

PROJECT PROFILE

EMERGENCY FOUNDATION SUPPORT AND LONG-TERM STABILIZATION

A 540-MW coal-fired, electric generating facility was forced to shut down when its cooling water supply was disrupted. The cooling water supply sys-



Storage tank exhibiting tilt resulting from foundation failure caused by collapse of subgrade cooling pipes.

tem consisted of two 14-foot-diameter, 600-foot-long corrugated metal pipes buried in sand 54 feet below the ground surface. The cooling water disruption was caused by a total collapse of both intake pipes that resulted in a subsidence feature 500 feet long, 120 feet



Sheet pile wall used for ground support during replacement of failed 14-foot-diameter cooling pipes located 60 feet below grade.

wide and as much as 22 feet deep. Because of this failure, numerous structures with the subsided area were tilted or completely destroyed.

D'Appolonia was retained by the utility to develop and manage the implementation of emergency remedial measures to temporarily support and eventually to relevel many of the affected structures. This work included support of structures adjacent to a 60-foot-deep and 50-foot-wide excavation made to replace the failed cooling water intake pipes.

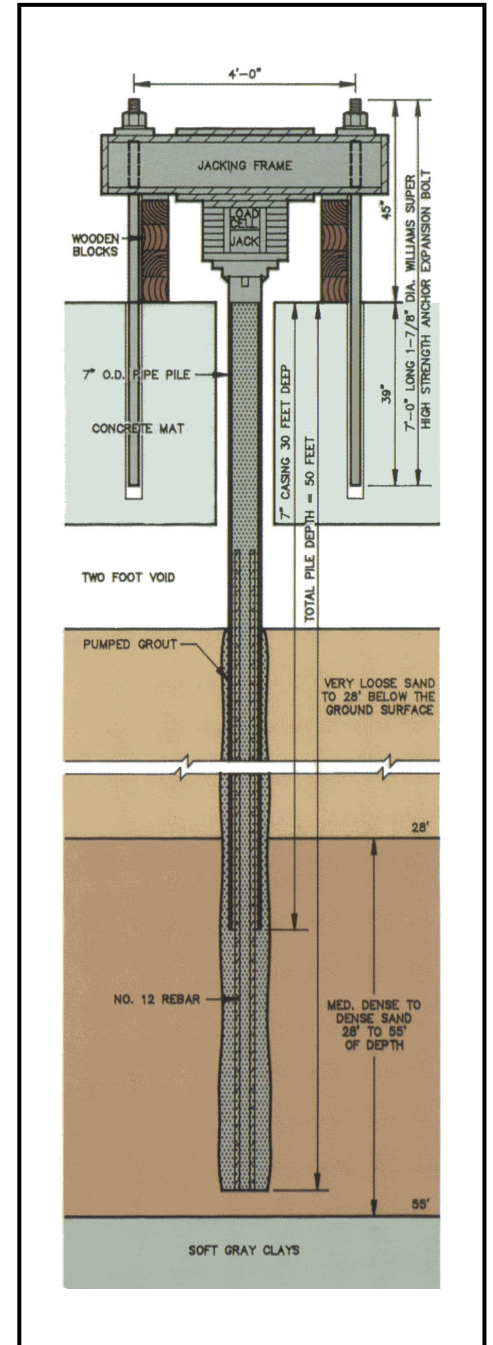
The primary support system for the largest structures affected by the failure consisted of micropiles installed through one-foot-diameter holes drilled through foundation mats of the affected structures. Reaction frames were positioned above the piles and anchored into the mats using 2-inch-diameter rock bolts. Jacks and load cells were placed between the pile caps and the reaction frames to facilitate support and leveling of these structures, which were sensitive to differential settlement and nonuniform loadings.

The most sensitive of these structures (a 93-foot-diameter, Fiberglas-lined sulfur absorber tank that weighed 8,000 tons including contents) was situated on a

four-foot-thick reinforced concrete mat with dimensions of 120 feet by 120 feet. About one quarter of the large foundation mat for this structure was undermined as a result of failure of the intake pipes.

D'Appolonia responsibilities for this project also included preparation of

engineering designs for restoring the integrity of the soils beneath the foundations of the affected structures; for lifting and leveling structures supported on spread footings and grade beams; and for implementation of soil/structure contact grouting for foundation stabilization. D'Appolonia also provided construction monitoring services for all of these field activities.



Micropile support system used to relevel structures affected by pipe collapse.