



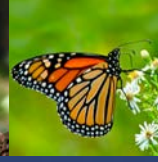
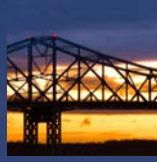
GEOTECHNICAL

ENVIRONMENTAL

ECOLOGICAL

WATER

CONSTRUCTION  
MANAGEMENT



# GEOTECHNICAL





GEOTECHNICAL



The New NY Bridge, Tarrytown, NY. courtesy of New York State Thruway Authority

**GZA is proactive by design.** With a 50-year track record of underground engineering excellence, we provide engineering analyses and design services for foundations, tunnels, dams, buried utilities, marine facilities, highways, railroads, site development and temporary underground structures. Originally founded as a soils and foundations specialty consultant, GZA has grown to provide environmental, ecological, water and construction management services in addition to maintaining excellence for providing geotechnical solutions. By integrating these additional disciplines, we create a unique combination of engineering expertise, innovation, sensitivity to client needs, and responsiveness tailored to the specific permitting, structural or construction issues associated with each project. When you're looking for a solution in the built environment, **look to the leader in innovation and technical excellence: GZA.**

## PROJECT SPOTLIGHT

### MTA No. 7 Line Extension along 41st St. from 8th to 11th Avenue Contract C-26503, New York, N.Y.

#### THE CHALLENGE

GZA was retained to evaluate ground conditions and design the rock support system for the 34th Street cavern, the Tunnel Boring Machines (TBMs) and three access shafts. During construction, GZA performed geologic mapping and observed installation of ground support for compliance with the design drawings. GZA also provided geotechnical and structural instrumentation monitoring to evaluate performance of the ground support system and confirm anticipated ground behavior during construction.

#### OUR SOLUTION

GZA completed supplemental subsurface explorations and field testing to provide a more detailed geologic interpretation of ground conditions and rock mass classification required to design the support system. GZA performed 3D modeling of major rock discontinuities.

#### THE RESULT

Based on real-time interpretation during construction, GZA determined less ground support was required than originally anticipated, which allowed the main cavern to be completed five months ahead of schedule.

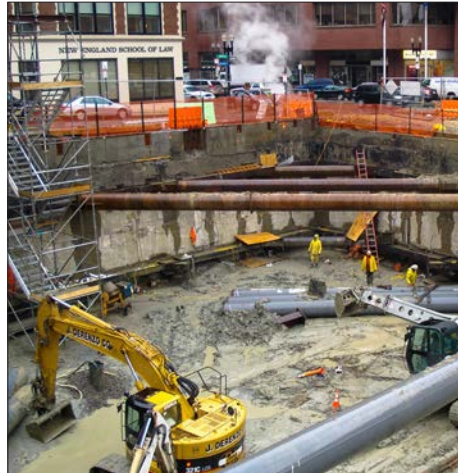


C-26503 NYCT No. 7 Line Extension



GZA is nationally recognized for a diverse range of geotechnical, environmental, hazardous materials management, water and marine engineering services that we provide for our nation's infrastructure and the building industry. Analysis and design services for various types of new and renovated infrastructure projects include:

- Bridges, highways and railroads
- Marine and waterfront facilities
- Tunnels (including tunnel inspections)
- Buildings
- Utilities/transmission structures/substations
- Nuclear power plants
- Airports
- Dams and water resource projects



W Hotel, Boston, Mass.

GZA is dedicated to providing outstanding client service and the best technical solutions in our industry. Our strong technical expertise, knowledgeable staff, integrated project management capabilities, and superior communication provide a proven model for success. For innovative, practical solutions to above and below ground challenges, choose a firm that has been committed to satisfying the needs of its clients for more than half a century. **Choose GZA.**



Maine Turnpike Widening and Modernization Project, Biddeford/Scarborough, Maine

Working for both private and public clients, GZA has provided geotechnical services for a multitude of building projects, including:

- Commercial and retail developments
- Parking garages
- Primary and secondary academic facilities
- Health care and medical facilities
- Hospitality facilities
- Government buildings
- Cultural venues
- Sports facilities

### GEOTECHNICAL SERVICES

- SUBSURFACE INVESTIGATION, UNDERGROUND AND ROCK SLOPE CHARACTERIZATION
- SHALLOW AND DEEP FOUNDATION EVALUATION AND DESIGN
- DESIGN AND CONSTRUCTION OF TUNNELS FOR RAILROADS, HIGHWAYS AND UTILITIES
- GROUND IMPROVEMENT TECHNIQUES
- UNDERPINNING
- EARTH SUPPORT SYSTEMS AND COFFERDAM DESIGN
- TEMPORARY AND PERMANENT DEWATERING SYSTEM DESIGN
- ROCK SLOPE ASSESSMENT AND ROCKFALL CONTROL DESIGN AND CONSTRUCTION
- SOIL SLOPE STABILITY ASSESSMENT AND STABILIZATION DESIGN
- ASSESSMENT AND MITIGATION OF EMBANKMENT AND FOUNDATION SETTLEMENT
- SOFT GROUND DESIGN AND CONSTRUCTION
- LIQUEFACTION MITIGATION
- SEISMIC SITE CHARACTERIZATION AND RISK MITIGATION
- BLASTING AND VIBRATION CONTROL
- LANDFILL DESIGN, CONSTRUCTION AND OPERATION
- GEOTECHNICAL INSTRUMENTATION INSTALLATION AND MONITORING
- STATIC, DYNAMIC AND NON-DESTRUCTIVE INTEGRITY PILE TESTING
- OSTERBERG CELL AND STATIC LOAD TESTING FOR DRILLED SHAFTS
- CROSS-HOLE SONIC LOGGING AND THERMAL INTEGRITY PROFILING FOR DRILLED SHAFTS
- SOIL/ROCK ANCHOR AND TIEBACK DESIGN AND TESTING
- RATING AND LOAD TESTING EXISTING FOUNDATIONS
- GEOTHERMAL INVESTIGATION, DESIGN AND CONSTRUCTION
- SOIL AND FOUNDATION DATA, ENGINEERING AND BASELINE REPORTS
- RISK REGISTER PREPARATION



*Proactive by Design*



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