

Seismic Strengthening Of Semiconductor Test Facility

The Challenge

Marvel Corp., a major manufacturer of semiconductors, needed to build test facilities at their North American Headquarters in Santa Clara. A large existing structure was being gutted and turned into a test laboratory.

In order to bring the building up to the demanding seismic specifications that were critical for the functioning of the sensitive equipment, the existing

columns needed to be braced against any uplift motion. The design called for each column base to resist an uplift force of 440 kips.

Action:

RWR Construction provided a design-build proposal to install helical pier tiedowns around all columns, consisting of (6) piers each with a 73.3 kip design rating and a 110 kip test (150%) rating per

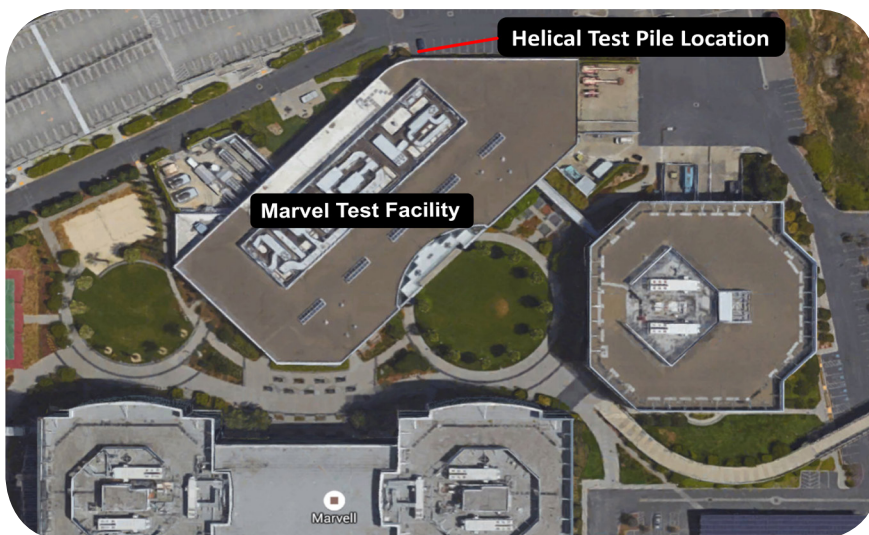


Existing column and base surrounded by installed helical pier group



Installing helicals around perimeter column base
Starter sections with helix flights visible

pier. 3.5" galvanized tubular helicals were installed to a depth of 56 ft. The helicals were driven through and below a 7 ft. thick dense sand lens located at an invert elevation of 28 ft. The sections in and below the sand lens were then pressure grouted. This locked the helicals into and up against the bottom of the sand lens, which increased the uplift resistance to the required specifications. The piers were then cut off at the proper elevation, anchor plates and nuts were installed and the pier caps were cast into the new footings surrounding the column bases.

