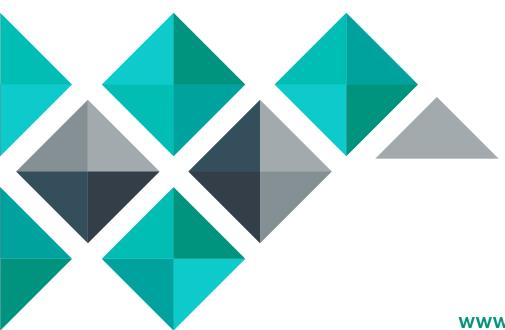


Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.



www.tectonicengineering.com



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ABOUT US

Founded in 1986, Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. is a multidisciplined engineering firm employing a staff of approximately 500 professionals comprised of civil, structural, geotechnical and environmental engineers, surveyors, planners, and construction inspectors. The substantial experience of our staff presents a company that is highly qualified to accomplish projects varying in size, scope or complexity.

To ensure the highest level of quality and consistency, we concentrate our services on core market sectors that reflect the strength and talent of our staff. Tectonic provides a full range of professional services in the following market sectors: Disaster Recovery, Energy, Institutions, Education and Healthcare, Land Planning, Telecommunications, Transportation, and Water Resources.

In 34 short years, Tectonic forged a reputation within the engineering and construction community for its technical knowledge, rigorous standards and fresh approach as design engineers and construction consultants. We take pride in the integrity and technical application of our services and strive to accomplish the goals of each Client.

As a result, our successes on contracts and overall activity in the industry are both recognized by our Clients through positive evaluations, and by reputable organizations through award and ranking programs.

The Zweig Letter ranked Tectonic #89 on its 2018 Hot Firm list of Architectural and Engineering Firms in the U.S. and Canada.

Tectonic continues to be listed on the annual Top AEC Firms list by Public Works magazine.

Our recent recognitions also include:

- ENR National Top 500 Design Firms: #177 in 2020
- ENR National Top 100 Construction
 Management-for-Fee/PM Firm: #49 in 2020
- ENR National Top 20 Design Firms by Sector: Telecommunications #16 in 2017
- ENR NY Top Design Firms: #20 in 2020
 Market Sector Ranking:

Government/Public Service - #10 Surveying and Mapping - #4 (in 2019)

- Trenchless Technology Top 50 Design Firms: #40 in 2019
- Crains Largest Engineering Firms in NY Area: #17 in 2019

We are a member of the American Council of Engineering Companies (ACEC) of New York – winning several awards for various projects, including a 2020 Platinum Award for "Vessel at Hudson Yards in NYC".

When you choose Tectonic you work with some of the finest professionals in the business - professionals who understand your goals and will put their skills and resources to work for you - professionals who will earn your trust and confidence, every day and on every project.

MISSION STATEMENT

TECTONIC'S GOALS, MISSION STATEMENT AND PHILOSOPHY

Tectonic has been guided by a focused philosophy since the firm's beginning - vision, integrity and technical expertise. Simply put, Tectonic's goals are to:

- Maintain the highest standard of quality on each and every project.
- Complete projects within budget and on-time.
- · Exceed our Client's expectations.

"Practical Solutions, Exceptional Service"

PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS

PROFESSIONAL REGISTRATIONS:

Professional Engineering Registration in 49 States Professional Planner Professional Land Surveyor Professional Geologist Licensed Environmental Professional (LEP) Licensed Site Remediation Professional (LSRP)

CERTIFICATIONS:

Construction Inspection/Laboratory Testing

National Institute for Certification in Engineering Technologies (NICET) Certified AASHTO Certified Materials Testing Laboratory
Occupational Safety and Health Administration (OSHA) Certified
American Concrete Institute (ACI) Certified
US Army Corps of Engineers Certified Materials Testing Laboratory

Homeland Security

Sandia Risk Assessment Methodologies (RAM) Technologies
Federal Emergency Management Agency (FEMA) Certified
ANSI/ASME-ITI/AWWA J100 RAMCAP® Standard for Risk and Resilience Management
of Water and Wastewater Systems

Health & Safety Certifications

Cardiopulmonary Resuscitation (CPR) trained/certified AMTRAK trained/certified Metropolitan Transportation Authority (MTA) trained/certified Comtrain Certified Tower Climbers



SERVICES MATRIX



SERVICES

Tectonic provides multidisciplinary engineering services that enable our clients to succeed across a wide range of goals.

Our core services include:

- sa Solar
- Transmission
- Wind
- Generation

We integrate these services to accomplish our client's project goals. Tectonic offers a streamlined management program (including top supervisory skills and tailored quality assurance measures), state-of-the-art resources and diverse expertise.

Our professionals are equipped with the field experience, resources and collective knowledge to support any phase of the project's life cycle, from preconstruction to final construction.



NASA Central Campus Solar Plant Addition, Merritt Island, FL





Morgan Stanley Phoenix Solar Array Installation, Westchester County, NY

Consolidated Edison Sprainbrook Substation Yonkers. NY

CORE CAPABILITIES

LICENSING & PERMITTING

NEPA and SHPO
State Environmental Acts
Environmental Impact Statements
US Army Corps of Engineers 404 Permitting
Zoning Approvals
Public Outreach

ENVIRONMENTAL

Visual Assessments

Monitoring/Mitigation Programs

Aquatic/Wetland Delineation

Archaeological Studies

Avian and Bat Impact Assessments

Phase I and Phase II site Assessments

SURVEYING SERVICES

Tectonic maintains multiple survey crews, each having specific areas of proficiency in boundary, topographic, right-of-way, construction stakeout and global-positioning-systems (GPS) surveying. Our staff of licensed land surveyors and survey technicians is fully equipped with state-of-the-art equipment and software, providing clients with fully automated services from the initial field visit to the final plat.

Acquisition/ROW
Aerial Control
ALTA/ACSM Land Title
Certified Boundary
Geodetic Control
GIS Mapping
Property Subdivision
Route Surveys
Topographic
Wetland Delineation
Mobile Mapping



Central Hudson Transmission Tower Foundation Design





CORE CAPABILITIES

Cornell Tech Roosevelt Island Solar Installation, NYC ACEC NY 2019 Engineering Excellence Platinum Award Winner

PROGRAM MANAGEMENT SERVICES

Planning

Feasibility Assessment

Cost Benefit Analysis

Value Engineering

Scheduling

Procurement

Contractor Evaluation

Contractor Prequalification

Bid Packages

Bid Evaluation

Progress Meetings

Cost Controls

QA/QC

Payment Request Evaluations

Close Out Packages

Facility Start-Ups

As-Builts

FACILITY PLANNING/FEASIBILITY

Constraints and Critical Issues Mapping

Fatal Flaw Analysis/Due Diligence

Site Access Assessment

Environmental Site Assessments

Leasing

Right-of-Way Acquisition Support

Title and Property Surveys

Cost Estimates

ENGINEERING

Civil Site Design

Geotechnical Investigations

Structural Analysis

Tower Analysis

Foundation Design

Stormwater Management Plans

Erosion Control

Access Roads for Construction

Support Building Design

Security Planning/Design

CONSTRUCTION SUPPORT SERVICES

CONSTRUCTION PHASE INSPECTIONS

Bid Documents Bid Evaluations

Contractor Selection

Construction Management

Resident Engineering

Construction Inspection

Materials Testing

Blast and Vibration Monitoring

Claims Analyses

Constructability Reviews
Contract Administration

QA/QC Programs

Resident Engineering

Technical Inspections

SPECIAL INSPECTION & MATERIALS TESTING SERVICES

Asphalt Pavement

Concrete

Firestopping

Fireproofing

Roofing

Soils Inspection

Subgrades

Structural Steel

Structural Cold-Formed Steel

Masonry

Precast Concrete

Post-Tensioned Concrete

Wood Framing

Pile Foundations

Pier Foundations

Ground Improvements

Underpinning

Curtain Walls

EIFS

Mechanical Systems

Sheeting, Shoring, Boring

SWPPP

Standpipe Systems

Sprinkler Systems





NASA Central Campus Solar Plant Addition, Merritt Island, FL

SOLAR

With the price of oil increasing, renewable energy sources have become a viable option. Solar power, the never ending energy source, has not only taken off for residential use but also for utility scale systems. Tectonic is dedicated to designing efficient and high quality solar and commercial systems. We have the experience and capacity to efficiently evaluate potential sites, effectively negotiate the regulatory climate and ensure engineering and construction is completed within the anticipated schedule. Tectonic has vast experience with various types of solar installations:

