Image courtesy Hartshorne Plunkard Architecture

NO. 9 WALTON

CHICAGO, ILLINOIS, USA

No. 9 Walton, an ultra-luxury condominium tower in Chicago's historic Gold Coast that's raising the high-rise condominium living standard. It is a $275 million ultra-luxury condominium tower on the corner of State and Walton that is designed for the top housing market. Part of a Chicago Near North Side construction boom, it is a powerful stone-clad 35 story building with just 67 exclusive units. As a "six-star" condominium community it will be unparalleled, a true Chicago-looking tower, housing condo units ranging from $1.85 million for a two-bedroom unit to $24 million for the penthouse.

A main project challenge was the ultra-compact jobsite, only 90 by 185 feet. The O-Cell® test method, a natural solution, as it eliminates the large ground level reaction system by utilizing the skin friction of the shaft as reaction. This frees tight jobsite space for other construction activities to continue simultaneously. This innovation assures the project foundations may be optimized with load test results.

Case Foundation Company has developed a technique for attaching the O-Cell assembly after the reinforcement cage is lifted into a vertical position. This eliminates need for a second crane, which, on tight jobsites is critical. The versatility of the O-Cell allowed the test shaft to be installed while a secant wall was being installed at the jobsite's North and East sides simultaneously. The adaptability of the O-Cell test method proved valuable as a design optimization tool in a challenging environment.

PROJECT INFORMATION

- Developer: JDL Development
- Design: Hartshorne Plunkard Architecture
- General Contractor: Lend Lease
- Drilling Contractor: Case Foundation
- Completion Date: 2018
- Project Cost: $275 million
- Maximum Load: 1,620 kips (411 ksf end bearing)

SERVICES PROVIDED

- Single level O-Cell load test
- Load test program design

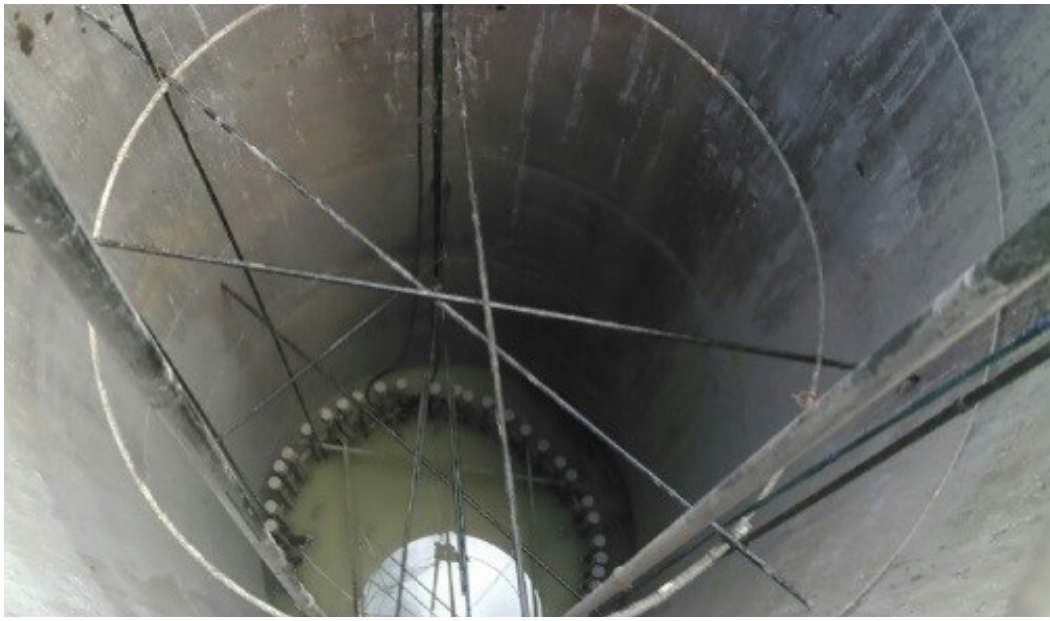
BI-DIRECTIONAL LOAD TEST

Choosing a "Chicago-Method" O-Cell test to allow for maximization of end bearing measurement was of benefit to the project from load optimization and schedule. Using a traditional O-Cell test placed at the pile tip with a reduced diameter circular bottom plate, as compared to the shaft diameter, allows confirmation of much higher end bearing values. A 102-inch production test shaft was drilled through the overburden to the top of rock with a single 20-inch diameter O-Cell located at the shaft base to provide a theoretical maximum test capacity of 4500 kips.

CONCLUSIONS

Fugro Loadtest performed the O-Cell test in September 2015 in accordance with the Quick Load Test Method for Individual Piles (ASTM D1143). The O-Cell, loaded in nine nominally equal increments, produced a maximum directly applied unit end bearing of 411 ksf.

The O-Cell test method proved to be an invaluable tool for foundation optimization for No.9 Walton, given the site constraints and large required test loads. No.9 Walton simply could not have been built without the O-Cell proving the foundation viability.



120-inch Diameter Steel Temporary Casing

Secant pile wall under construction

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