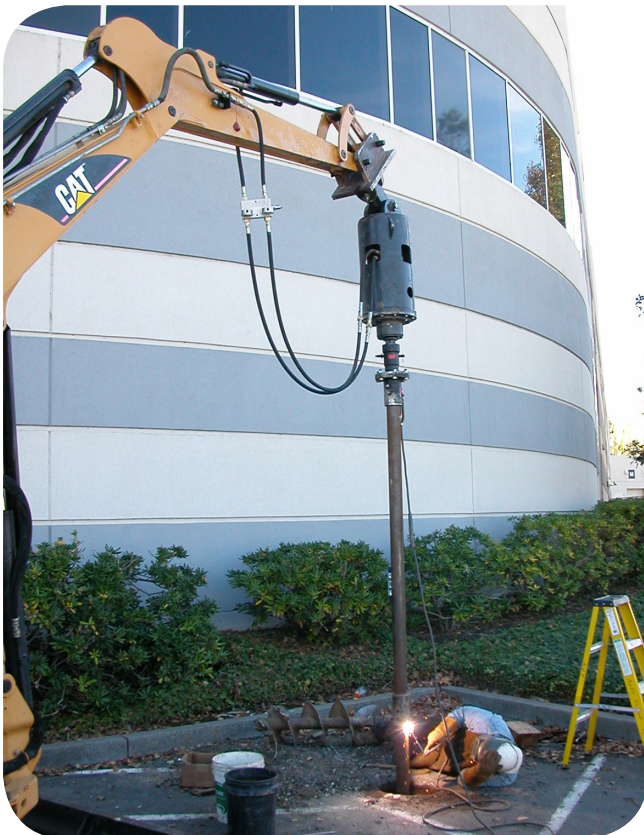




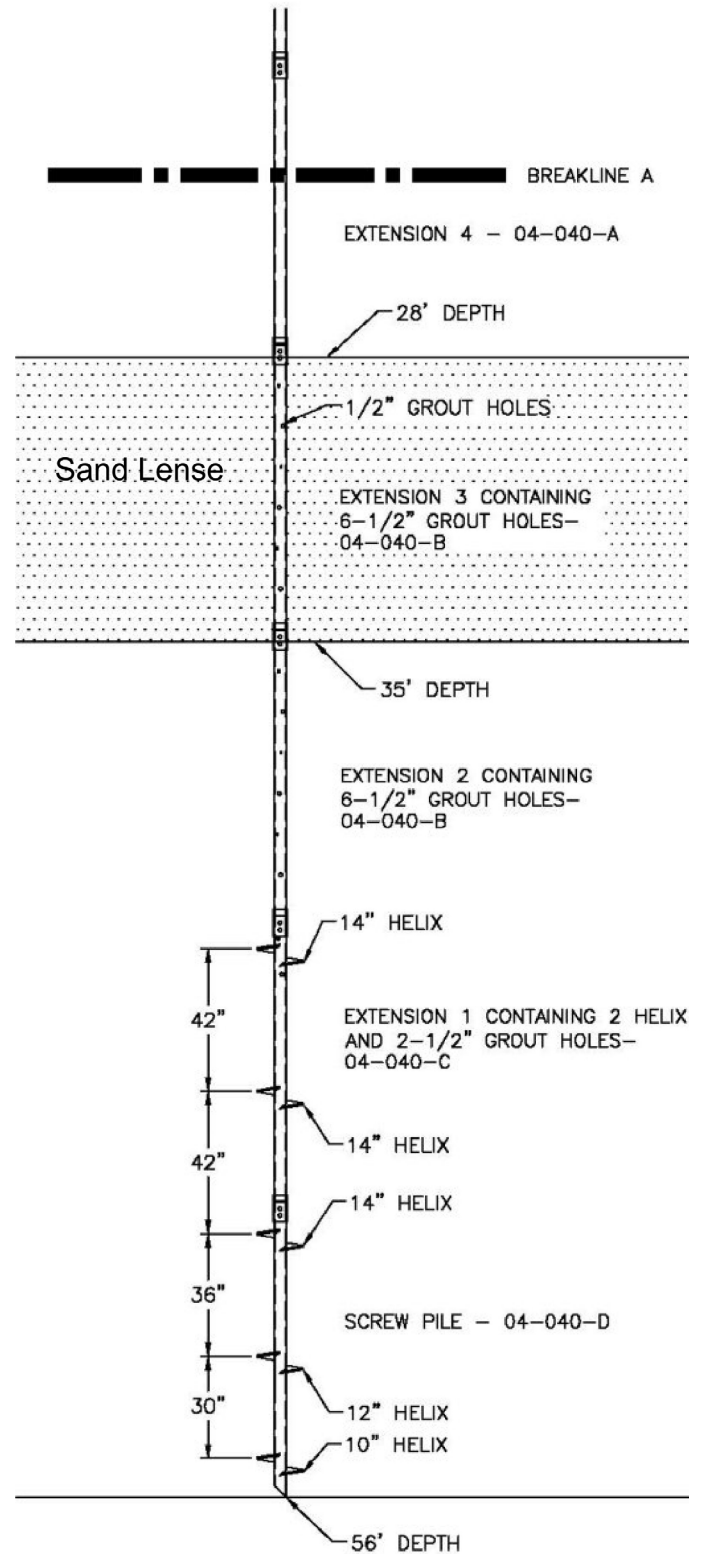
Pressure grouting operations for test pile

Results:

All helicals were tested to 150% of design load and passed. The test facility is now able to keep functioning through any minor seismic event, and is structurally protected from major events.



Performing helical test pile installation in parking lot adjacent to testing facility.



Detail of end section of typical helical pile showing sand lens, helix flight configurations and grout ports.