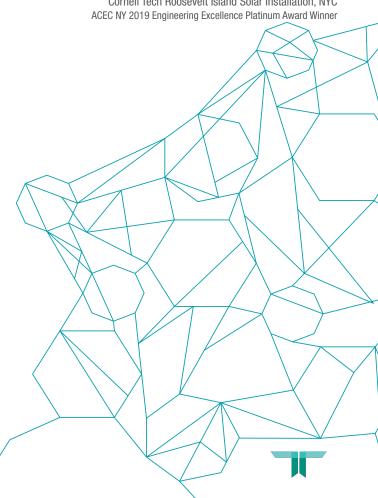


SERVICES

- Cost and Feasibility Studies
- Foundation Design
- Mounting Rail Design
- Steel Support Design
- Environmental Review and Impact Analysis
- Civil/Site Layout and Plan Design
- Geotechnical Investigations
- Construction Administration
- Construction Inspection
- Due Diligence
- Regulatory Permitting
- Surveying

TYPES OF INSTALLATIONS

- Ground Mounted
- Carport Canopy Systems
- Rooftop
- Ballasted
- Steel Framed / Anchored
- Utility Scale Solar Farms
- Landfill
- Building Facade Structures







Orange and Rockland Lovett Substation, Tompkins Cove, NY

TRANSMISSION

As the demand for electrical power continues to grow, and the existing infrastructure continues to age, electrical utilities face many challenges in dealing with:

- Providing Additional Capacity to meet Customer Demand
- Implementation of Technology Upgrades
- · Extension of Service Life
- · Retrofits for Safety, Security, and/or Accessibility

Tectonic and its staff have been providing professional services for electrical utilities and other energy providers for over 30 years. Tectonic has performed civil and structural engineering and design for several utility companies and public authorities, as well as permitting, environmental studies, surveying, geotechnical engineering, inspections and other services as necessary. We have assisted in the development of approximately 8,000 tower sites nationwide and have performed site acquisition, zoning, environmental, surveying, engineering and construction management services for the telecommunications industry. Tectonic has also designed and obtained regulatory approval for numerous large civil site development projects, which require roads, utility right-of-ways, stormwater management systems, erosion control measures, wetlands mitigation, geotechnical and environmental studies as well as comprehensive site and grading plans.





Central Hudson

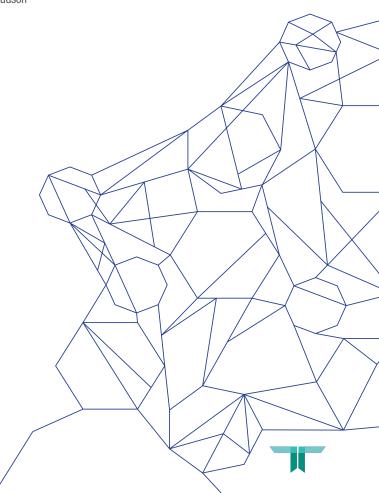
STRUCTURES

Tectonic is prepared to assist with the planning, design and construction oversight of transmission and distribution facilities including:

- Transmission and Distribution Lines
- Substations and Switch Yards
- New and Existing Structures
- Foundations
- Access/Service Roads
- Underground Utilities and Vaults

SERVICES

- Constraints and Critical Issues Mapping
- Fatal Flaw Analysis/Due Diligence
- Site Access Assessment
- Environmental Site Assessments
- Leasing
- Right-of-Way Acquisition Support
- Title and Property Surveys
- Cost Estimates
- Tower Analysis







SUNY Canton Wind Foundation Design, Canton, NY

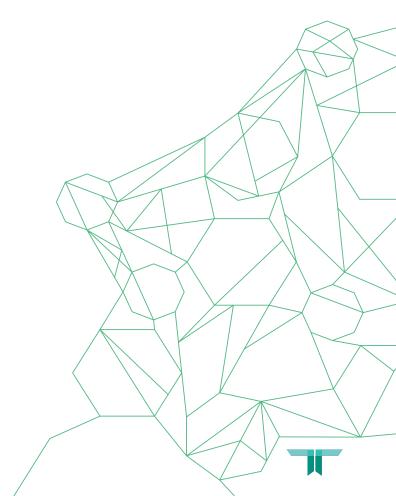
In parts of the country, natural wind speeds make wind power a viable option. Tectonic can provide the services necessary to deliver these projects from concept to completion. Our objective is to cost-effectively design successful wind energy projects that generate a continuing return on investment.





SERVICES

- Feasibility Studies
- Environmental Review & Impact Analysis
- Civil / Site Layout
- Transmission & Distribution back into the grid
- Geotechnical Investigations
- Foundation Design
- Construction Administration
- Due Diligence
- Fatal Flaw Analysis
- Regulatory Permitting
- Surveying
- Thermal Resistivity
- Electrical Resistivity







Consolidated Edison Farrogut Substation, Brooklyn, NY

GENERATION

As demand increases, the need for near generation facilities also increases. As a result, new facilities are currently under design and construction across the country. Tectonic provides additional services for various generation facilities throughout the country.





Consolidated Edison Astoria Substation, Queens, NY

SERVICES

- Civil/Site Plan Design
- Surveying Services
- Geotechnical Engineering
- Environmental Services
- Structural Engineering
- Construction Inspection
- Construction Administration
- Facility Planning
- Feasibility Studies
- Fatal Flaw Analysis

STRUCTURES

- Power Plants
- Substations
- Pump Stations
- Gas Collection Facilities
- Mining Facilities
- Co-generation Plants

SUBSTATIONS AND SWITCHYARDS

Tectonic is well qualified to design equipment foundations for:

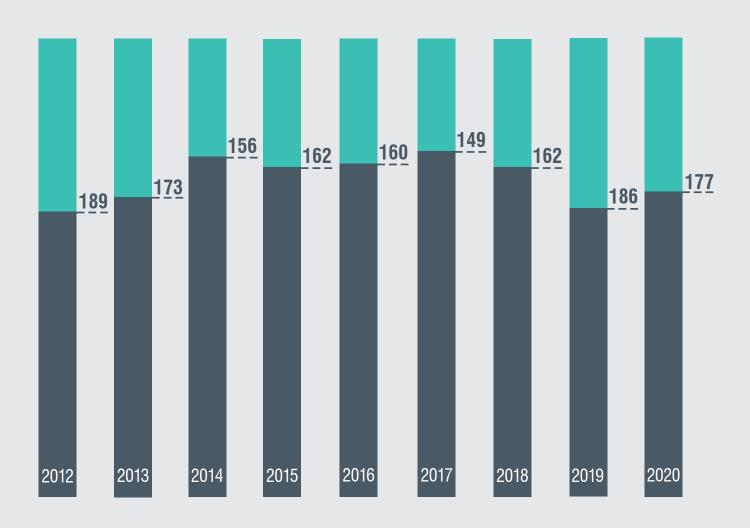
- Bus Structures
- Transformers
- Switches and Breakers

Tectonic provides services to accommodate facility upgrades and expansions such as:

- Equipment Replacement
- Changes in Site Layout
- Increase in Substation Capacity



ENR TOP 500 DESIGN FIRMS RANKINGS



REPRESENTATIVE CLIENTS

Tectonic has worked for a number of public and private clients providing planning, environmental, engineering, surveying and construction management services. Presented below is a brief representation of those clients.

