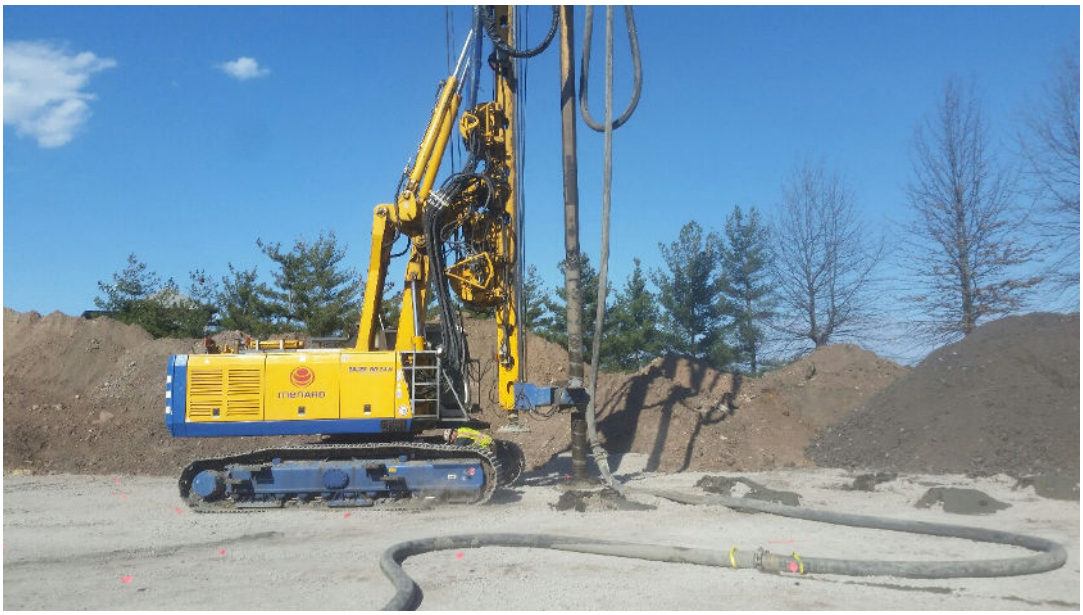
Buildings

UNITED STATES

Vermella Crossing

Kearny, NJ



Owner
Schuyler Crossing Urban Renewal, LLC

Engineer
Melick-Tully and Associates, P.C.

General contractor
Russo Development, LLC

Dates of work
March 2017 March 2017

Main figures

Controlled Modulus Columns
504 EA.

Description

Vermella Crossing is a living community located in Kearny, NJ, that required ground improvement to support the construction of two new three-story residential buildings. The footprint of each building is approximately 18,000 sq.ft and is supported by heavily-loaded, deep footings around the perimeter and at various locations within the building footprint, while the rest of the building is supported by lightly-loaded, shallow footings and slab-on-grade.

To support both the deep and shallow footings, Menard proposed a solution of Controlled Modulus Column (CMC)® rigid inclusions installed using a hybrid scheme of direct and global support.

Ground conditions

The site consists of a 6 to 10 ft layer of loose granular fill with pockets of silt and clay. Beneath the fill is a layer of silty clay with some organics at 10 to 12 ft, underlain by a soft to medium dense silty clay layer at approximately 11 to 13 ft. The silty clay layer is underlain by loose to medium dense sands containing varying amounts of silt and gravel extending to depths of 25 ft. This sand layer was planned to be the termination layer. However, during CMC installation, the sand was observed to be loose in areas, so some CMC rigid inclusions were drilled deeper than anticipated.

Solution

CMC rigid inclusions were installed using a direct support scheme under the building's deep footings, and a global support scheme under the shallow footings and slab-on-grade. Direct support is used in areas where the structure's weight is more concentrated. Global support is used where the structure's weight is spread over larger areas, allowing the structural engineer to design load bearing walls at any location within the footprint of support.

This hybrid approach resulted in cost savings for the client while meeting a strict settlement criteria of 1 in total and ½ in differential. A total of 504 CMC rigid inclusions were installed to maximum depths of 45 ft.