

TorcSill is the premier provider of engineered Helical Pile and Anchor solutions to clients in a broad range of industries

**Project Type**  
Substation Dead End

**Location**  
Indiana

### Executive Summary

After the original pier reinforcement design proved unfeasible due to failed concrete, TorcSill provided a foundation solution that bypassed the existing pier, utilizing steel frames connected to multiple helical piles.



### Challenges

New dead ends were being installed at this substation, requiring additional capacity to support the new loads. Initially, the Engineer of Record designed multiple medium-diameter helical piles embedded into concrete reinforcement caps to carry the additional load. This assumed that the existing piers could support the original structure.

Upon excavation, it was discovered that the concrete had degraded beyond repair and should be abandoned. The owner and its Engineer of Record were faced with few options: remove and replace the existing six-foot diameter piers, relocate the structure or develop a novel solution to the challenge.

### What We Did

With medium-diameter helical piles previously specified, manufactured and on site, TorcSill Engineering proposed a large-diameter extension section to be added to the top of each pile, connecting to a steel frame design to span the existing, inadequate concrete pier.

Piles transitioning from 5.5-inch diameter lead sections (the section of the pile shaft containing helices) to 12.75-inch diameter were designed to account for up to 43 kips of shear load. The steel frames directly connecting the dead end structures to the pile terminations were designed to adequately distribute the loads.

Upon approval from the owner's Engineer of Record, TorcSill Manufacturing began fabrication of the custom steel frames and the large-diameter transition sections for timely delivery to site and subsequent installation coordinated through the TorcSill Construction Services local Operations District.



### Solution

To avoid significant costs and schedule impact associated with massive excavations and equipment relocation, TorcSill designed a steel-to-steel solution to span over the existing, useless concrete piers. The design, incorporating the original helical pile design, called for transition sections for increased stiffness.

With the owner staring at weeks of delays and enormous costs, TorcSill's Engineering and Manufacturing TEAMS took only days to develop and fabricate a solution in the face of change, ensuring a safe and efficient foundation that will perform for the lifetime of the structure.



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