Black Oak Wind Farm LLC

Bright Power

CEC Windpower, LLC

Central Hudson Gas & Electric Corp.

Columbia Gas Transmission Company

Consolidated Edison, Inc.

CPS Energy

Crosstex Energy

Dynegy, Inc.

Enfield Energy, LLC

Entergy Corporation

Enter Solar

First Energy

Jersey Central Power & Light

KB Racking

Legatus 6

Lenape Resources

National Grid

New York Power Authority

NiSource Gas Transmission & Storage

Orange & Rockland Utilities, Inc.

PurePower

Southwestern Power Administration

Solar Mounting Solutions, LLC

Sustainable Energy Developments, Inc.

Standard Solar

Tesla

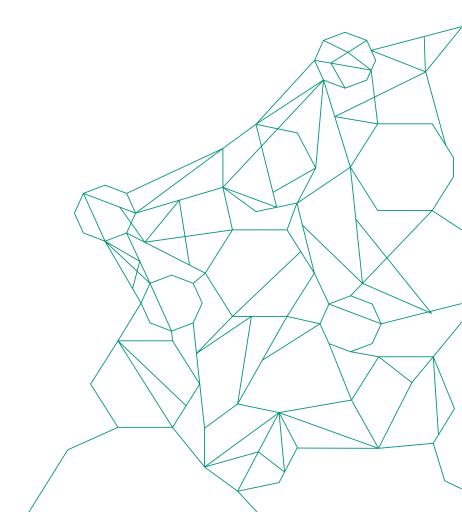
UGE

Unirac, Inc.

XTO Energy/Mobil



PROJECT EXPERIENCE









Solar Rooftop Installation Design at Cornell Bloomberg Building Cornell Tech's Roosevelt Island Campus Construction

This project included the construction of a new Cornell Tech campus including two million square feet of state-of-the-art buildings, over two acres of open space that will become home to over 2,000 graduate students and hundreds of faculty. The construction included the installation of solar panels on the Bloomberg Center and Bridge building. When completed, the 12-acre campus will be known as one of the most environmentally friendly and energy efficient campuses worldwide. Tectonic provided engineering services for the installation of a rooftop solar system at the Bloomberg Center Building and Bridge Building.

Tectonic performed structural analysis and design of the proposed solar mounting steel support system. The support system for Bloomberg was composed of steel members and Unirac rails and the Bridge building was composed of Unirac rails at an 8-degree tilt. The design included a design to span the large 25' and 30' spans as required to support the PV panels. Tectonic also drafted structural design drawings and was involved with the permitting process with the NYC DOB.

PROJECT CLIENT:

EnterSolar

LOCATION:

Roosevelt Island, NY



National Institute of Standards (NIST) – 5MW Solar Farm

Tectonic performed geotechnical, environmental, civil, and surveying services for the proposed 5 MW ground mounted solar installation on the campus of the National Institute of Standards and Technology (NIST) in Gaithersburg, MD. The details of the provided services are:

- Geotechnical Performed a subsurface investigation and geotechnical engineering analysis for construction site improvements. The purpose was to evaluate the subsurface conditions across the site and develop geotechnical recommendations for the design and construction of the roadway pavement sections and electrical manhole structures.
- Civil Engineering Services Performed civil design for the proposed solar system. Sediment erosion control, SWPPP, grading, and stormwater designs were included for the 5 MW system.
- Environmental Engineering Services Performed a Phase I ESA to characterize the environmental quality of the property through determining the likely presence (or not) of Recognized Environmental Conditions (RECs). This was performed in conformance with ASTM Practice E1527-13, in order to identify obvious and likely potential sources of contamination such as hazardous substances or petroleum products and assess general environmental conditions of the property.
- Surveying Services Tectonic was requested to provide additional surveying services because the array geometry and location changed requiring additional areas on the property to be surveyed. A topographic survey was performed for a 5 MW solar ground mount system for the new area required of the solar installation and prepared mapping in AutoCAD format. The mapping showed all visible improvements, roadways, structures, etc. with a 2-ft contour interval, and spot elevations on all flat surfaces and improvements, including rims and inverts on all sanitary and drainage structures. All vertical data was based on the North American Vertical Datum of 1988.

PROJECT CLIENT:

Legatus6

LOCATION:

Gaithersburg, Maryland



Arverne View Buildings #1 & #2 – Structural Analysis and Inspection Solar Arrays

Arverne View is a residential community consisting of 11-buildings located in the Far Rockaways, New York. The project sought to increase operational efficiencies, develop a plan for long-term sustainability while also investing in energy efficiency. As part of this large scale preservation initiative, Tectonic provided engineering services to perform structural analysis and inspection of the installed solar arrays at Arverne View buildings #1 & #2.

The inspection was performed to verify that the racking hardware was installed at the proper torque as specified by the aluminum rail manufacturer, Ironridge. This included the testing and retightening of all panel connections and tilted leg assembly connections. The solar arrays at both buildings were installed in accordance with the approved construction drawings and manufacturer's specifications.

Tectonic also performed a visual inspection of the secondary safety system consisting of a 5/16" diameter steel cable passing through 1/4" diameter eyebolts attached to the panels. In the event of a connection failure, the steel cables would engage to keep panels attached to the railing and anchors.

PROJECT CLIENT:

Brightpower Inc.

LOCATION:

Queens, NY



5MW Solar Installation

Tectonic provided services as the Owner's Engineer on this 5MW solar PV installation in Morris County, New Jersey. The solar installation on this site encompasses ground mount, carports, and roof mounted systems with multiple array azimuths and inclinations. Seven different sub arrays are utilized to optimize the system output using the three different mounting systems. Requiring approximately 20 acres of tree removal, grading and overall site work, the extensive system is predicted to supply approximately 70% of the power consumption for the existing facility.

