S.W.COLE ENGINEERING, INC. ● Geotechnical Engineering ● Field & Lab Testing ● Scientific & Environmental Consulting

SUMMARY R.A.P. INSTALLATION OBSERVATION REPORT

Project: Courtyard by Marriott – 321 Commercial St. Portland, ME
Client: J.B. Brown & Sons, Inc.
Client's Rep.: Vin Veroneau

SWCE Project No.: 08-0494.2
Dates: 3-4-13 to 3-20-13

Work in Progress: Helical Drilling installing rammed aggregate piers for ground improvement below proposed building foundations and slab-on-grade. Gorham Sand & Gravel (GSG) excavating to remove obstructions encountered during pier installation.

General Observations, Discussions, Etc: SWCE was onsite to observe installation of non-grouted rammed aggregate piers for ground improvement below the proposed building foundations and slab-on-grade. Between March 4 and March 20, 2013, we observed Helical Drilling install piers at locations displayed on the Geopier plan entitled "Geopier Location Plan", Sheet GNE-00944, GEO-1.0 and in general accordance with the Geopier design submittal. Pier installation was performed using an ABI rig with a vibratory/hydraulic driven mandrel system and top stone hopper. At the pier locations, the mandrel was driven with a sacrificial steel bottom plate. After driving the mandrel, the top hopper was filled with ¾-inch crushed stone and the mandrel was extracted and rammed in an extract 4-foot/3-foot advance reciprocating fashion until reaching ground surface.

Bottom stabilization tests were performed on the first five installed piers and then on approximately every tenth production pier installed. We observed Helical Drilling perform a modulus test on a non-production pier in the northeastern portion of the site, in proximity to piers 124 and 125. Two non-production uplift piers were installed on either side of the test pier to provide reactions for the jack force.

Obstructions which could not be penetrated by the pier rig were encountered at various locations across the site. At some locations, Helical Drilling was able to offset from the planned pier location 2 to 3 feet or add additional piers to a group to avoid the obstructions. Where the obstructions were continuous in a pier group, GSG excavated to remove the obstruction and then backfilled with either imported Structural Fill or existing site fill material, free of large debris and deleterious material. The backfill was generally compacted with a mid-size plate compactor. Helical Drilling then returned to the cleared locations and installed the piers. Helical Drilling and (GSG) kept record of adjacent piers which were disturbed by overexcavation of obstructions. Helical Drilling rebuilt the disturbed piers to at least 2 feet below measured overexcavation depths.

We observed Helical Drilling keep continuous records of pier installation including theoretical pier stone quantity, theoretical pier diameter, installation depth, additional piers added, piers which were rebuilt due to disturbance, and modulus testing data. We understand Design/Build Geotechnical will review the installation data.

Attachments: Photos
Sheet: 1 of 1

SWC Rep.: E. Walker
Rev. by: TJB

P:\2008\08-0494.2 M - JB Brown & Sons - Portland, ME - Marriott Courtyard - 321 Commercial Street - RED\COR's\COR Aggregate Pier Summary 3-4 thru 3-20.doc

GRAY, ME OFFICE
286 Portland Road, Gray, ME 04039, Tel (207) 657-2866, Fax (207) 657-2840, (E) infogray@swcole.com, (I) www.swcole.com


1156919
United Rentals


United Rentals


WERNER


PILATES