Buildings

UNITED STATES

CubeSmart
North Bergen, NJ

Owner
Urban Edge Properties

Engineer
Langan Engineering & Environmental Services

General contractor
A&E Construction

Dates of work
2018/06 2018/07

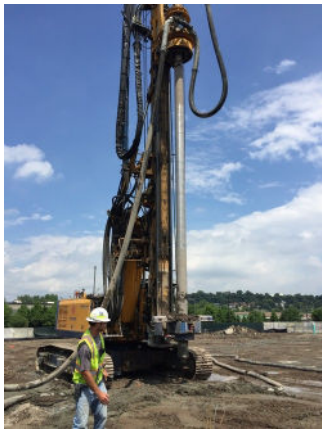
Main figures

Controlled Modulus Columns
314 EA.

Description

CubeSmart is a self-administered and self-managed real estate company focused on the ownership, operation, acquisition and development of self-storage facilities in the United States. The company's facilities are designed to offer affordable, easily accessible storage space for residential and commercial customers. CubeSmart operates more than 1,200 facilities nationwide. In 2018, the construction of a CubeSmart location was proposed for North Bergen, NJ, which sits 10 miles outside of New York City. The four-story, 26,000 sq-ft facility (with a finished floor elevation of 11.6 ft) would consist of 10x10 ft storage units separated by corrugated metal walls, and a management office.

Due to the compressible and loose nature of the soils at the site, Menard USA was contracted to provide ground improvement to support all spread footings, including interior footings on 10 ft spacings and perimeter walls, of the self-storage facility. The selected technique was Controlled Modulus Column (CMC)® rigid inclusions.



Ground conditions

The subsurface conditions generally consist of fill overlying marsh deposits, silty clay, glacial till and siltstone bedrock. The fill contained boulders and other obstruction in areas. The site required improvement of soft and/or loose fill soils, marsh deposits, and silty clay for improved bearing capacity and settlement control.

Solution

Micropiles were initially considered for support of the storage facility. However, Menard provided an economic and timesaving solution with CMCs. Not only were CMCs installed to shallower depths than what would have been required for micropiles, but they also provided a savings of between $250,000 and $400,000 to the client. Menard installed 314 CMCs to an average depth of 70 ft and a maximum depth of 79 ft. The CMCs were designed with a maximum capacity of 120 kips each. The general contractor removed boulders and obstructions from the fill layer in areas.

The CMC rigid inclusion installation under all spread footings served to take the load through soft soils allowing for spread footings and slab-on-grade construction. Steel fiber reinforcement supplied by Bekaert was used to enhance the strength of the slab. While Menard has worked with Bekaert on several projects, this was the first time that the companies designed a fiber-reinforced slab for a self-storage facility. The use of CMCs was crucial in minimizing generation of contaminated soils. The CMC design provided for 1 in of post-construction settlement, with less than a ½ in of differential settlement, meeting the performance criteria of the new facility.

Menard and Bekaert worked together to provide a CMC-supported fiber-reinforced slab for a new storage facility at a site with heavily obstructed soils.