Our services as Owner's Engineer include the following:

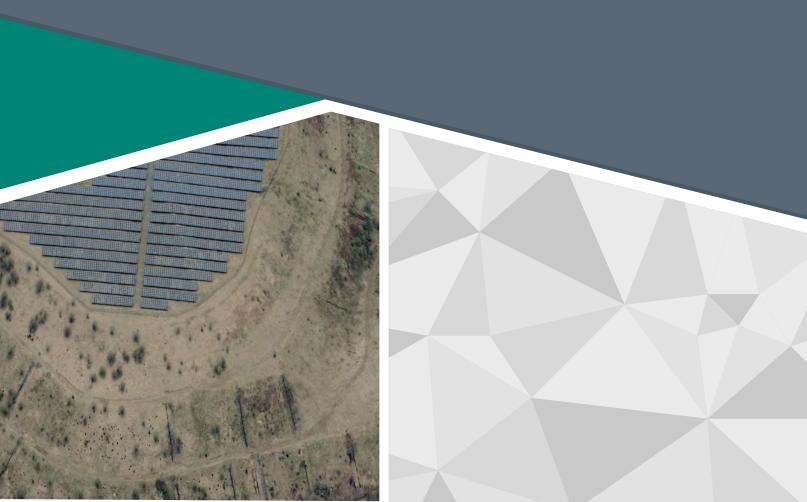
- Technical Design/Code Compliance Review
- Permitting Review and Assistance
- Threatened & Endangered Species Studies
- Contractor Submittal Reviews and RFI Responses
- Engineering Support during Design Phase
- Construction Administration during Construction and Close-Out Phase
- Site Visits and Engineering Inspections
- Change Order Review and Takeoffs

PROJECT CLIENT:

KDC Solar, LLC

LOCATION:

Morris County, NJ Commons Way, Rockaway, NJ



2.3MW Solar PV Installation

Tectonic provided engineering services on this 2.3MW solar PV installation in Somerset County, New Jersey. The solar installation on this site encompassed a ground mounted system with multiple sub-arrays utilized to optimize the system output. Initially requiring approximately 20 acres of tree removal and overall site work (to coordinate with future planned investment in the property), the extensive system was predicted to supply approximately 80% of the power consumption for the existing facility. The facility spans two municipalities, so land use approvals were required from both to construct the array and its 4,000 foot overhead connection to the grid at an existing onsite substation. In coordination with local preservation groups, the property owner, and the Town ,the array was ultimately relocated northward onsite to a position which minimized the clearing. Our services as the project engineer included the following:

- Civil Engineering
 - o Storm-Water Management
 - o Erosion and Sediment Control Planning
 - o Land-use approval plans
- Structural Engineering
 - o Ground-Mounted System
 - o Transmission Line Analysis and Design
- · Geotechnical Engineering
- Surveying
- Environmental Engineering
 - o Threatened & Endangered Species Studies
 - o Wetlands Delineation
 - o Environmental Impact Statement

NJDEP LURP, Wetlands (LOI, General Permits)

- o Cultural Resource Management
- Technical Design/Code Compliance Review
- Municipal Review (two townships)
 - o Planning Board Approvals
- Somerset Union Soil Conservation District
- Somerset County Planning Board

PROJECT CLIENT:

Confidential

LOCATION:

Somerset County, NJ

DATE:

2011 - 2014





Smith Cairns Carport & Rooftop 395 kW Solar Array Installation

Tectonic provided structural design, surveying, a subsurface investigation and geotechnical engineering analyses for the proposed carport and rooftop PV solar arrays to be installed at the Smith Cairns Ford car dealership at 900 Central Park Avenue in the City of Yonkers. The carport included a total of two (2) carports to be installed within the existing parking lot. This included determining the design load, performing an analysis to check the building supporting elements and examining the existing roof deck and connections to support the proposed solar installation. The solar installation will provide alternate power solutions to the Ford Dealership building resulting in cost savings as well as clean energy.

PROJECT CLIENT:

Standard Solar

LOCATION:

Yonkers, NY



NASA John F. Kennedy Space Center Central Campus Solar Plant

NASA planned to install a 2 MW ground mounted solar plant generating capacity that connects to the KSC 13.2KV 60hz electrical grid at the John F. Kennedy Space Center in Merritt Island, Florida. The 1 MW array will become part of NASA's electrical distribution system. Tectonic provided civil engineering services including SWPP, a dewatering plan, grading and erosion and sediment control plans.

Project Challenges:

The location of the system will be close to the coast line. The soils are corrosive and with combination of the salt in the air effects the electrical equipment. The system will need to be designed to take into consideration of the air quality and flood zones.

PROJECT CLIENT:

Legatus6

LOCATION:

Merritt Island, Florida



Christian Cultural Center 273.3kW Solar System – Structural Assessment Verification

Tectonic provided engineering services for a 273.3kW solar system on the roof of the Christian Cultural Center located in Brooklyn, NY. A structural review of the existing building structure and the proposed solar-ballasted system analyses was performed.

Services involved with designing the structure included the following procedures:

FDNY Package

- Prepared drawings
- Designed narrative document to include any non-compliant conditions
- Prepared FDNY paperwork per NYC building code
- Filed plans and applications with the FDNY rooftop access unit

Department of Buildings (DOB) Filing

- Prepared Alteration Type II D14 applications for NYC DOB approval
- Reviewed and sealed drawings
- Prepared work permit applications
- Completed Letter of Completion as required to close out NYC DOB building permit application.

The structural assessment was based upon the most stringent criteria of the 2014 New York City Building Code.

PROJECT CLIENT:

UGE USA Inc.

LOCATION:

Brooklyn, NY



Shakespeare Building 28.3 kW Solar Installation

Tectonic performed a structural analysis for a 28.3 kW solar system supported on the roof of the building located at 1282 Shakespeare Ave, Bronx, NY.

The purpose was to determine the design loads for the solar panel support system and design the proposed steel framing. Framing materials primarily utilized strut channels on top of the proposed pipe framing.

Tectonic also determined the quantity and locations of roof penetrations required to support the proposed solar system. Tectonic provided all connection details and post down connections to the roof.

In conclusion, the proposed strut and pipe framing was adequate to support the loads and the existing supporting structure was sufficient to support the proposed solar installation.

PROJECT CLIENT:

Bright Power, Inc.

LOCATION:

Bronx, NY



Marcus Garvey Buildings 300 kW Solar Installation

Tectonic performed structural analyses of the existing rooftops for 22 buildings within the Marcus Garvey village to support a total of 300 kW of solar. The solar system was installed as non-penetrating ballasted mounts.

The purpose of the project was for the Village to consume all the energy it generates, without exporting to the grid. This system will also lower energy costs, deliver essential load relief for utilities, and help reduce greenhouse gas emissions.

PROJECT CLIENT:

Bright Power, Inc.

LOCATION:

Brooklyn, NY



Via Verde 18-Story LEED Gold Building

Via Verde is an 18-story LEED Gold building project in the Bronx. This 300,000 square foot building consists of 202 affordable housing units with a building integrated 65kW solar photovoltaic system. The solar panels are a prominent architectural feature of the building as they form the visible façade along the southern building elevations. In addition, solar panels have been integrated on top of a pergola structure located on the 7th floor.

Tectonic provided services to Aeon Solar, the building's solar installer, to design the structural support system for the solar panels on the building façade and over the pergola structure.

PROJECT CLIENT:

Aeon Solar

LOCATION:

Bronx, NY



Gem Theatre Solar Installation – Structural Analysis

Tectonic provided engineering services to review the ballast mount system for the solar panel installation at Gem Theatre located in Athena, OR.

These services included the following procedures:

- Determining the design loads
- Checking the proposed ballast weight for the ballast system by KB Racking for Wind and Seismic

PROJECT CLIENT:

KB Racking, Inc.

LOCATION:

Athena, OR

GN GENERATION



Indian Point Nuclear Power Plant - Geotechnical Services

Tectonic performed geotechnical engineering analyses and prepared reports providing geotechnical design criteria and construction recommendations for support buildings and structures at the power plant. Investigations included performance of test borings with borehole image processing to identify the orientation of discontinuities within the bedrock. Performed analyses to identify stability of bedrock subgrades for proposed heavily loaded crane foundations falling in close proximity to the crest of an existing approximately vertical rock cut and designed rock reinforcement to prevent undermining of existing foundations during excavation of bedrock adjacent to and below the foundations. Also planned and managed detailed laboratory testing of processed aggregate fill to identify the small and large strain elastic properties of the fill that was to be placed beneath sensitive installations. Testing included cyclic triaxial, consolidated, drained triaxial and resonant column.

