Services - Hospitality

Asteri Conference Center

UNITED STATES

Ithaca, NY

Owner
Vecino Construction

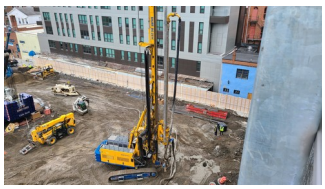
Engineer
Stand Structural Engineering, Inc.

General contractor
Welliver Construction

Dates of work
May 2022 June 2022

Main figures

Controlled Modulus Columns
294 EA.



Description

As part of the expanding development in downtown Ithaca, the proposed Asteri Conference center, located at 120 East Green St. in Ithaca, NY, will encompass the construction of a 12-story mixed development building, including 217 new housing units, a 55,000 square foot conference center and 350 parking spots.

To support the weight of the proposed structures, improvement of the loose/soft fill soils and silty sand would be required. Menard USA was contracted to provide ground improvement by installing reinforced Controlled Modulus Column (CMC)® rigid inclusions.

Ground conditions

The soils at the site included in-situ soil, consisting of 5 ft of loose fill over medium dense sand and gravel that included cobbles to an approximate depth of 24 ft. This layer is underlain by a soft to medium stiff silt layer to an approximate depth of 37 ft. Below the silt, a medium dense and dense sand was encountered. Sampler refusal was found below 90 ft in a glacial till material. The water table was found to be approximately 20 ft below the working surface.

Prior to ground improvement, Cone Penetrometer Testing (CPT) was performed by Contech to verify the bearing layer. A total of 9 CPTs were conducted throughout the building footprint. CTPs reached refusal from 40 ft to 68 ft, confirming a suitable termination depth for the CMCs.

Solution

The original design called for driven steel piles, however, this technique was considered to be impractical due to the substantial noise and vibration resulting from the pile-driving technique. Menard provided a more economical and time-saving solution with CMCs. CMCs terminated at a much shallower depth (range from 45 ft to 75 ft) than the original design, which called for 100-ft long driven piles.

Menard installed 269 CMCs to support the conference center with an additional 25 CMCs to support a tower crane west of the building footprint. CMCs were designed for 200 kips Axial, 70 kips uplift, and 10 kips lateral. Reinforcing steel (Grade 75 #11 bar) and a 4-in by 4-in grade 60 plate was added to each CMC to account for lateral and uplift loads. The design provided for post-construction settlements of ½-in total between adjacent columns, meeting the performance criteria of the new building. Load testing was successfully performed to 400 kips.

Menard successfully installed the CMCs despite challenging working conditions that included the need for additional equipment, the general contractors crawl crane, and previously unknown utilities including a gas line on the East side of the site and a telecommunications/fiber optic line on the western side.
The ground improvement for both the conference center and crane pad were successfully completed in June of 2022, highlighted by the collaboration of the crew on site and assistance from Menard's office personnel.