

**Building
Strong
Foundations
Est. 1971**



Foundation Installation

Standard Procedure



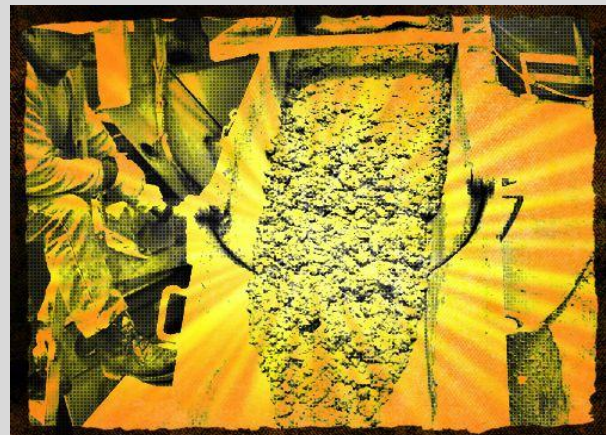
1) DRILL HOLE



2) REMOVE LOOSE DIRT



3) INSERT FOUNDATION PILE



4) POUR CONCRETE FILLER



5) CUT PILE TO DESIRED LENGTH

**EFFECTIVE BUT
TIME CONSUMING**

**THIS METHOD CAN COST MORE THAN IT
HAS TO...**

Innovation

Screw Piles

Unlike standard pile driving, our **Helicast™ "Multi-Fin, High Strength Helix"** head remains underground once it has been drilled which has so many hidden advantages



Faster . No Mess . Solution



Firstly the buried *Multi-Fin Helix screw-head* acts as an anchor giving added stability and counteracting not only downwards forces from the weight of the structure built on the foundations, but also countering up-lift which is a useful feature for structures with forces pulling them out of the ground such as cyclone affected areas.

Using Screw Piles has less effect on sites where other structures already exist. Screw piles are screwed into the ground and not driven which eradicates vibrations associated with driving or *hammering* standard piles into the ground which causes small quakes and ground movement which can damage existing structures.

In addition, no soil needs to be removed from site, which eliminates a lot of post-drilling clean up and presents a favorable alternative to standard pile driving in situations where soil is contaminated. Removal of contaminated soil requires removal specialists and added cost.

Using Screw Piles allows for fixed price estimations. Because soil conditions are hard to predict, sometimes piles need to be driven deeper than initially calculated into harder ground to ensure a safe/stable foundation. Because Screw Piles are *screwed* into the ground in sections which link together (and the screw-head remains buried), they can easily be driven deeper after initial installation by adding more sections to achieve greater depth.



Innovation

Screw Piles

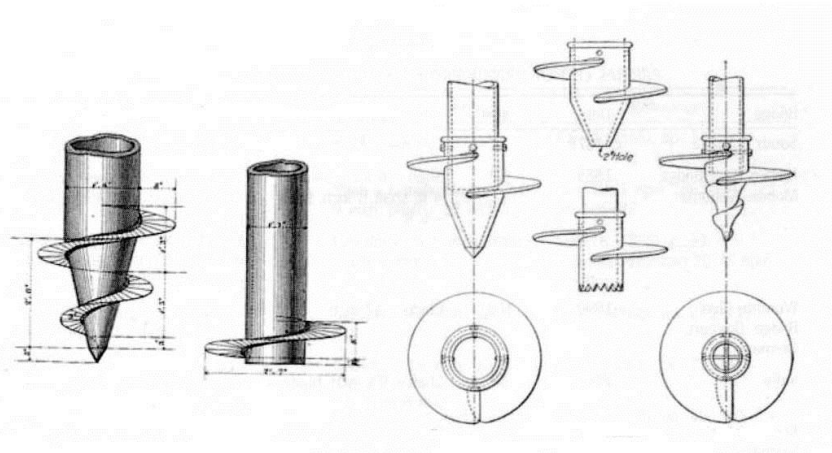
Development

Screw pile technology has been around since the 1800's and were originally used as piling foundations for lighthouses and piers along the east coast of the United States. However recent developments in Screw Pile Technology have made them more suitable for commercial use.

Originally a spiral-shaped fin would be welded from a flat plate of steel onto a Pile and then the pile was drilled into the ground much like a screw into wood. These *Plate tip helixes* would sometimes bend and distort and the customized nature of each screw pile increased costs.



