

Client:

Metropolitan Transportation
Authority

Location:

New York, NY

Services Provided:

- Automated Total Stations and reflective prismatic targets continuously monitored tunnel deformations during construction
- Seismographs to record vibrations caused by construction activities
- Installed tiltmeters to monitor deflection
- Installed inclinometers to monitor lateral deflections during excavation

Value Provided:

- Remote monitoring provided real-time data of restricted access tunnels

Background & Project Challenges

The Metropolitan Transportation Authority and New York City Transit's improvement project for the South Ferry Terminal subway lines, corrected existing physical and operating deficiencies which limited train capacity and reduced subway reliability for millions of passengers each year. The new platform and station tunnels are located underneath Peter Minuit Plaza in Lower Manhattan, adjacent to Battery Park and the Staten Island Ferry Terminal. The rebuilt station includes the following improvements:

- a new free transfer between the lines at the South Ferry Terminal and the lines at Whitehall Street station;
- station accessibility compliant with the Americans with Disabilities Act;
- sufficient overrun track south of the platform, to allow trains to safely enter at higher speeds;
- the crossover tracks north of the station utilizes state-of-the-art switching technology; and
- the overall design of the station provides capacity for up to 24 trains per hour.

The Design-Build contract included underpinning the existing tunnels using mini-piles, and cut-and-cover excavation of the new tunnel. Geocomp provided specialty geotechnical design and monitoring services for the underpinning and tunnel construction.

Geocomp Role & Accomplishments

As part of the monitoring program, Geocomp focused on monitoring the underground and aboveground structures, including many historic buildings located throughout southern Manhattan. The project had unique challenges for monitoring implementation and logistics which included: the existing tunnels must remain in operation during the construction and access to the tunnels was severely restricted.

To accommodate the difficult access, Geocomp implemented a wireless monitoring system that facilitates remote access to all instruments via radios, and an automated data transfer from the site to Geocomp's web-based monitoring and reporting system, *iSiteCentral*[™], where access to data is available on the web in real-time to authorized users 24/7.