Under a separate task order, Tectonic provided geotechnical engineering and design services of a MAT foundation for outside storage nuclear waste casks. Services included subsurface exploration, soils laboratory testing, geotechnical engineering analyses to develop soil structure interaction parameters which included dynamic soil strength properties, subgrade modulus, bearing capacity, and lateral earth pressure coefficients. Tectonic was also responsible for preparation of foundation design plans, specifications, and cost estimates associated with construction of the new MAT foundation.

PROJECT CLIENT:

Indian Point Nuclear Power Plant/ Entergy Nuclear Operations, Inc.

LOCATION:

Bronx, NY



Danskammer & Roseton Power Stations Modifications

Tectonic performed structural analysis and design, site engineering, facility planning, regulatory, structural inspections, load capacity evaluations, design of improvements/repairs, structural design (to address corroded and/or deteriorated condition of the existing steel framing and accommodate new operational needs) and design of modifications to various plant infrastructures for the 500 megawatt, gas-fired Danskammer Power Station and the 1242 megawatt, oil-fired Roseston Power Plant. Both power plants are located adjacent to each other on the west bank of the Hudson River in Newburgh, NY. Under a firm agreement, Tectonic provided on-call consulting engineering services for a multitude of task assignments including:

- Fire pump hose and equipment foundations
- River intake structure structural design
- Intake structure vehicular bridge structural design
- Paving and drainage improvements around the Danskammer Station (including maintenance and protection of traffic schemes to maintain facility operation during construction)
- Long-term planning for coal pile capacity improvements geotechnical investigation and site design
- Crusher tower framing structural design
- Circulator pump platform and new hoist beams structural design
- Boiler building access platforms and storage area floor framing structural design
- Turbine building stair framing modifications and office area expansion structural design
- Load rating of existing hoist beams
- Parapet and basement wall masonry evaluations
- Pipe rack walkway fall protection structural design
- Various tank foundations geotechnical engineering and structural design

PROJECT CLIENT:

Dynegy Northeast Generation, Inc.

LOCATION:

Newburgh, NY



Blenheim Gilboa Pump Storage Facility and Dam

The Blenheim Gilboa power pump storage project is a 1040 megawatt hydroelectric facility comprised of upper and lower reservoirs and a massive underground powerhouse in Gilboa, NY.

Tectonic provided construction management and contract administration services for the remediation of an unstable slope along the lower reservoir's east shore. Stabilization work involved the construction of a 1 million cubic yard rock fill berm at the base of the slope. This also involved the construction of a toe berm along the downstream toe of the 80 ft. high, 1800 ft. long dam that impounds the lower reservoir. Tectonic provided construction engineering, contract administration, planning and scheduling, record maintenance, preparation of inspection reports and preparation of record "As-Built" plans.

Tectonic was employed once again by the New York State Power Authority for the Gilboa Power Project. Tectonic's structural team designed various systems that would ensure safe personnel access. This project consisted of designing various systems to provide safer personnel access to the existing taintor gates at this hydroelectric generating facility. These systems included various platforms, ladders, stairs, railings, safety cables and tie-off points for personnel. Some of the components were designed to be removable so not to interfere with operation of the gates. Tectonic prepared the detailed drawings and specifications for procurement and construction.

PROJECT CLIENT:

New York Power Authority

LOCATION:

Gilboa, NY



138 to 13.2 kV Substation Bid Documents

Under its program to improve network performance and reliability through redistribution of load, the utility regularly proposes improvements to and/or replacement of substation infrastructure. This work generally consists of transformer additions/replacements, switchgear improvements, transmission taps, underground/overhead distribution connection improvements, equipment foundations, site access improvements, stormwater management facilities, temporary wetlands disturbance, fire suppression improvements, and visual screening enhancements. Site improvements included grading, drainage, paving, site retaining walls, fencing and landscaping.

Under a term agreement with Orange and Rockland Utilities, Inc., Tectonic developed bid documents and specifications to facilitate general civil construction of the substation infrastructure. Services included bid document generation, project phasing, integration and coordination with company-performed work, unit price development, cost estimating services, technical specification preparation, and authoring of general conditions of contract.

Locations where services were performed include:

- New Hempstead Substation Upgrade, New Hempstead, NY: 2 acre footprint, (2) 50 MVA 138 to 13.2 kV transformer bank replacement
- Hartley Road New Substation, Goshen, NY: 7 acre footprint, (2) 50 MVA 138/69 to 13.2 kV transformer banks with switchgear for 10 circuits

PROJECT CLIENT:

Orange and Rockland Utilities, Inc.

LOCATION:

Various Locations throughout Orange and Rockland Counties, NY



Colonial Pipeline Pump Station & Storage Tank Rt. 654 Geotechnical Investigation

Tectonic performed subsurface investigations, laboratory testing and prepared a geotechnical engineering report with recommendations for the design of a pump station and appurtent structure foundations. The project involved the installation of two pumps with associated 12 and 16 inch diameter piping and a control building.

Based on the results of the testing and the geotechnical analyses, a mat foundation was recommended for support of the pumps to minimize the dynamic response of the foundation to the unbalanced forces of the high speed rotary pumps. The report also included recommendations for allowable bearing pressure, anticipated total settlement, management of groundwater for design and construction, subgrade preparation, lateral earth pressure and seismic design criteria.

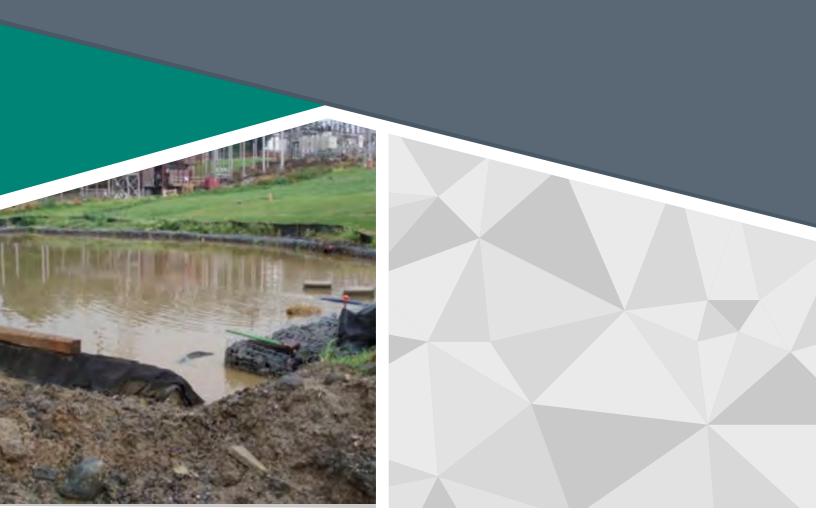
Tectonic also performed an evaluation of the existing foundation concrete for Tank 116 within the Buckeye Perth Amboy Terminal. Non-destructive testing on in-place hardened concrete was performed to obtain an estimation of the compressive strength.

PROJECT CLIENT:

SPEC Consulting, LLC for Buckeye Partners, L.P.

