



College Ave Office Building & Garage

New Haven, Connecticut

Geopier GCCs and RAPs allowed for traditional shallow footings and slab-on-grade construction.

Description: The New Haven Downtown Crossing is a multi-phase redevelopment project. The first phase featured the construction of a 14-story office building and parking garage located on College Street.

Subsurface Conditions: The project team was faced with a variety of geotechnical challenges including the presence of fill, soft organic soils, compressible natural sand/silt and a relatively high groundwater table. Supporting footings and slabs directly on the existing unimproved soils would have led to excessive settlement.

Geotechnical Challenge: Geopier [Rammed Aggregate Pier® \(RAP\)](#) and [GeoConcrete® Columns \(GCCs\)](#) allowed for traditional shallow footings and slab-on-grade construction. The GCCs were designed to limit the total and differential post-construction footing settlement to less than 1 ½ inches and 1 inch respectively within the GCC-improved zone, and provided a maximum allowable footing bearing pressure of 9.5 kips per square foot. They were installed using a displacement technique that did not require dewatering and did not generate excess spoils, ultimately reducing premium dewatering and off-site soil disposal costs



Helical installed more than 900 GeoConcrete Columns and 100 Rammed Aggregate Piers. Helical's designer engineered a structural footing pad beneath the footings to help transfer footing stresses to the GCCs and surrounding matrix soil. The footing pads also provided a stable sub-grade for footing construction.

A full-scale modulus test was conducted on a test footing supported by a group of three GCCs to 150% of the GCC element design stress. Two individual GCC modulus tests were also performed to 150% of the GCC element design stress.

PROJECT TEAM

Geotechnical Engineer:

McPhail Associates, Inc.

Structural Engineer:

McNamara/Salvia, Inc.

General Contractor:

John Moriarty & Associates

Geopier Designer:

GeoSolv Design/Build, Inc.

Geopier Installer:

Helical Drilling, Inc.