

Drilled Displacement Pile Tuscany By The Sea Condominiums Indian Shores, FL



Client: Voeller Construction, Inc.
Owner: JAGM II, LLC
Structural Engineer: STM, Inc.
Geotechnical Engineer: Central Florida Testing Laboratories, Inc.
Construction Date: November 2003



Scope of Work:

Coastal Caisson installed (289) 12" diameter drilled displacement piles an average of 35 feet deep to support the Tuscany By The Sea, a 6-story over parking condominium project. The original foundation system was designed on 14" diameter, 50-ton conventional auger cast-in-place piles. Through a value-engineering re-design, Coastal Caisson was able to reduce the foundation cost by approximately 10 percent. Eliminating spoils removal generated additional savings.

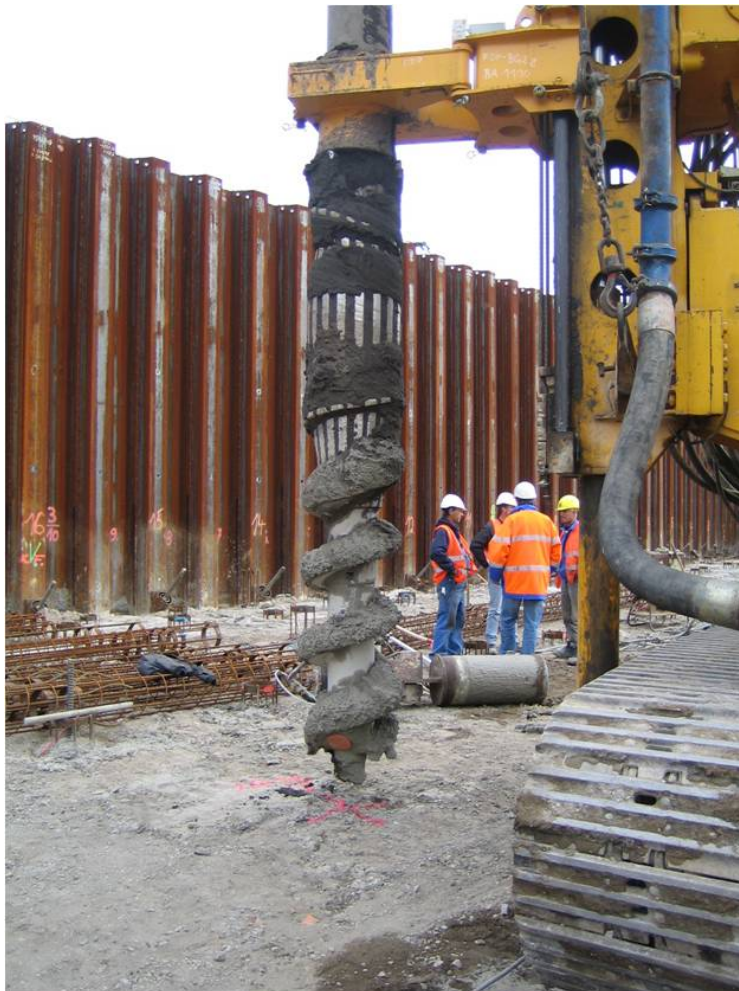
Advantages of the drilled displacement pile include increased load bearing capacity and decreased grout overage due to the densification of the in-situ soils and a much cleaner site that results from the elimination of spoils. This is a large benefit to both, cost and workability on site.

Through a conventional static compression load test, the design load capacity of 50 tons was verified by CFTL. Each compression pile was reinforced with a 20-foot cage while each tension and shear loaded piles were reinforced with 20-foot cage and a centered, full-length single bar.

With a small crew and minimal equipment, the project progressed on schedule and allowed the foundation cap contractor to begin work almost immediately behind the pile installation. The project was completed in December of 2003.



Coastal Caisson used a Bauer BG-22 Drill Rig with a 12" diameter displacement drill tool for the pile installation. The use of this type of drill rig was advantageous in that it required only minimal site preparation. In addition, the drill rig was able to generate the high down pressure and torque needed to advance the auger through overlying loose sands and an upper layer of very hard clay observed at the site. The piles were terminated approximately 4 feet into a very hard clay layer that lies approximately 30 feet beneath the site. A compression load test per ASTM 1143 was conducted by CFTL using four reaction piles and beam setup provided by Coastal Caisson. A maximum gross settlement of approximately 0.38 inches was observed at 100 tons of load. A net pile head settlement of 0.24 inches was observed after unloading the pile.



While production rates were as high as 30 piles per day, quality was maintained and assured by the use of an on-board computer and data recording system that measures and records installation parameters for each pile. The pile installation data was down loaded to a personal computer and a pile installation report showing the rate of penetration and withdrawal as well as the crowd torque and grout pressures was printed for each pile. These printouts can be supplied to the pile inspector in an electronic format or paper copies.