LOCATION:

Perth Amboy, New Jersey



Dunwoodie Substation Drainage Study

Tectonic performed a drainage analysis of a 17-acre Con Edison substation located in the City of Yonkers. The purpose of the study was to evaluate the maximum design storm event the existing detention basin and outlet structure were capable of handling without overtopping.

The overall drainage area was divided into separate distinct sub-areas, including on and off-site areas, to provide an accurate model of the overall drainage area for analysis using Hydraflow Hydrographic 2002 software, which uses the Natural Resources Conservation Service (NRCS) and the Rational Methods. Flows to the treatment pond were calculated for five different storm events.

In addition, the affects a proposed substation expansion would have on site drainage and peak flows to the detention pond was evaluated.

A drainage study report with all support calculations and recommendations for future studies required to develop alternatives concepts for upgrading the detention basin capacity is being prepared.

PROJECT CLIENT:

Consolidated Edison of New York

LOCATION:

Yonkers, New York



Blue Lake Substation

A new 21,000 square foot substation for Orange and Rockland Utilities, Inc. was proposed in Warwick, New York to serve the distribution network loads associated with the redevelopment of the former IBM Sterling Forest campus. The substation position was achieved with a 15-foot reinforced concrete retaining wall founded on rock and contained thirty three (33) separate foundations consisting of various types including piers on spread footings, continuous footings, and concrete caissons. The responsibilities of Tectonic included:

- A complete subsurface investigation (including the drilling of 16 borings and 25 rock probes, geotechnical analyses, a complete geotechnical report, review of the preliminary foundation designs prepared by the client, and load values for various electrical equipment provided by the client),
- Design of the various foundation structures (utilizing ACI 318 and 360 codes, calculating loads not explicitly supplied using ASCE 7 and the NESC, and preparing construction drawings with details, notes, and specifications),
- Obtaining a highway work permit from the Orange County DPW for interconnection to the distribution network (topographic survey of Long Meadow Road, maintenance and protection of traffic plans, and agency coordination),
- A supplemental subsurface investigation to verify compaction of the structural fill behind the site retaining wall, and
- Resident engineering, site safety, construction observation, and material testing for the fit-out construction of the substation electrical infrastructure.

PROJECT CLIENT:

Orange & Rockland Utilities, Inc.

LOCATION:

Warwick, New York

DATE:

2015





Foundation Design for 1.8 MW Wind Turbine

Tectonic provided the structural design of the tower foundation for a Vestas 1.8 MW wind turbine with a hub height of 80 meters (262 feet). The \$1.5 million project will include a 436-foot wind turbine to be constructed on the campus of SUNY Canton behind the baseball fields. The turbine will be able to produce approximately 1.8 to 2.2 megawatts, enough to cover nearly half of the university's electricity use. The scope of services included the review of subsurface data to determine the most appropriate foundation configuration for support of tower and the preparation of foundation drawings and technical specifications.

PROJECT CLIENT:

Sustainable Energy Developments Inc.

LOCATION:

State University of New York at Canton, Canton, NY



Black Oak Wind Farm Subsurface Investigation & Geotechnical Engineering

Tectonic performed a geotechnical investigation for a 50 MW farm consisting of seven wind turbines with associated collector systems, a collection station, substation and associated access roads on a site in excess of one square mile. The purpose of the investigation was to identify the engineering properties of the site soils and bedrock necessary for the design of tower foundations, electrical grounding and buried electrical transmission lines.

Tectonic performed test borings, Multi-Analysis of Surface Wave (MASW) testing, thermal resistivity testing, electrical resistivity surveys, laboratory soil testing for engineering properties and corrosivity potential. Tectonic performed analyses to determine bearing stability and settlement. Tectonic also prepared a report presenting recommendations for the design and construction of the wind turbine foundations including net allowable bearing pressure, coefficient of sliding resistance, design shear modulus, unit weight and Poisson's ratio rock anchor design criteria.

PROJECT CLIENT:

Black Oak Wind Farm, LLC

LOCATION:

Town of Enfield, New York



Feasibility Study Reviews Five Wind Projects

Tectonic reviewed the technical feasibility of five (5) proposed wind energy projects for rural energy subsidization, consisting of 140-foot high, submegawatt Endurance wind turbines within multiple sites located in Erie, Niagara, Ontario, Onondaga, Tompkins Counties, New York.

Technical reports were prepared by the CEC Windpower pursuant to Section 8 of 4280-B, Appendix B, of the U.S. Department of Agriculture (USDA) Rural Energy Development program's technical report guidelines. Tectonic evaluated and assessed the primary and cumulative environmental impacts, permitting, development, construction, wind resource, and turbine output analysis components of the project.

Through close communication and coordination with CEC Wind Power, Tectonic provided seamless expedited review services to meet the CEC's proposed deadlines and budget constraints. Provided recommendations for the design and construction of the wind turbine foundations including net allowable bearing pressure, coefficient of sliding resistance, design shear modulus, unit weight and Poisson's ratio rock anchor design criteria.

PROJECT CLIENT:

CEC Wind Power

LOCATION:

Various Locations, New York State





Structural Analysis of Transmission Towers

Tectonic has performed structural engineering services for more than sixty (60) of Con Edison's transmission towers in recent years, including the following projects:

Consolidated Edison Transmission Tower Analysis

Tectonic provided coordination and design services for over 40 transmission line structures in 2009. Tectonic performed structural analyses on over 30 of the structures, designed tower reinforcement and provided shop drawings for many of them, and prepared as-built drawings as needed to bring all the towers into compliance with updated requirements from the Public Service Commission.

Stony Point Transmission Tower

Tectonic provided an analysis and the design of modifications to this existing 473' tall steel transmission tower. The structure supports the high-voltage electrical conductors spanning the Hudson River from a similar tower in Buchanan, adjacent to the Indian Point Generating Station. The tower has an elevator for hoisting equipment and materials to the upper portion of the structure. Tectonic prepared a detailed report and construction drawings for modifications and installation of antennas for wireless telecommunications purposes.

Millwood and Buchanan Transmission Towers

This project included the upgrade of two existing four-circuit electrical transmission towers in Westchester County. The existing towers were evaluated for their capacity to support the proposed installation of antennas by various telecommunications providers, as well as for additional equipment required by Consolidated Edison. The services provided included a structural analysis of the tower, preparation of an engineering report, design of structural modifications, preparation of construction drawings and detailed steel fabrication and erection drawings, including bills of material.

The work included incorporating current NESC and Con Edison loading conditions, as well as the recent recommendations of the New York State Public Service Commission, all of which are more stringent than the criteria used at the time of the original design and construction. The towers are being reinforced to satisfy the requirements of current codes and standards.

PROJECT CLIENT:

Consolidated Edison

LOCATION:

Various Locations, New York



Columbia Gas Line K Third Party Consultant Inspections

Tectonic provided NYSDOT 3rd Party Consultant Inspections with a NICET Level III certified senior inspector on the Columbia Gas Line K project along NYS Highway 97/42 in Port Jervis, NY. The project consisted of constructing 20-inch uncased road bores as crossings beneath NYS Highways 97/42 to install new gas mains and abandon the older gas mains. Responsibilities under the NYS PERM 36 include inspections in accordance with the Standard Practices of NYSDOT and certifying the work is performed in accordance with the approved plans/specifications, maintenance of records in accordance with NYS DOT Manual of Uniform Record Keeping (MURK), preparation of as-built sketches/plans necessary for changes to meet actual field conditions, reviewing & inspecting compliance with all aspects of Maintenance & Protection of Traffic specified in the plans & permit and obtaining all necessary material samples & conducting all necessary materials testing in accordance with the NYSDOT methods.

