

CHANCE™

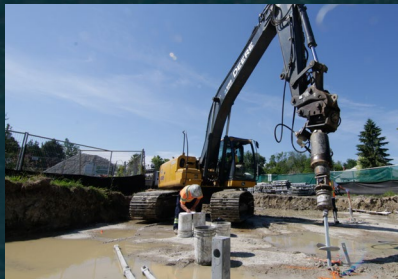
SQUARE SHAFT
EFFICIENT HELICAL PILE DESIGN

COMMERCIAL GRADE

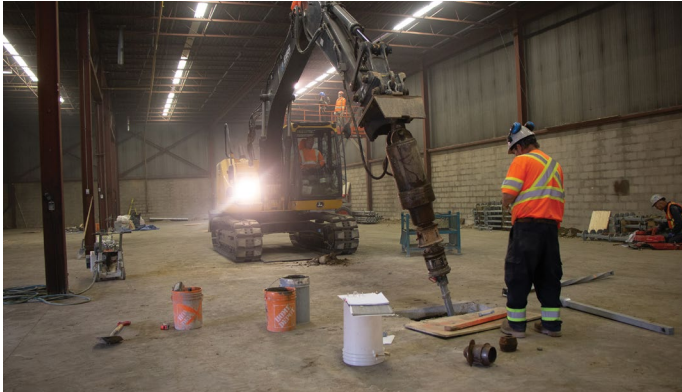


CHANCE square shaft helical piles are a high-torque, shaft-driven, multi-helix deep foundation. An end-bearing deep foundation solution, the load is transferred to the pile tip via the helix plates. Originally designed by the A.B. Chance company in the mid-1960s, the square shaft product line has since been expanded and engineered to suit a wide range of applications and soil conditions. Today, Hubbell Power Systems continues manufacturing operations in the same town where it all began – Centralia, Missouri.

Extension shafts with integral couplings can be used to lengthen square shaft piles to penetrate most soils at significant depths for many civil construction applications including guying, foundations, tiebacks, and soil nails.



SQUARE SHAFT ADVANTAGES



HIGHEST TORQUE CORRELATION FACTOR (KT)

It is generally accepted that installation torque can be used to verify the axial capacity of helical piles. When compared to other types of helical piles, square shaft helical piles can support the most axial capacity with the least amount of torque because of their greater torque correlation factor (Kt) compared to larger displacement helical piles.

SMALL INSTALLATION EQUIPMENT

Square shaft helical piles can be installed using a hydraulically powered torque motor mounted to virtually any machine such as a rubber-tired backhoe, digger-derrick truck, track-hoe excavator, or front-end skid-steer loader. This eliminates the high mobilization costs associated with equipment used to install driven piles, drilled shafts or auger-cast piles. This makes helical piles an ideal solution for limited access, remote location, or environmentally sensitive job sites.

BETTER PENETRATION IN DENSE SOIL

Square shaft piles can even be configured to penetrate rocky, permafrost, or high blow count soils without pre-drilling. This is due to their low displacement shaft and higher helix-to-shaft diameter ratio compared to larger displacement piles of comparable capacity. Penetration is improved further with the ROCK-IT™ lead section, which uses a carbide tip welded to the pilot point below the bottom-most helix.

COST EFFICIENT

Square shaft helical piles offer the lowest cost per kip at load ranges 50 kip or less due to their higher torque efficiency and lower material cost.

BY MANUFACTURING ALL TYPES OF HELICAL PILE FOUNDATIONS, HUBBELL CAN ALWAYS PROVIDE THE BEST PRODUCT FOR THE JOB:

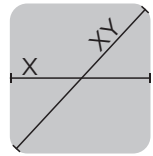
Need lateral capacity? – try pipe shaft, a combo pile or a grouted shaft Helical Pulldown® Micropile if lateral loading is an important factor in your project

In soft soils with an ASTM D1586 blow count $N_{spt} < 4$, the slender square shaft may buckle depending on the required load. The solution is to use pipe shaft, a combo pile or Helical Pulldown Micropile.



APPLICATIONS

- New Construction
- Foundation Repair
- Earth Retention / Tiebacks
- Guying (Tension-only)
- Solid Round Cornered Square (RCS), yield strength of Grade 70 or Grade 90.
- Ultimate compression/tension axial capacity: 57 to 200 kip.
- Lower Section Properties – Square Shaft helical piles are compact sections.
- Relatively Large Cross-Sectional area – takes high axial loads; large cross section means less surface area exposed to the soil and less corrosion area loss than other pile types.



CHANCE® SQUARE SHAFT (SS) HELICAL PRODUCT RATINGS

Product Series	X Shaft Size Across Flats Inches (mm)	XY Diagonal Length Inches (mm)	Kt Value	Torque ft-lb (N-m)	Ultimate Compression Capacity kip (kN)
SS125	1.25" (32)	1.66 (42)	10	4,000 (5 400)	40 (178)
SS5	1.5" (38)	1.91 (49)	10	5,700 (7 730)	57 (254)
SS150	1.5" (38)	1.91 (49)	10	7,000 (9 500)	70 (312)
SS175	1.75" (44)	2.27 (58)	10	10,500 (14 240)	105 (467)
SS200	2.0" (51)	2.57 (65)	10	16,000 (21 700)	160 (712)
SS225	2.25" (57)	2.93 (74)	10	21,000 (28 475)	210 (934)

For complete specifications and product ratings, consult the CHANCE Technical Design Manual.



