

University of New Haven Dormitory West Haven, Connecticut



Description: Construction of a five-story dorm with a 55 by 210 ft. footprint and one level below grade basement. Typical column loads ranged from 216 to 600 kips.

Subsurface Conditions: A 2 to 15 ft. thick layer of rubble/debris and boulder fill was encountered with the greatest thickness of these unsuitable soils found in the eastern half of the building footprint. In many locations, medium dense alluvial silt and medium dense glaciodeltaic sand was encountered below the fill. In the deep fill area, weathered siltstone bedrock was encountered at depths in excess of 15 to 20 ft. Groundwater was noted at depths ranging from 21 to 28 ft.

Design Details: As an alternative to excavation and replacement of the fill, construction documents offered the alternative to support footings in the eastern half of the building on *Geopier*[®] Rammed Aggregate Piers to reinforce the rubble/debris fill and provide an increased allowable bearing pressure of 6 ksf. A design incorporating a total of 124 85-kip capacity piers was developed and constructed through difficult ground conditions in an 8-day period. In addition to limiting the volume of rubble fill to be removed and disposed off site, the *Geopier* soil reinforcement alternative offered significant schedule benefits to the project and reduced overall costs for footing concrete and grade beam construction.

Geopier Licensee: Helical Drilling Inc. - Braintree, MA

General Contractor: Petra Construction Corporation - North Haven, CT

Owner: Acorn Property Management, LLC

Architect: The Kagan Company - New Haven, CT

Geotechnical Engineer: Haley & Aldrich, Inc. - Hartford, CT

Structural Engineer: Aschettino Associates, LLC - West Haven, CT

References: Mr. John Dugan - Haley & Aldrich, Inc. - (860) 282-9400

Mr. Brian Larsen - Petra Construction Corp. - (203) 401-2456