PROJECT CLIENT:

Columbia Gas Transmission Company (Owner) C/O NiSource Gas Transmission & Storage

LOCATION:

Port Jervis, NY



30 Mile Natural Gas Gathering Pipeline - Aquatic Resources Delineation

This National Fuel Gas (NFG) project consists of approximately 30 miles of natural gas gathering pipelines for twelve (12) existing and proposed high-volume hydraulic fracturing well heads located throughout sensitive ecosystems in the Tiadaghton State Forest in Lycoming County, Pennsylvania. Proposed pipelines will be extended throughout the Tiadaghton State Forest and south through private rural properties, eventually connecting to the existing Transcontinental (Transco) Pipeline. Tectonic provided expedited sensitive aquatic resource delineation services during the pre-construction survey and pipeline routing/ planning stages of the project, thoroughly covering mountainous terrain, farmlands, steep valleys, and floodplains. Sensitive aquatic resources, including wetlands, watercourses, water bodies, and vernal pools, were identified in the field and delineated in accordance with US Army Corps of Engineers 1987 Corps of Engineers Wetland Delineation Manual (the 1987) Manual) and associated Northeast Regional Supplement methodologies pursuant to Title 25, Chapter 105 of the Pennsylvania Code for Dam Safety and Waterway Management.

Additionally, the boundaries of these sensitive aquatic resources located within, or in close proximity of the proposed right-of-ways, were flagged according to the 1987 Manual and located using sub-meter accurate GPS equipment. Utilizing this GPS data, NFG was able to proceed with the preliminary route planning stages and evaluation of proposed reroutes while simultaneously avoiding sensitive aquatic resources and subsequent permitting requirements or constraints that might otherwise result in potential project delays, permit denials, or budget overruns.

PROJECT CLIENT:

Fisher Associates, PE, LS, PC

LOCATION:

Lycoming County, Pennsylvania



Land Surveying Services Term Agreement

Tectonic is working on our fifth consecutive term agreement with Consolidated Edison to provide land and property surveys, title searches, ROW and easement surveys, topographic surveys, hydrographic surveys, including soundings, construction and quantity surveys, transmission surveys including subsurface or overhead electric, gas and steam lines, and route feasibility surveys and studies at a variety of sites. A small sampling of projects completed include:

South Bronx, NY - Provided ground support for aerial photography which will be utilized for preparing topographic mapping for the design of sub-surface utilities in the South Bronx.

Sprainbrook Sub-Station, Yonkers, NY- Provided aerial control and supplements topographic maps produced by photogrammetric methods of the Sprainbrook substation. Tectonic also provided stakeout services for column lines, grid layout and test borings at the sub-station.

30th & 31st Streets, New York, NY - Tectonic performed a field survey on the ground and prepared mapping in AutoCAD format to be utilized for the design of sub-surface transmission lines. The total project length was approximately 8,000 feet. Baselines were laid out for the entire length and tie sheets were provided for control points which were set at all street intersection.

Dunwoodie Substation, Yonkers, NY- Provided aerial control and supplements topographic maps produced by photogrametric methods. Tectonic also provided stakeout services for column lines, grid layout and test borings at the sub-station.

Park & Madison Avenue, New York, NY - Tectonic performed a field survey on the ground and prepared mapping in AutoCAD format to be utilized for the design of sub-surface transmission lines. The total project length was approximately 24,000 feet. Baselines were laid out for the entire length and tie sheets were provided for control points which were set at all street intersection.

PROJECT CLIENT:

Consolidated Edison of NY

LOCATION:

Various Locations, NY





XTO Energy/Mobil - Dry Run Well Pad - Timber Rattlesnake Monitoring

Tectonic provided construction-phase timber rattlesnake (Crotalus horridus, PA Candidate) monitoring services on a proposed horizontal Marcellus well pad being constructed through expansion of an existing vertical well pad located off Dry Run Road in the Town of Renovo, Clinton County, Pennsylvania.

The existing site consisted of a small natural gas compressor station, associated natural gas pipelines and shallow vertical natural gas wells. XTO Energy plans to remove the existing compressor station and build a 12,500 square foot building to house four compressors, each capable of putting out 1775 horsepower. The existing natural gas pipelines were to be removed and replaced with a 12-inch diameter pipeline to pipe the gas from the proposed horizontal Marcellus well.

Two (2) timber rattlesnake dens were located within 400 feet of the project area. Per the PA Fish and Boat Commission (PFBC) permit requirements, a qualified timber rattlesnake construction monitor was required to be onsite during construction activities between May and October. Tectonic's licensed biologists were responsible for checking all equipment, supply stockpiles, silt fencing, as well as the construction work area for the presence of timber rattlesnakes.

Five (5) timber rattlesnakes were caught and relocated outside the work area throughout the duration of Tectonic's services on the project, helping minimize the likelihood of human-snake interaction, snake injuries or incidental deaths. Licensed biologists remained on site and on-call throughout the workday, actively searching the construction and surrounding areas for timber rattlesnakes. Tectonic's biologists also provided on-site safety orientations and general information regarding timber rattlesnake identification and behavior.

PROJECT CLIENT:

Wildlife Specialists, LLC/For XTO Mobil

LOCATION:

Clinton County, Pennsylvania



Columbia Gas/Nisource – L1278-K Construction Phase Environmental Inspection

Tectonic provided construction-phase environmental inspection (EI) and timber rattlesnake (Crotalus horridus) monitoring services on a 17-mile natural gas pipeline replacement project extending from Pike County, Pennsylvania, into Orange County, New York.

The project consisted of the replacement of 17 miles of an existing 14-inch diameter natural gas pipeline with a 20-inch pipeline from Pike County, PA into Orange County, NY. Tectonic performed required environmental inspection activities during construction, which included daily inspections of the construction activity and providing guidance and recommendations for compliance relative to permit specifications. Responsibilities included inspections of all phases of pipeline construction, including clearing, grading, stream and wetland crossings, clean-up and restoration. Tectonic supervised the stream side "live stake" plantings, as required by the project's streambank restoration plan. Tectonic participated in numerous agency interactions (PADEP, FERC, PCCD, NYSDEC, ACOE), and conducted required stormwater inspections after rain events.

Timber rattlesnake basking and gestating habitat was located within 11 miles of the project right-of-way. Tectonic's licensed biologists were responsible for inspecting the construction work area and capturing and relocating any rattlesnakes that were observed, as required by project permits. Further, Tectonic's biologists provide on-site safety orientations and training for timber rattlesnake identification and behavior, as well as supervision of construction of required timber rattlesnake habitat restoration.

Subsequent to completion of construction, Tectonic provided post-construction environmental inspections, as well as coordinate and inspect restoration and seeding activities. Tectonic also assisted in preparation of response letters to Notice of Violations from the Pike County Pennsylvania Conservation District, including coordinating and implementing proactive repair plans to address documented environmental issues and maintain permit compliance.

