Homeowner Wanted to Prevent Tidal Surges from Damaging House and Foundation

Chatham, MA

Problem Solved with *ECP Torque Anchors*™

The homeowner wanted to raise the first floor elevation of the new residence to avoid tidal surge damage to the house and contents. Atlas Systems of New England contacted J.R. Perkins, PE of Brierley Associates for assistance with the foundation support analysis and design.
The proposed structure is approximately 3,500 square feet to be built upon sand. Soil borings revealed that the piles must be founded between 20 and 30 feet below grade where the sand was reported to be medium dense with a SPT, "N", between 13 and 16 blows per foot. Boring Log details highlighted in box at right.
The plan was to install 52 ECP Torque Anchor™ foundation piles to terminal shaft torsion of 4,700 ft-lb, which provides ultimate capacity per pile of 40,000 lbs. Once the piles were installed to the suitable shaft torsion and trimmed to proper elevation, pile caps were welded to the pile shafts so that the *ECP Torque Anchors*™ not only will be supporting the structural weight, the piles also will resist uplift created by a tidal surge.

BRIERLEY ASSOCIATES INC.

BORING NO. BA1

SOIL BORING REPORT

SHEET 1 OF 1

PROJECT:

CLIENT: Atlas System of NE

CONTRACTOR: Carr-Dee Corp, Medford, MA

LOCATION: On right side of building.
Northing -
Easting -
Elevation (Ft) 7.0
Datum (Ft) NAVD
Start 10/18/2018
Finish 10/18/2018
Driller Steve DeSimone
Inspector James Duffy (BA)

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT AND PROCEDURES
Type	NW	SS	none	Rig: Acker Track Rig
Diameter (i.d.-in.)	4	1 3/8		Bit: Tri-cone Roller
Weight (Lbs)	300	140		Mud: Water
Drop (in.)	24	30		Other

Depth / El. (Ft)	Casing Blows Per Ft.	Sampler Blows Per 6-in.	N Value	Sample Number (In. Rec.)	Sample Depth (Ft)	Graphic Log	Visual Description and Remarks
0							
5		9 5 6 4	11	S1 18	5-7		Sand, poorly graded fine sand, trace med sand, medium dense, brown. (SP)
10		4 5 4 4	9	S2 11	10-12		Sand, poorly graded med-fine sand, trace coarse sand, loose, brown. (SP)
15		2 4 5 7	9	S3 12	15-17		Top 6", Sand, well graded coarse-fine sand, 10-20% coarse sand, loose, brown., Sand, poorly graded med-fine sand, loose, brown. (SP)
20		4 6 7 9	13	S4 12	20-22		Top 5", Sand, well graded coarse-fine sand, 5-15% coarse sand, medium dense, brown. (SW) 6" Sand, poorly graded med-fine sand, medium dense, brown. (SP)
25		5 7 9 9	16	S5 16	25-27		Top 12", Sand, well graded, coarse-fine sand, brown. (SW) Bot. 4" Sand, poorly graded med-fine sand, medium dense, brown. (SP)
30		3 6 6 8	12	S6 12	30-32		Sand, well graded, coarse-fine sand, 5-15% coarse sand, medium dense, brown. (SW)
		3 6 5 8	12	S7 3	33-35		Sand, well graded coarse-fine sand, 5-15% coarse sand, medium dense, brown. (SW)

ECP Torque Anchor™ product was delivered to the job site. The configuration of the pile is 2-7/8 inch diameter tubular shaft with a 10"–12"–14" diameter helical plate attached along the shaft. Extra extensions shown here were required to reach the target depth for suitable bearing.

Project Summary	
Installer:	**Atlas Systems of New England, Norwood, MA** *atlassystemsnewengland.com*
Engineer:	**J.R. Perkins, PE Brierley Associates** **Cambridge, MA www.brierleyassociates.com**
Products Installed:	**TAF-288-84 10-12-14 Torque Anchor™** **TAB-288 Pile Cap**
Number of Placements:	**52 *ECP Torque Anchors*™ Tubular Shaft - 2-7/8" dia. with 10-12-14 helical plates**
Average Depth:	**14 ft (max 39 ft)**
Install Torque:	**4,700 to 6,900 ft-lb**
Ultimate Pile Capacity Rating:	**40,000 to 58,700 lb**
Average Working Load:	**20,000 to 29,300 lb**

This photo shows a track machine installing an *ECP Torque Anchor*™ on the job site.

The job progressed without a hitch. All piles were installed to suitable and verified load bearing. Some piles needed additional depth to achieve the load requirement. The engineer inspected and approved of the work.

The project was completed on time and within budget.

The photo above shows many of the *ECP Torque Anchor*™ foundation piles installed to verified capacity. The shafts will be cut to correct elevations and pile caps welded to the shafts for attachment to the structure.

Photo at right is representative of final construction on the site.

Earth Contact Products, LLC
***ECP Helical Torque Anchors*™**
"Designed and Engineered to Perform"

www.getecp.com 866.327.0007- FAX 913.393.0008