DESIGN CONSIDERATIONS

- Axial Strength - pile's ability to withstand combined axial and bending stress must exceed required capacity
- Expected torque requirement - must equal or exceed required capacity
- Required design load
- Site soil conditions - relative density and strength of soil; $N_{spt} > 4$
- Penetration into desired geologic strata
- Corrosion Potential - if geotechnical report declares the corrosion potential is moderate to severe, the solid cross section and low perimeter surface area of a square shaft helical pile is ideal. Pipe shaft, on the other hand, is hollow and has more perimeter surface area relative to the cross-sectional area of steel.
- Tension Only - square shaft is the best choice for tension-only applications



DEFY DENSE SOILS

ROCK-IT™ helical pile lead section is an innovative solution that penetrates rocky, high blow count, or even permafrost soils without pre-drilling or field modification. The single carbide tip combined with a square shaft helical pile provides a proven solution to reach loadbearing depths in high blow count material.





With over 100 years of design and application experience, your local CHANCE distributor is ready to assist and support your next project.

BUILDING CODE APPROVED

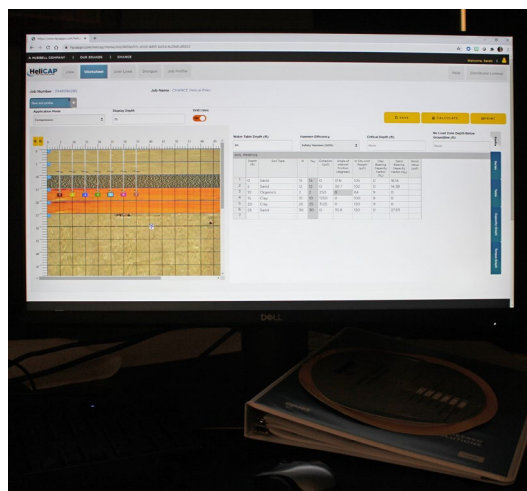
Ensuring that our products adhere to the appropriate application design guidelines is important to us. That is why we make available to building officials, architects, contractors, specifiers, designers and others the relevant product ICC-ES Evaluation Reports to provide a basis for using or approving helical anchors and piles in construction projects.

CHANCE SS5 and SS175 products received a comprehensive evaluation report ESR-2794 from ICC Evaluation Service (ICC-ES), providing evidence that SS5 and SS175 helical systems and devices are in compliance with the International Building Code requirements. CHANCE SS5 and SS175 products have been evaluated for both tension and compression loads.

HISTORY AND INNOVATION SINCE 1912

The CHANCE helical pile was the first foundation stabilization system created for remedial repair. Today, CHANCE products continue to lead the industry with innovative solutions that are widely accepted for quality and performance within the deep foundation industry. HPS proudly manufactures the American made CHANCE brand family for residential, commercial, industrial, electric utility, oil and gas, pipeline, mooring, railroad, and renewable energy markets. Backed by over 100 years of engineering experience, CHANCE helical pile systems offer a technologically advanced and cost effective alternative to concrete and other foundation systems. CHANCE helical piles comply with the 2021, 2018, 2015, 2012, and 2009 International Building Code (IBC), are ICC-ES Approved, and ISO:9001 Certified.

SQUARE SHAFT ADVANTAGES



HELICAP® V.3.0

CHANCE HeliCAP® Helical Capacity Design Software Version 3 is a proprietary engineering software for confident helical pile design. It performs powerful calculations on site soil parameters to aid engineers designing foundations, tiebacks, soil nails, guy anchors, and heavy guyed loads. The software gives prompts to maintain control over essential criteria to affect the same process that CHANCE application engineers employ daily to analyze problems and specify solutions. HeliCAP can be instantly accessed from any web-connected device, allowing collaborators to view or edit shared jobs.

CHANCE TECHNICAL DESIGN MANUAL

The CHANCE Technical Design Manual is a complete engineering resource guide covering CHANCE® helical piles, ATLAS Resistance® piers, soil mechanics, product feasibility, load determination, design methodology, installation methodology, product drawings/ratings, design examples, soil nailing, the Instant Foundation® system, corrosion overview, load testing, and much more. This manual is a valuable guide for anyone designing helical piles and is available online at no charge.



LOCAL DISTRIBUTOR

Offering knowledge and experience are hallmarks of the CHANCE distribution network. CHANCE helical piles are backed by a nationwide network of local distributors who are experts in helical pile design and installation. Your local distributor can provide engineering and design support, information on local soil conditions, and product recommendations for specific jobs.

LEARN MORE ABOUT AVAILABLE PRODUCTS, APPLICATIONS,
AND RESOURCES ON OUR WEBSITE.

www.ChanceFoundationSolutions.com



HELICAL SOLUTIONS

DEEP FOUNDATION PRODUCTS

FOUNDATION REPAIR

DISASTER RECOVERY

NEW CONSTRUCTION

TELECOM & TRANSMISSION

TIEBACK ANCHORS

OUTDOOR LIGHTING

SOIL SCREW

ENVIRONMENTAL TIEDOWNS

Never Compromise™



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