



North Hartford Minor League Ballpark

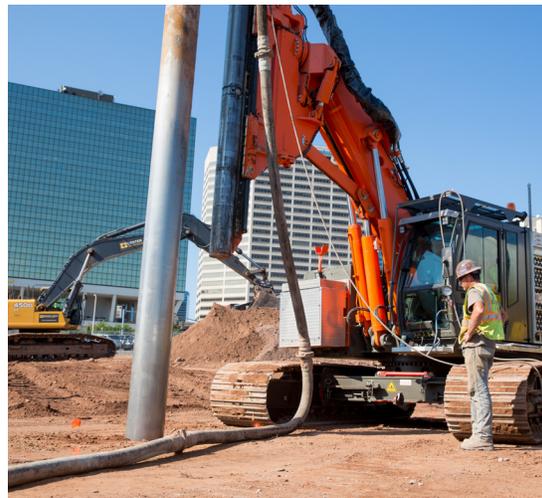
Hartford, Connecticut

Geopier GeoConcrete® Columns provided cost effective support for a 200,000 square foot facility.

Description: The Hartford Yard Goats, the Double-A affiliate of MLB's Colorado Rockies, needed a new ballpark for their hometown fans. The site that was selected for the development was a corner lot located in a highly-developed downtown area of North Hartford, Connecticut. The ballpark design consisted of a multi-level, steel-framed structure with several large retaining walls and a footprint area of approximately 200,000 square feet.

Subsurface Conditions: Soil conditions consisted of up to 20 feet of granular urban fill, over 2 feet of alluvial sand, over up to 35 feet of soft to very soft varved silt and clay, overlying relatively dense glacial till and bedrock. The varved silt and clay layer is a lacustrine deposit regionally known as "Connecticut Valley Varved Clay," known for its reddish color, high sensitivity and compressibility.

Geotechnical Challenge: The primary geotechnical challenge was the compressible urban fill and relatively soft varved clay layers. Supporting footings on the unimproved fill and varved clay layers would have resulted in excessive post-construction settlements far exceeding the specified maximum allowable settlement of 1-inch.



[Geopier GeoConcrete® Column \(GCC\) System](#)

Given the site's downtown location, not only did the Owner require an economically viable foundation support solution, but they also required a solution that would not disrupt surrounding businesses with excessive noise or vibrations. Furthermore, the project schedule required that the final ground support system be designed and built expeditiously such that the construction team could "get out of the ground" and focus on completing the superstructure within about one calendar year.

PROJECT TEAM

Owner:

North Stadium Authority

Geotechnical Engineer:

Freeman Co.

Structural Engineer:

The SLAM Collaborative

General Contractor:

Centerplan Construction, LLC

Geopier Designer:

Design/Build Geotechnical, LLC

Geopier Installer:

Helical Drilling, Inc.

GCC INSTALLATION



GEOPIER® GEOCONCRETE® COLUMNS

- ▶ Substantial cost savings compared to driven piles with pile caps and grade beams.
- ▶ Simplified foundation construction by using shallow footings.
- ▶ Displacement technique eliminated dewatering and excess spoils.
- ▶ Did not disrupt surrounding businesses with excessive noise or vibrations.
- ▶ Fast installation allowed the team to meet an aggressive construction schedule.
- ▶ Eliminated the need for lightweight backfilling, providing further cost savings to the project.

Geopier Solution: The design team considered several foundation support alternatives including driven piles (requiring with pile caps and grade beams), and the [Geopier GeoConcrete® Column \(GCC\) system](#). Geopier GCC systems consist of high-capacity rigid inclusions, and allowed for shallow foundation support of the structure, instead of the more costly pile caps and grade beams.

Geopier GCC's and shallow footings were ultimately selected as the most economical foundation support approach to address the project's highly-populated urban setting, challenging subsurface conditions and schedule demands. The GCC's were designed to limit total and differential post-construction footing settlement to less than 1-inch and ¾-inch respectively, and provided a design bearing pressure of 4 kips per square foot (ksf). Some late project design changes were needed to eliminate the need for lightweight backfilling in the left field section of the structure. To accommodate this, design adjustments were made to the Geopier GCC system in these specific areas to increase the allowable bearing pressure to 6 ksf. This localized adjustment to the GCC design provided further cost savings on the project.

[Helical Drilling](#) installed more than 1,400 GCC's with one Geopier rig and crew. They were installed using a patented displacement mandrel that did not require dewatering and did not generate excess spoils, reducing the premium for dewatering and off-site soil disposal costs. Helical's designer engineered a structural fill pad ("footing pad") beneath the footings to help transfer footing stresses to the GCC's and surrounding matrix soil. The footing pads also provided a stable subgrade for footing construction.

Helical's crew included a full-time Quality Control person to oversee all testing and installation procedures. A full-scale modulus test was performed to 200% of the GCC element design stress. The testing results showed deflections of less than 1/4 -inch at the design stress levels, indicating superior performance of the Geopier GCC ground improvement system.