Buildings

Harbor Station South

Bayonne, NJ

UNITED STATES

Owner
Accurate Builders

Engineer
Soil Mechanics Drilling Corporation

General contractor
Accurate Builders

Dates of work
2019/07 2019/10

Main figures

Controlled Modulus Columns
3,140 EA.

Description

In Bayonne, NJ, a major redevelopment was proposed for a portion of the former Military Ocean Terminal. The project – Harbor Station South -- would feature the construction of a hotel, housing, retail space and a park.

The site was previously used by the US Army and Navy, while the Coast Guard retains a presence in the area. Various parts of the premises have been, are in the process of, or are slated to be redeveloped. In addition to the Harbor Pointe Apartments, which were completed years ago in a somewhat remote part of the site, the Costco Wholesale location at the Harbor View Marketplace development opened recently and more retail space, industrial space, two buildings with a combined 651 residential units, another building with 97 units, and a Seastreak ferry terminal are on the way.

The residential portion of the Harbor Station South project would include two five-story buildings, each with an attached garage. Ground improvement was required for this portion of the project due to the compressible nature of the soils at the site. Menard Group USA was contracted to support the two apartments and attached garages – the selected technique was Controlled Modulus Column (CMC)® rigid inclusions.

Ground conditions

The soil consisted of 12 to 18 ft of fill, underlain by 10 to 16 ft of soft clay and organics, underlain by 25 ft of dense sand.

Solution

Timber piles and a structural slab had been designed for foundation support. However, Menard provided an economical and time-saving solution with CMC rigid inclusions. The difference in cost: $500,000.

Piles require heavily reinforced structural foundations (pile caps, grade beams, structural slabs), while also carrying 100 percent of the structure load. CMCs use economical shallow foundations (spread footings/slabs on grade) and share the load with surrounding soils.

Design bearing pressures for the spread footings were up to 6,000 psf. Maximum column loads for the apartments and garages were 420 kip and 1,000 kips. Menard's solution included the use of 3,140 CMCs that were installed to an average depth of 36 ft and maximum depth of 52 ft. The design provided for 1 in of post-construction settlement with less than a ½-in of differential settlement, meeting the performance criteria of the two buildings. One challenge that Menard faced on this project was that due to the fast-paced nature, Menard was required to submit its preliminary CMC design before the foundation layout and loads were finalized. Menard was able to modify the CMC design following finalization of the foundation design and also modified depths of the CMCs to meet the design requirements.

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