

WooSox Madison Residential Development

Location: Worcester, MA

Project Type: Residential

Service: Ground Improvement

Technique: Geopier® GeoConcrete® Column (GCC) Rigid Inclusions



HELICAL



GEOTECHNICAL CHALLENGES

- Unsuitable Soil Conditions
- Settlement Control
- Compression Load Resistance

INTRODUCTION

A new, 7-story, mixed-use structure consisting of 2 garage levels with 5 residential and retail levels above was planned across the street from Polar Park, the home of the Worcester Red Sox. The project was the first residential development of a multi-million-dollar campus planned in the Canal District to consist of modern apartment buildings, offices, laboratories, and hotels.

GEOTECHNICAL CHALLENGES

Subsurface conditions consisted of about 10 to 15 feet of unsuitable granular fill over up to 50+ feet of compressible organic soils, overlying medium dense to dense glacial soils. In addition to structural support, the site required up to 11 feet of new fill. To meet project settlement requirements, new structural and fill loads needed to be transferred down to the deep glacial soils.



DESIGN AND CONSTRUCTION SOLUTION

Our goal for ground improvement was to provide the project team with the following key requirements: 1) a relatively high allowable bearing pressure for footing design; 2) less than 1-inch of total settlement; 3) quick installation to keep the project on schedule; and 4) an economical solution over pile foundations. We accomplished these goals by utilizing Geopier GeoConcrete Columns (GCC) Rigid Inclusions for foundation and slab support. The GCCs were installed through the unsuitable fill and deep organics to bear in the glacial soils.



Our GCC Rigid Inclusion approach allowed the structural engineer to design footings based on an 8 kips per square foot (ksf) allowable design pressure- this helped minimize footing sizes, which provided concrete and steel cost savings. Estimated settlement was ≤ 1 -inch total and $\leq 1/2$ -inch differential. Over 1,300 GCCs (and over 60,000 LF!) were installed in about 24 days and ahead of schedule. The solution ultimately saved the project several million dollars versus driven piles, and does not account for the savings due to the accelerated construction schedule.



PROJECT DETAILS

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