

Case History

ECP Torque Anchors™
Model DLS-863-144-14



Completed Lattice Tower Structure – The tops of the ECP Torque Anchor™ helical piles are visible at ground level.

New 25 kV 2-Bay Distribution Structure

Chesapeake Bay Island - Tangier, Virginia

This small island community needed to increase electrical capacity to provide for the future needs of the homes and the Tangier Marina. The design conditions required that a new electrical equipment tower structure be constructed to support ultimate capacities of 45 kips in compression, 34 kip tension and 31 kip lateral.

The new substation was at an elevation very close to sea level, which



DLS-863-144-14 Torque Anchor™ Installation

offered many challenges for the new structure. These challenges included ocean wave proximity, up to 140 mph hurricane force winds and extreme ice loads of up to one-inch.

Subsurface Exploration and Geotechnical Engineering performed a soil analysis and provided foundation design recommendations. The soils at the site consisted of 2 feet of fill soil overlaying 4 feet of soft to medium sandy clays. Below the sandy clay to a depth of 31 feet was medium compact silty sand. The geotechnical engineer recommended a foundation consisting of four 30 inch diameter concrete caissons.



DLS-863-144-14 ECP Torque Anchors™

The electrical utility, A&N Cooperative, found that bringing concrete to the island on a barge would cost a prohibitive \$11,000 per yard! A&N requested Power Services engineering to provide the geotechnical soil data and the foundation loading criteria to ECP. The ECP team designed and fabricated a custom Torque Anchor™ Helical Pile foundation that would meet the design criteria, and a pile system that could be installed using an A&N line truck with torque motor. The custom ECP Torque Anchor™ piles were rotated into the soil until reaching stable soil at 12 foot depth.

The ECP helical pile system not only supports the load, the helical piles were rapidly installed at cost far less than the cost of drilling and casting concrete! In addition, the ECP Torque Anchor™ Piles were immediately ready after installation for loading without the need for concrete curing time.



Project Summary	
Project:	25 kV 2-Bay Distribution Structure
Engineer:	Power Services, Raleigh, N.C.
Installer:	T & D Solutions North Carolina
Product Installed:	4 ECP DLS-863-144-14 Torque Anchor™ Tubular 8-5/8" dia. x 12' long with single 14" diameter helical plate and custom mounting)
Custom Mounting Plate:	22" Square x 1.5" thick 4 Anchor Bolts – 1-1/4" Diameter
Ultimate Design Capacity:	Compressive - 45,000 lb. Tensile - 34,000 lb. Lateral – 31,100 lb.