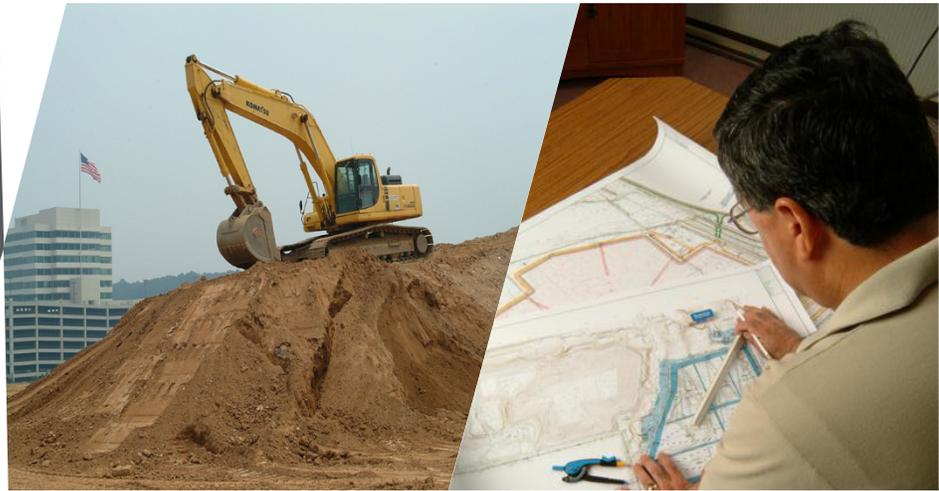


# Geotechnical Engineering

Our in-depth knowledge helps you address geotechnical issues up front to assure an efficient foundation design and minimize change orders, delays and overall costs.



As a member of your design team, Cardno ATC helps you address subsurface conditions and geotechnical issues throughout all project phases: feasibility, planning, design, development, construction and post-construction.

Together, we help you achieve practical and cost-effective geotechnical engineering results whether your project involves dams, bridges, towers, low and high-rise buildings, airports, auto plants, distribution centers, industrial plants, stadiums, healthcare facilities, higher education and K-12 schools, water supply and sewage treatment facilities, dock and waterway facilities, power plants or any other structure supported on or within the earth. We work closely with your team to develop a strategy for the most effective use of your site's subsurface conditions.

With Cardno ATC, you have access to a multidisciplinary team, making us a one-stop resource of geotechnical and materials engineers, roofing professionals

and certified engineering technicians. Our in-depth knowledge helps you address geotechnical issues up front to assure an efficient foundation design and minimize change orders, delays and overall costs. Our resources are complemented by full-service AASHTO Certified Laboratories and exploration equipment to evaluate all types of soil and rock conditions.

Cardno ATC's professionals can provide practical real-world answers through a seamless support system, guiding you through each phase of your project. Our comprehensive construction engineering services include:

## **Geotechnical Engineering**

- > Soil borings/drilling
- > In-situ testing
- > Laboratory testing
- > Site feasibility studies
- > Foundation design
- > Groundwater control
- > Pavement design

- > Soil resistivity analysis
- > Slope stability analysis
- > IBC shear wave velocity profile investigations
- > IBC site-specific seismic assessments
- > Computerized engineering evaluations

## **Infrastructure Engineering**

- > Landfill engineering
- > Storm water planning & design
- > Mine reclamation
- > Dams and levees
- > Wastewater collection and treatment systems
- > Water distribution and treatment systems



## **Capital Improvement Program Overview**

Atlanta, GA

When the Hartsfield-Jackson Atlanta International Airport set out to complete a capital improvement program that would allow it to efficiently and affordably meet projections for significant increases in passengers, they contracted Cardno ATC to provide a range of services for a 1.2 million square foot new terminal and concourse building on the east side of the existing airport. Following a comprehensive strategic planning process and approval from the Atlanta City Council, in 2000 the Department of Aviation embarked on what has become a \$6 billion-plus Capital Improvement Program (CIP).

Cardno ATC provided geotechnical engineering services for the foundation design of the terminal and concourse building, and construction materials testing and special inspection services including soils, sub-grade inspection, caisson and auger cast pile evaluations, concrete, concrete maturity, masonry, reinforcing steel observation, structural steel, fireproofing evaluation and waterproofing consulting.

## **Geotechnical Exploration, Foundation Design, Construction Inspections**

Tampa, FL

When a developer began to build a 35-story high-rise residential structure he was informed by his geotechnical consultant that deep foundation costs would exceed initial budget estimates by over one million dollars and impact the schedule by two months. The problem became apparent at the beginning of construction, when full-scale load test results revealed that available friction was insufficient for the deep-drilled foundations. Cardno ATC was contacted and asked to review the geotechnical consultant's work and provide alternatives.

Cardno ATC re-evaluated the entire foundation system and concluded that the design shaft lengths could be reduced to save \$300,000 without compromising safety. No lost construction time occurred and the construction schedule was reduced by approximately four weeks. Cardno ATC consultants recognized that available subsurface data was limited. We employed a rapidly executed program of additional soil borings and rock coring to further describe subsurface stratigraphy, and obtain additional data for detailed foundation analyses. To avoid construction delays, the additional soil boring program and reevaluation program was conducted within a three week period, while the initial foundation elements were installed.

Cardno ATC has seamlessly and discreetly worked behind the scenes for hundreds of Fortune 500 companies for more than 30 years. From working with the World Trade Center recovery and redevelopment efforts to environmental testing in the aftermath of Hurricanes Katrina and Rita, as well as providing geotechnical services and construction materials testing on hundreds of major capital improvement projects across the country, we have served as a one-stop resource for business leaders across all major business sectors.

Cardno is an ASX200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD] [www.cardno.com](http://www.cardno.com)

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