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THE SUPPORTWORKS NEWSLETTER FOR DESIGN PROFESSIONALS

Third Time's a Charm

– Our New Technical Manual Edition!

Here at Supportworks, we strive to be constantly innovating, reinventing and improving our products, tools and services for the betterment of the contractors and design professionals we serve. Just one example of our continual pursuit of excellence is the newly published Third Edition of our Technical Manual!

The Third Edition includes all of the previous periodic revisions we've made to the online electronic version plus some significant additions and upgrades.

- The Helicast™ Grouted Helical Pile System has been added to the helical pile chapter text and appendices. The system and design methodology are described in great detail, and a design example is provided to show how the end bearing and frictional components of the pile capacity are calculated.
- The Wall Stabilization Systems chapter has been completely rewritten to describe the features, benefits and appropriate applications for the active and passive systems we offer. There have been recent, major changes to the PowerBrace™ I-beam wall bracing system. The chapter appendices include the specifications and spacing guidelines for the new PowerBrace "bridge bracket" and "lever bracket" systems, for use with perpendicular and parallel joist orientations, respectively. Both brackets are completely unique to the market.

We also decided to remove items from the Technical Manual that were already available on our commercial website *(OnStableGround.com)*.

- Product evaluation reports have to be renewed annually, so it made more sense to have all current versions of those reports available on the website for review and download.
- Model specifications for helical piles, helical tiebacks, helical soil nails, hydraulically driven push piers, and polyurethane foam injection are intended to be modified by design professionals for each specific project. These are available as editable Word documents that can be easily downloaded from the website.

While you're on the commercial site, launch the interactive, electronic version of our Technical Manual to view, download or print the new edition! Or, if you prefer to use the bound, soft-cover book version of the new Technical Manual, contact Supportworks or your local Supportworks installing contractor for your free copy.

JAKE BLESSEN, P.E., APPLICATION ENGINEER

Connecting drive head to helical pile lead section

Advancing battered pile

Beach house framing bolted to helical pile

Completed beach house

Project: **Temporary Beach House Support**
Location: **Miami Beach, FL**
Pile Installer: **N Square, Inc.**

Challenge: A designer beach house conceptualized in 1934 by French architect, Charlotte Perriand, was planned for construction and temporary display outside the prestigious Raleigh Hotel for the Design Miami Fair. The structure was commissioned by the French luxury group, Louis Vuitton, to be prefabricated in Italy and shipped to Miami for assembly. The beach house would then be disassembled and removed immediately following the fair to allow for an outdoor wedding planned at the hotel. A geotechnical investigation was not performed; however, loose surficial sands over medium dense sands were expected at the site. A deep foundation system was therefore required, which could be easily installed to support the temporary structure, and just as easily extracted after the fair.

Solution: Helical piles were chosen as the ideal foundation support alternative for the temporary beach house display. Helical piles can be installed quickly and with the precision required to line up the pile head connections with the prefabricated steel framing. Helical piles can also be quickly removed with the same equipment that was used for installation, leaving behind no foundation remnants, spoils or large holes.

Eighteen (18) Model 288 (2.875-inch O.D. by 0.276-inch wall) round shaft helical piles with a 10"-12"-14" triple-helix lead section were installed to support design working vertical loads of 4.4 to 14.6 kips (compression) and 2.5 kips (tension) per pile. Four additional battered piles with the same shaft size and helix plate configuration were installed at the corners of the structure to resist a total design lateral force of 6 kips. The piles were installed to depths from 10 to 13 feet below grade to achieve torque-correlated ultimate capacities of at least three times the design working loads (FOS ≥ 3). The battered piles were installed at angles of 30 to 35 degrees from horizontal and to lengths of 17 to 24 feet. The tops of the vertical piles were advanced or cut to a design top of pile elevation 14 inches above grade and fitted with custom new construction brackets. The battered piles were connected to gusset plates on the pile head brackets via a threaded rod and clevis. The steel frame of the beach house was bolted to the pile brackets. Following the fair, the beach house was disassembled and disconnected from the helical piles, and the helical piles were removed to leave the site near its original, undisturbed condition.

Upcoming Webinar Opportunities

- **An Introduction to Helical Foundation Systems**

  1st Wednesday of every month 11:30 am (CT) and 1:30 pm (CT)

- **An Introduction to Polyurethane Foam Injection**

  2nd Wednesday of every month 11:30 am (CT) and 1:30 pm (CT)

- **An Introduction to Hydraulically Driven Push Pier Systems**

  3rd Wednesday of every month 11:30 am (CT) and 1:30 pm (CT)

Project: Progressive Protein Warehouse Addition
Location: Omaha, NE
Pier Installer: Thrasher, Inc.

Challenge: A 2,800-square-foot addition was planned to extend the warehouse at four loading dock doors. The geotechnical investigation performed for the proposed addition included the advancement of two soil borings to a maximum depth of 85 feet. The subsurface profile generally consisted of uncontrolled fill with asphalt and brick rubble to a depth of 12 feet, medium stiff to stiff silty clay to a depth of 30 feet, and intermixed layers of stiff to very stiff clay and medium dense to dense silty sand to the bottoms of the borings. Groundwater was encountered at a depth of 68.5 feet at the time of the exploration.

Solution: Helical piles were chosen as the ideal deep foundation solution to support the proposed addition. Helical piles were selected over drilled piers due to the limited working area and the ability to install helical piles quickly to maintain a tight construction schedule. The deep foundation design included seventy eight (78) Model 287 (2.875-inch OD by 0.203-inch wall) and six (6) Model 350 (3.50-inch OD by 0.340-inch wall) round shaft helical piles with a 10"-12"-14"-14"-14" helix plate configuration to support design working compression loads from 25 to 50 kips. The Model 350 piles were installed at the proposed column locations with design working loads greater than 25 kips. The helical piles were advanced to depths from 46 to 68 feet to achieve torque-correlated ultimate capacities of at least twice the design working loads (FOS ≥ 2). During installation, some of the piles encountered concrete debris approximately seven feet below grade, hindering further advancement. The debris was excavated from most areas of the site and replaced with clean fill soils to allow the piles to be installed at the plan locations and design vertical orientation. With the project engineer's approval, other piles were either slightly battered or relocated to avoid the obstructions. The installed piles were fitted with new construction brackets and cast into the columns and grade beams. The helical pile installation was completed in nine days.

Skid-steer and mini-excavator installing helical piles

Leads and first extensions staged near installed piles

Setting pile elevations within columns and grade beams

Project completed

To sign up, email us at training@supportworks.com with the following information:

- Name of the firm
- Location of firm
- Approximate number of engineers/architects/GCs that will be in attendance

Supportworks, Inc. is an approved provider of continuing education credits through the AIA, RCEP and the Florida State Board of Engineers.

HelixPro® 2.0 Design Software

is a state-of-the-art program that allows you to calculate bearing and uplift capacities of Supportworks helical piles as well as tension capacities of Supportworks helical tiebacks as they pertain to specific site and soil parameters.

Register today to use this FREE state-of-the-art software program: www.helixpro.supportworks.com

YOUR LOCAL DEALER

For more information about Supportworks, Inc. or to locate a Supportworks dealer in your area, please visit our website at supportworks.com or call 800.281.8545

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