



Above: Completed building with soils showing complicated underground. MRCE has performed over 50 projects for NYU Medical Center over the years. The new Smilow Research building is one of the most recent. At right: Excavation of basement for this constrained site. Note adjacent buildings on left and FDR Drive on right.



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New York, NY

Foundation Engineering Project Highlights

- Performed subsurface investigation that revealed poor soils and high groundwater table
- Provided foundation recommendations for high-rise state-of-the-art facility with two levels of basement in constrained urban environment near a busy highway
- Carefully designed, staged and constructed excavation for new basements and foundations that ensured maximization of the site, protection of adjacent buildings, and timely completion

This new biomedical research center faces the East River next to FDR Drive and is part of the NYU School of Medicine and the other buildings that comprise the NYU Medical Center Complex in Manhattan. It was constructed on a site that included a courtyard surrounded by several existing buildings and where soil conditions are poor, and the groundwater table is high due to the close proximity of the East River. As foundation engineers on the project, Mueser Rutledge Consulting Engineers (MRCE) came up with an innovative solution for construction of the foundation that allowed the installation of a fairly watertight excavation shoring system with enough rigidity to limit movement of adjacent buildings, and that could be installed in a limited work space available at the site. MRCE's innovative solution involved a secant pile wall—a line of individually drilled and concreted of piles that overlap one another to form a continuous watertight wall. The secant wall provided temporary excavation support and later it becomes the permanent foundation wall for the building. After the wall was constructed, basement space was excavated. Adjacent buildings were monitored for movement throughout the construction process. The secant pile wall was sealed by injecting a chemical grout into joints that showed dampness, and then the entire wall was waterproofed using a specialty waterproofing system applied on the inside face of the wall.