

## Lister Avenue Warehouse

UNITED STATES



Lister Avenue

**Owner**  
The Morris Companies

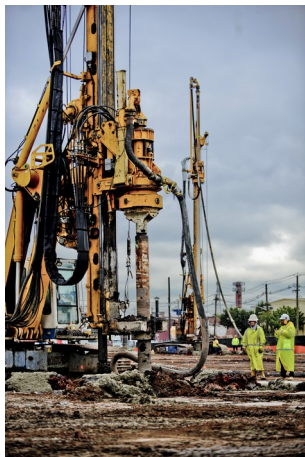
**Engineer**  
SESI Consulting Engineers

**General contractor**  
Power Concrete Company

**Dates of work**  
2012/08 2012/10

### Main figures

Controlled Modulus Columns (CMC)<sup>TM</sup>  
4700 EA.



Lister Avenue

### Description

The Lister Avenue Warehouse is a 352,000 sq-ft facility in the Ironbound section of Newark, NJ. To strengthen the highly contaminated soft subsurface soils, support the high surface loads, minimize future settlements, and avoid ground water treatment structures, Menard implemented a design-build ground improvement solution using Controlled Modulus Column (CMC)<sup>TM</sup> rigid inclusions.

### Ground conditions

The building site had very poor soil conditions. The upper layers of soil consisted of 5 to 10 ft of highly contaminated, dense fill over 8 to 25 ft of very soft organic silt and peat underlain by a clayey sand layer 20 to 30 ft below grade. The medium dense sands at depth were considerably softer than anticipated. Due to the loose sands, the CMC rigid inclusions extended to depths ranging from 35 to 60 ft.

### Solution

The building was originally designed for pile support. Menard's alternative design of CMC rigid inclusions would support the entire facility and improve the soft, contaminated soils allowing for spread footings and slab-on-grade construction.

CMC rigid inclusions are a preferred alternative for ground improvement at brownfield sites because they are installed using a specially-designed auger that displaces the soil laterally, with virtually no spoil. In addition, the inherent flexibility in the design of this system allowed for field adjustment of the CMC rigid inclusions locations so as to avoid the long-term ground water treatment system (air sparging and soil vapor extraction) structures being incorporated in the site's remediation plan.

Menard designed and installed thousands of CMC rigid inclusion elements to keep total and differential settlement within project tolerances of 1.2 in total and half inch differential. Four load tests were successfully performed to confirm critical components of the design. The installation was completed in 2.5 months using multiple rigs resulting in significant cost savings for the client.



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