

Beachfront Condos Supported by 130 ECP Helical Piles



Boston, Massachusetts



This Project took several years of extensive permitting with local and state conservation commissions to get all the necessary approvals in place.

The owner investigated driven piles for foundation support in the very weak, soft soil at the site. The potential environmental impact of bringing a pile driver on the site would cause more permitting problems with local regulatory agencies.

In order to move the project forward, the owner needed an environmentally safe foundation support alternative that would be accepted by all regulatory agencies.

Helical piles were the perfect solution. Atlas Systems of New England was able to provide engineering expertise and extensive helical screw pile foundation installation experience in sensitive environments like this one.



Several major challenges had to be addressed including working during the local tidal changes and with high water table on site. The weak soil also generated concern that the piles may have trouble getting the required torque to adequately support the design loads.



There were no deep soil borings available to verify the underlying soil strata below target depth. It is well known that in some locations of Massachusetts that if a target stratum does not provide sufficient load capacity, the next stratum of suitable bearing soil could be over 100 feet deep. This unknown regarding the soils ability to achieve required pile capacity within the target depth...

... along with the possibility of much weaker soil below the target depth created concern for the owner about increased construction costs.

New FEMA regulations governing coastal buildings mandate that foundation piers must provide compression capacity and must resist tension forces from strong tidal surges. The local building code stated the first floor elevation must be a minimum eight feet above the mean high tide mark.

Earth Contact Products engineering division designed a helical screw pile configuration that would support the design load. They used ECP's TAF-350-84 12-12-14. A helical torque anchor that consists of a 3-1/2 inch diameter structural steel tubular pile shaft with two 12 inch diameter helical flights and one 14 inch diameter helical flight.

During helical pile installation, some placements did not achieve the required installation shaft torsion to meet the design capacity. At each placement, installation logs recorded the associated torques. These logs were reviewed by the structural engineer of record. Each of the deficient placement locations were carefully checked against the specific calculated design load at the particular location. Most of the placements with lower than expected terminal shaft torque still provided sufficient capacity plus a suitable safety factor that the engineer approved. After completing the engineering review of the installation logs, only a few locations needed a supplemental pile for additional support.

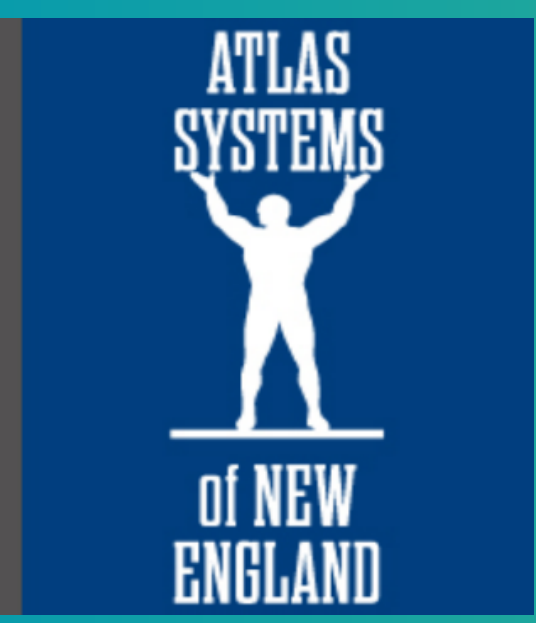


The project was completed on time and all 190 helical screw pile placements were approved by the engineer and the relevant regulatory agencies.

For construction jobs with unique challenges, reach out to the industry experts at Earth Contact Products and Atlas Systems of New England.



Products Installed
Lead: TAF-350-120 12-12-14
Extensions: TAE-350-84/120
Pile Cap: TAB-350-T 8-8



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