PROJECT CLIENT:

Wildlife Specialists, LLC

LOCATION:

Pike County, Pennsylvania Orange County, New York





SB & H Transmission Line Upgrade Geotechnical Investigation & Foundation Design Recommendations

Tectonic has performed a subsurface investigation and geotechnical evaluation for the proposed upgrades to the Central Hudson Gas & Electric (CHG&E), 11-mile, 69 kV SB transmission line located between Kingston and Saugerties, Ulster County, New York, and the 12-mile, 69 kV H transmission line located in Catskill, Greene County, New York. Our services were performed in accordance with CHG&E Standard Contract No. 25707, dated September 3, 2010. The purpose of this investigation was to evaluate the feasibility of utilizing direct burial poles to replace and/or supplement some of the existing steel lattice transmission towers along these lines. The investigation was conducted using an all-terrain drilling rig on terrain ranging from open farm fields, wooded areas, wetlands, and a rock quarry. The drill rig advanced test borings and rock cores at each proposed new tower location. The results of the borings were reviewed by Tectonic's geotechnical engineers to determine the appropriate parameters for designing foundations for the new structures. Where the use of direct burial poles was determined to be feasible, geotechnical recommendations were provided for the design of these structures. Where the use of direct burial poles was determined to not be feasible, the most appropriate foundation support alternative for the new structures was determined and the geotechnical design criteria for foundation design was provided. The results were summarized in a geotechnical report provided to CHG&E containing the subsurface investigation and laboratory testing results and geotechnical recommendations.

PROJECT CLIENT:

Central Hudson Gas & Electric

LOCATION:

Ulster and Greene Counties, NY Kingston to Catskill, NY

CONTACTS



- NEW YORK (Mountainville, Corporate Office)
 70 Pleasant Hill Road
 Mountainville, NY 10953
 (845) 534-5959 | (800) 829-6531
- ARIZONA (Tempe) 3923 S. McClintock Drive, Suite 409 Tempe, AZ 85282 (480) 629-5533
- CALIFORNIA (Newport Beach) 1420 Bristol Street North, Suite 210 Newport Beach, CA 92660 (949) 502-8555
- CALIFORNIA (Sacramento) 1024 Iron Point Road Folsom, CA 95630 (925) 357-8236
- COLORADO (Denver) 1600 Broadway, Suite 1600 Denver, CO 80202 (303) 386-7116
- CONNECTICUT (Hartford)
 1344 Silas Deane Highway, Suite 500
 Rocky Hill, CT 06067
 (860) 563-2341
- FLORIDA (Tampa)
 429 Lithia Pinecrest Road
 Brandon, FL 33511
 (813) 374-9177
- NEW JERSEY (East Brunswick) 197 Route 18 South, Suite 260 South East Brunswick, NJ 08816 (732) 220-0606
- NEW JERSEY (Mountainside) 1122 Route 22, Suite 106 Mountainside, NJ 07092

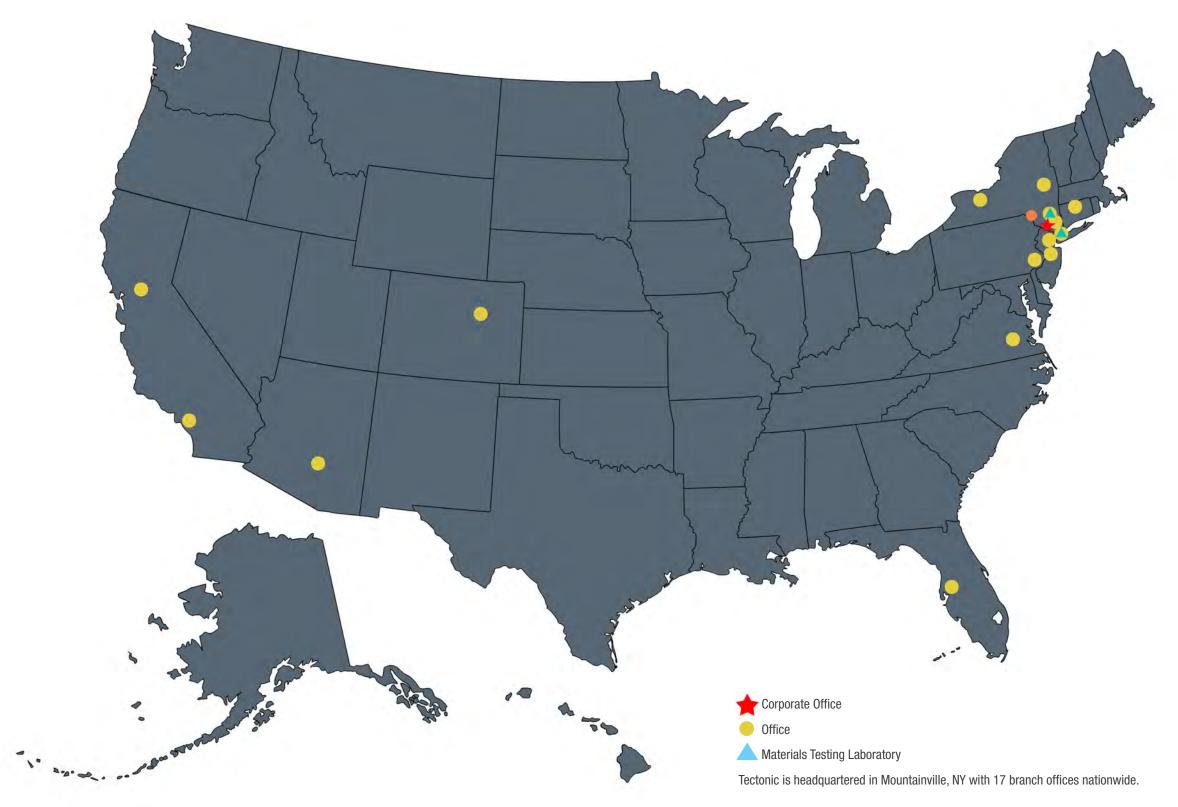
- NEW YORK (Albany)
 36 British American Boulevard, Suite 101
 Latham, NY 12110
 (518) 783-1630
- NEW YORK (New York City) 118-35 Queens Boulevard, 10th Floor, Suite 1000 Forest Hills, NY 11375 (718) 391-9200
- NEW YORK (New York City Lab) 24-37 46th Street Astoria, NY 11103 (718) 784-0550
- NEW YORK (Newburgh) 1279 Route 300 Newburgh, NY 12550 (845) 567-6656
- NEW YORK (Newburgh Lab) 280 Little Britain Road, Building 2 Newburgh, NY 12550 (845) 563-9081
- NEW YORK (Rochester) 3495 Winston Place, Building E, Suite 260 Rochester, NY 14623 (585) 270-8373
- NEW YORK (White Plains)

 1 North Lexington Avenue, Suite 530
 White Plains, NY 10601

 (914) 358-9783
- PENNSYLVANIA (West Conshohocken)
 Four Tower Bridge, 200 Barr Harbor Drive, Suite 409
 West Conshohocken, PA 19428
 (484) 380-9289
- VIRGINIA (Richmond)
 3951 Westerre Parkway, Suite 160
 Henrico, VA 23233
 (804) 217-8504

I OCATIONS







Our Story

For the past 30 years, Tectonic has delivered quality professional services in a timely and cost effective manner by pooling its talented staff into project teams that think, act, and perform as one integral unit. By carefully listening and collaborating with its clients, the firm is able to identify the key issues and assure stakeholder objectives are met in the final deliverables. Through innovating and adopting technological advances, the firm is able to generate unique solutions to improve our nation's infrastructure and build energy efficient communities.

As the world evolves, and its challenges grow more complex, Tectonic continues to innovate and provide the practical solutions and exceptional customer service its clients have trusted since its founding.





MOUNTAINVILLE, NY (CORPORATE OFFICE)

70 Pleasant Hill Road, PO Box 37 Mountainville, NY, 10953 Phone: 845-534-5959 Fax: 845-534-5999