

# Harrison Heights Development

Harrison, NJ

Controlled Modulus Columns

**To prevent excessive settlement of a multi-story residential apartment being constructed on a brown field site, Menard designed a solution using Controlled Modulus Columns™ (CMCs), which are well adapted to high surface loading conditions and strict settlement criteria.**



*Menard installed over 750 CMCs to keep total and differential settlement to within project tolerances.*

**Owner:** Harrison Heights Development, LLC  
**Geotechnical Engineer:** Melick-Tully and Associates, P.C.  
**Architect:** Chester, Ploussas, Lisowsky Partnership, LLP  
**Structural Engineer:** Terranear PMC  
**Ground Improvement Contractor:** DGI-Menard (Menard)

## Project Summary

Harrison Heights is a multi-story residential project consisting of 70 two-bedroom units and 2 three-bedroom units and 82 parking spaces. The apartment complex is part of a major mixed-use redevelopment of industrial brown fields near the Passaic River in Harrison, NJ. The apartment was constructed on uncontrolled fill underlain by soft compressible organic soils. The weight of the proposed building, along with up to 4 feet of fill required to reach finished floor elevation, would cause excessive settlement within the building footprint, and beneath the adjacent sidewalks, gardens and retaining walls.

In order to improve the ground, support the high surface loads and prevent settlement, DGI-Menard (Menard) implemented a design-build solution using Controlled Modulus Columns (CMCs).

## Ground Conditions

The ground conditions on the site consisted of 10 to 15 feet of uncontrolled fill material made up of silty sands and sandy silts with varying amounts of concrete, brick, wood, glass, metal and cinders. The uncontrolled fill overlaid approximately 5 feet of highly compressible organic silt and peat. Medium dense to dense sands were present below the organics at depths between 20 to 33 feet below the working grade.

## Ground Improvement Solution

The Menard solution for the 44,000 square foot building footprint consisted of the design and installation of more than 750 CMC elements to keep total and differential settlement to within project tolerances (1" total, 1/2" differential). Menard installed a total of approximately 19,000 linear feet of CMCs.

Menard worked with the owner's project team to value engineer the building foundations, which were originally designed for driven timber piles with pile caps and grade beams. The Menard solution changed this recommended solution to a conventional shallow foundation system consisting of spread footings sized at an allowable bearing pressure of 4,000 psf. The Menard solution supported both perimeter and interior footings, and supported slabs on grade.



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