Buildings

UNITED STATES

Artspace Lofts
Minneapolis, MN

Owner
Artspace

Engineer
Geotechnical Engineer - AET; Structural Engineer: Mattson Macdonald

General contractor
Watson-Forsberg

Dates of work
2020/03 2020/04

Main figures

Controlled Modulus Columns
686 EA.

Description

Artspace, a Twin Cities nonprofit that develops housing and work space for low-income artists, proposed the construction of a $30 million, 100-unit mixed-use apartment building to be built on a once-polluted site in the Harrison neighborhood in north Minneapolis. The project is the nonprofit's biggest in Minnesota. The five-story Northside Lofts building would have a number of amenities, including a large gallery at the main entrance and community work space, gathering areas and gardens. There would also be indoor bike storage and underground parking, and the building would be built to standards set by the Enterprise Community Partners initiative, which encourages more energy-efficient and sustainable multifamily housing.

The site, which is within the Bassett Creek Watershed, was once occupied by an industrial dry-cleaning business and parking lot, but had been undeveloped for several years. Contaminated and unstable soils made the area challenging for developers. Due to the very compressible nature of the soils at the site, ground improvement was required for increased bearing capacity and settlement control. Menard Group USA was contracted to support the 25,000 sq. ft apartment building - along with supporting grade changes for an adjacent 8,000 sq-ft parking lot and 7,000 sq-ft courtyard. The selected technique was Controlled Modulus Column (CMC)® rigid inclusions.

Ground conditions

The soil is characterized by 1 to 10 ft of fill consisting of mostly silty sand and clayey sand, with occasional organics. Below the fill is a compressible soft fat clay layer, extending to as deep as 31 ft below grade. Underlying the fat clay layer is a deep coarse alluvial and till, consisting mostly of medium to dense sand and silty sand. The site required improvement of the fill and fat clay layers.

Solution

Work on this project was interrupted by the COVID-19 pandemic, as a nationwide lockdown was initiated one week after mobilization. Menard Group USA restarted work a week later. Driven steel piles were originally considered for foundation support. However, Menard provided an economical and time-saving solution with CMC rigid inclusions. The CMCs eliminated the need for handling and removing large amounts of spoils generally created through the process of driven steel piles. The CMCs also terminated at an average depth of 50 ft, significantly less than the predicted depth of the steel piles. Total savings for the client: Several hundred thousand dollars.

Menard's solution included the use of 686 CMCs that were installed beneath the spread and strip footings to a maximum depth of 60 ft. The design provided for 1 in of post-construction settlement with less than a ½-in of differential settlement, meeting the performance criteria for the new building. Additionally, the design for the parking lot and courtyard provided for 2 in of post-construction settlement. Menard met the client's requirements for quality, safety and schedule.