Above: Middle Bay Lighthouse, Mobile Bay



Old Concept, New Design

Spiral Drillers stocks and installs **Helicast™ "Multi-Fin, High Strength Helix"** (depicted below) which are mass produced for cost efficiency and forged from cast steel which incorporates:

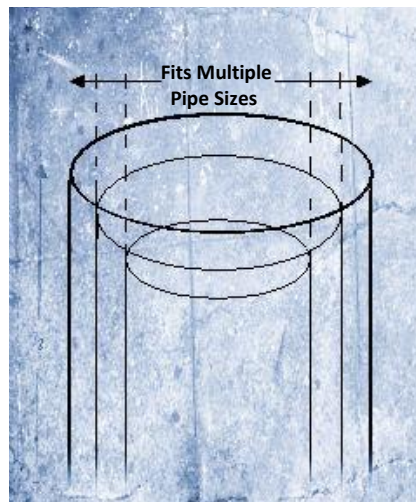
- A design ideal for cyclone and earthquake rated construction
- Helix tip is able to penetrate rocky grounds much better than plate tip helix
- Cast steel cannot bend or fold up against shaft as plate helix can
- Greater geotechnical contact area for founding than single plate helix.
- The uplift capacity of our conical shaped helix is equal to its download capacity for lighter load shafts subject to minimum depths, in dense soils

Information Source: Helicast™ a trading company of Minmetals Australia Pty Ltd



Cost Effective

The staggered, *staircase like* attachment end of our New Screw Pile design allows us to weld varying sizes of pipes to our standardized drilling heads. Costs are greatly reduced by using a standardized Screw-Pile drill head for multiple pipe sizes.



Testing

Screw Piles

STATIC LOAD TESTING TENSION / UPLIFT CAPACITY to 1.20 ULS of 300kN SUCCESSFULLY TESTED

The test is carried out to a specified method of applying a static load incrementally to the test pile head and measuring the pile head deflection under the applied load as specified in AS2159-2009 Section 8 Appendix A - Table A2.

The test piles were installed to the designed criteria prior to testing. A test beam was setup with required equipment and measuring instruments on each of test pile.

The load test was carried out under observation of a Registered Engineer.

Working - Proof Test: This test was carried out on a working pile and the test loaded to 1.20 ULS of 300kN. The pile results were reported to be well within the specified parameters and approved the design and installation criteria for the project piles.



All Shapes & Sizes

Screw Piles

Helicast™ Size Chart



Series	Helix Diameter (mm)	Pipe Shaft Diameter (mm)	Wall Thickness (mm)	Load Range (kN) Safe Working Load
150	150	33.4	3.4 - 4.5	55 - 70
	150	60.3	3.6 - 5.5	110 - 170
	150	76.1	3.6 - 5.2	140 - 200
280	280	76.1	3.6 - 5.0	140 - 200
	280	88.9	4.0 - 5.5	185 - 260
350	350	88.9	5.5	260
	350	101.6	4.0 - 5.0	210 - 270
	350	114.3	4.0 - 7.1	240 - 440
	350	127.1	4.8	330
	350	139.7/141.3	4.8 - 6.0	370 - 455
	350	165.1/168.3	4.0 - 7.1	365 - 670
450	450	168.3	4.0 - 8.0	365 - 755
	450	177.8	6.0 - 8.2	600 - 825
	450	193.7	7.6 - 8.3	835 - 910
	450	219.1	6.4 - 12.7	795 - 1590
	450	273.1	6.4 - 12.7	1000 - 2000
600	600	219.1	6.4 - 12.7	795 - 1590
	600	273.1	6.4 - 12.7	1000 - 2000
	600	323.9	6.4 - 12.7	1190 - 2400
750 (single turn)	750	273.1	6.4 - 12.7	1000 - 2000

Note: The above are Safe Working Load Shaft Capacity Achievable when installed in medium to dense sands or equivalent geotechnical material
Subject to Geotechnical conditions and Engineers Review

Summary

Standard Foundation Installation

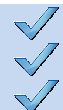
1. Drill hole to required depth
2. Remove Excess Dirt
3. Insert Foundation Pile
4. Secure with concrete
5. Cut Pile to desired length



Screw Pile Installation

1. Drill Screw Pile to required depth
2. Cut Pile to desired Length

TIME SAVING



For more information

Call the team at Spiral Drillers Civil Ltd.

0800 SPIRAL