

Palm Beach County Convention Center Parking Garage

West Palm Beach, Florida

Palm Beach County Convention Center, which opened in 2004, is a multi-purpose facility hosting conferences, trade shows, meetings, and special events. The adjacent 400-room Hilton West Palm Beach has easy access to the convention center via a covered walkway.



The project

Given the need for additional parking to accommodate event attendees as well as hotel guests, a 2,650-bay, cast-in-place, 9-story parking structure was proposed connecting directly to the existing hotel. Site soils consisted of 35 ft of loose and medium loose sands over sandy limestone.

The challenge

- Given the loose nature of the subsurface soils, the unacceptable settlement of the heavily loaded parking structure was a significant concern for the owner.
- Excavation for the new building foundations was close to the convention center and could potentially result in undermining of existing foundations and associated utilities.
- Construction of the parking structure was fast-tracked to meet hard deadlines for upcoming scheduled events.

The solution

The geotechnical engineer for the project recommended either auger cast piles or vibro compaction ground improvement to mitigate settlement potential. However, vibro compaction offered a 3-week shorter installation schedule, as well as a 50% cost savings advantage over auger cast piles. Additionally, since Keller had designed and implemented vibro compaction for the 13-story Hilton West Palm Beach the previous year, the company had direct knowledge of the subsurface soils. Anchored sheet piles were also required to facilitate a 10-ft deep excavation next to smaller neighboring buildings on the east side of the site to accommodate a half-level of parking. To avoid noise pollution, the sheet piles were installed with a variable frequency hammer.

The sands were densified to a maximum depth of 35 ft. A smaller vibrator and denser probe spacing were used near the neighboring homes and the convention center to minimize vibrations. Vibro point spacing beneath the structure's shallow foundations was between 6 and 7 ft. Standard Penetration Tests (SPT) were conducted after the ground improvement program to verify that the densification occurred as expected.

Project facts

Owner(s)

Palm Beach County Facilities and Development Operations

Keller business unit(s)

Keller

Main contractor(s)

The Weitz Company

Solutions

Ground improvement
Support of excavation

Markets

Commercial

Techniques

Vibro compaction
Sheet piles
Anchors

Email address

info@keller-na.com

Phone number

1 (800) 456-6548