



Rock Island Police Department



Ground Improvement – Installing Concrete Columns

PROJECT OVERVIEW

The City of Rock Island proposed to build a new Police Department. The main building at the new facility is L-shaped with a short leg.

REQUIREMENTS AND CHALLENGES

Geotechnical borings indicated the site consisted of uncontrolled fill ranging from three to eight feet throughout the site. Below the fill is a layer of organics with high moisture contents above 200 percent and N-values from 1 to 5 blows per foot. This layer of organics ranged from 5 to 10 feet throughout the site.

The initial recommendation from the design team was to install aggregate piers to improve the soils to 3,500 psf with less than 1" total settlement and ½" differential settlement.

According to the FHWA guidelines, the thick layer of organics posed a problem as aggregate piers are not a viable solution when encountering organic soils with high moisture content.

Because organics with high moisture content release their pore water pressure much slower than typical soils – even with the installation of aggregate piers – settlement would continue for an extended period of time.

SOLUTION AND RESULTS

In considering the organic layer, CNC Foundations' engineers designed a Vibratory Concrete Column system that could penetrate the organic layer, improve the project site to the appropriate 3,500 psf, and limit the settlement to the design requirements.

Testing in the field validated the design. The crew finished the project a week ahead of schedule.

Project Details

SECTOR

Police Department

LOCATION

Rock Island, Iowa

APPLICATION(S)

Ground Improvement, Vibratory Concrete Columns

