



## Ground-Solution Improvement for Medical Building



### THE PROBLEM

CNC Foundations recently completed an aggregate pier project to support a new medical office building and parking garage in Cary, N.C. CNC Foundations was engaged from the preliminary stages of conceptual design multiple years prior to building construction to provide ground improvement design and construction sequencing assistance for the project. The project featured three different foundation levels in a small area, which made early coordination with the other trades on the site extremely challenging.

### OUR SOLUTION

After multiple rounds of budgeting and coordination calls, CNC installed more than 1,000 aggregate piers, also called vibratory stone columns, for foundation support to increase the allowable bearing capacity to 5,000 psf. CNC Foundations installed this work over multiple mobilizations with a pre-drilled, top-feed method of aggregate pier installation. In addition, CNC installed more than 50 uplift anchors with uplift loads of 30 kips to resist net uplift associated with seismic loads.

### QUALITY CONTROL AND ASSURANCE

CNC Foundations has created a comprehensive quality control/assurance procedure for each of its projects. Each project is validated by an outside, third-party design firm. This process guarantees an independent peer review on each project to ensure that the design will meet the requirements for the project. CNC Foundations also maintains a computer data acquisition system on its aggregate pier equipment. This allows the rig operator to monitor the flot depth, flot hydraulic pressure and visually verify the placement of the rock in real time as the aggregate pier is installed.

Because of this, CNC Foundations operators provide the full-time quality control for the installation of each and every aggregate pier. CNC Foundations also performs a minimum of one full-scale load test on each project. The aggregate pier design submittal includes the calculated pier elastic modulus (pier stiffness) and the top of pier stresses for each footing type on the job site. Full-scale load testing is performed on a sacrificial aggregate pier installed at a location determined by the engineer of record. Additionally, throughout the project, the data from the field (both installation logs and load testing) are submitted daily to CNC Foundations' office.

