

EASILY REMOVED:
Ideal for temporary and
modular buildings

CERTIFIED BY
The International
Code Council ✓

HELIFIX

SUSTAINABLE STRUCTURAL SOLUTIONS

Helifix Dixie Micro-Piles: Piled Foundation System

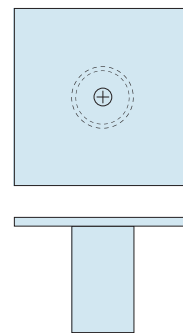


Dixie Micro-piles

reliable structural support
for permanent or
temporary buildings

Helifix Dixie circular hollow section piles can rapidly provide reliable and economical structural support for both permanent and temporary buildings. When suitable load-bearing strata is at a deeper level, a piled foundation is likely to be more cost-effective at transferring the superstructure loads than undertaking deep excavations to form traditional foundations.

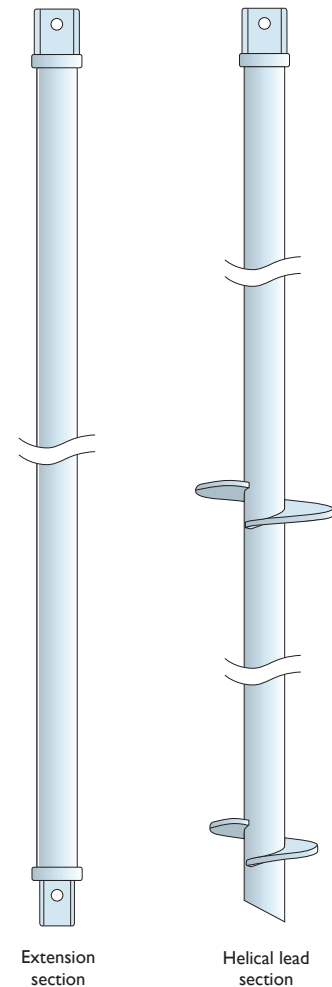
The Dixie micro-pile foundation system is simply screwed vertically into the ground to provide an efficient means of support. Each pile is topped with an engineered flat top plate, which is either cast into reinforced concrete pile caps / ground beams in traditional new build construction or connected directly to the base of modular or temporary structures.



Top plate
bracket

Dixie micro-piles are ideal for use in situations where speed, vibration, noise, contaminated ground or spoil removal are concerns or where there is restricted access to large plant. They are a technically innovative, proprietary, micro-pile system, making it simple for engineers to specify.

Furthermore, they are easy to extract from the ground, once a temporary structure is removed, by simply being 'unscrewed'.



Helifix DIXIE Micro-pile System



Square connections, simplify engagement

Features and Advantages

- ✓ Efficient, engineered pile foundation system for new build construction
- ✓ As a proprietary system it is easy for engineers to specify
- ✓ International Code Council (ICC) certified system
- ✓ Screws into virtually any soil type
- ✓ Can be easily extracted when building is removed
- ✓ Ground is returned to original state without environmental issues
- ✓ Rapid contract times with minimal disruption/noise
- ✓ No spoil removal or vibration
- ✓ Excellent resistance to buckling and high ultimate loads
- ✓ Independently verified ratings up to 265kN
- ✓ Square connections simplify engagement, accelerating installation speed
- ✓ Established torque versus capacity relationship
- ✓ Approved Installer network

Installation

Scan the QR code to watch the micro-piles animation



Fully trained contractors, belonging to the nationwide network of Helifix Approved Installers, supply and install the Dixie micro-pile system. All pile sections are easily transported on to site by hand.

Installation equipment consists of a portable hydraulic drive head with extendable stabilising arm and a hydraulic compressor. The small, portable equipment is ideal for confined areas or where access is limited.

The drive head may be hand held or machine mounted to suit access and installation can usually be carried out by a two or three man team with noise and disruption being kept to a minimum.

Once soil investigations have been completed and the required depth, spacing and torque of the piles are established, the Dixie micro-piles can be installed.

Traditional New-build Construction



1. The piles are screwed vertically into the ground using a lightweight hydraulic drive head. The helical lead section is installed first, followed by the necessary number of extension sections to reach load-bearing strata



2. Each pile is topped with the flat plate bracket



3. Formwork is created around pile brackets



4. The piles are cast into reinforced concrete to form foundations and the build process continues as required



Temporary and Modular Buildings

1. Piles are screwed vertically into the ground at the specified centres to the calculated depth and torque
2. The flat top bracket is fitted to each pile
3. The building chassis beams are secured to the top plates and construction continues as required



Technical specification

System Components

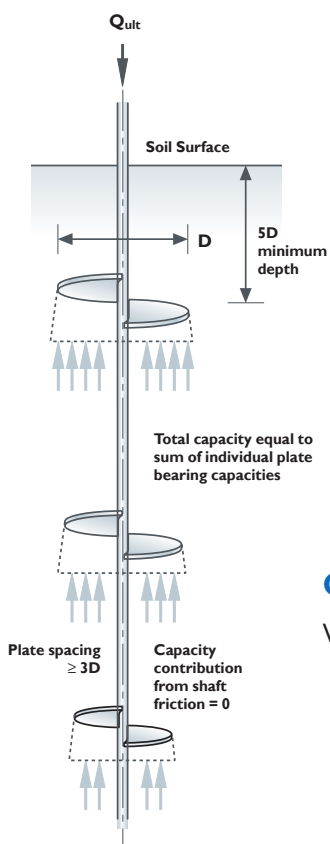
Helifix Dixie micro-piles are typically 4-5 metres in overall length comprising:

- **A Lead section**, featuring two or three helices (depending on requirements) which accepts extension sections.
- **Extension sections** are added to produce a sufficient depth of pile to reach the load-bearing strata.
- **Extension sections** are plain middle sections and the number used depends on the ground conditions. Additional sections are joined together with the final one being cut to length to accept the top plate.
- **A Top Plate** bracket assembly.

Helical Pile bearing capacity

The load-bearing capacity of a helical pile is dependent on:

- The strength of the soil – evaluated using standard techniques
- The projected area of the helical plates – plate surface area and number
- Depth of the plates below ground level



Helical piles should be installed to a depth based on soil investigations to ensure the most reliable load-bearing capacity. The soil behaviour mechanism is assumed to follow the theory that the overall capacity of the helical pile is equal to the sum of the capacity of the individual plates. Any friction contribution along the central shaft is generally ignored. The helical plates are spaced far enough apart to avoid overlapping of individual "pressure bulbs" to obtain best performance.

The following is Terzaghi's general bearing capacity equation to determine the ultimate capacity of the soil.

$$Q_{ult} = A_h (cN_c + q'N_q + 0.5\gamma'BN_\gamma)$$

Where:

- Q_{ult} – ultimate capacity of the soil, kN
- A_h – projected plate area, m^2
- c – soil cohesion, kN/m^2
- q' – effective overburden pressure, kN/m^2
- B – footing width (base width), m
- γ' – effective unit weight of the soil, kN/m^3
- N_c, N_q & N_γ – bearing capacity factors

Safety factor

Once the ultimate capacity of the helical pile has been determined an appropriate safety factor must be applied, generally a minimum of 3, to give an acceptable working capacity.

Pile spacing

Having determined the capacity of the helical pile, it is recommended that the centre-to-centre spacing between adjacent piles be no less than five times the diameter of the largest plate.

