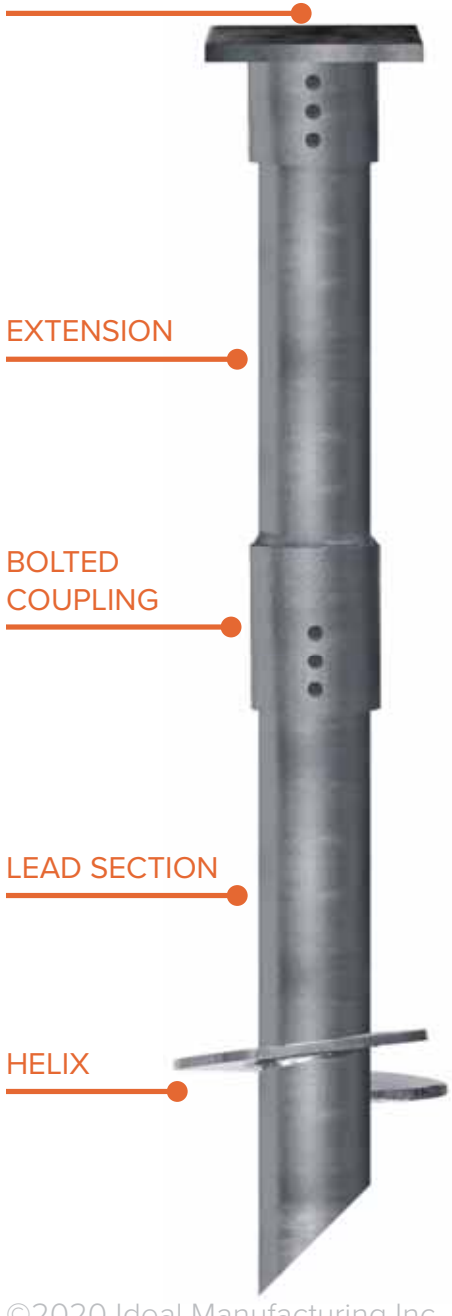
IDEAL Group

HELICAL PIPE PILES

FOR LOADS UP TO 500 TONS

WHILE HELICAL PILES AND THE ASSOCIATED METHODS HAVE BEEN USED FOR MANY DECADES, THE IDEAL APPROACH IS ANYTHING BUT ANTIQUATED.

We believe that although it isn't broken, there's always room for improvement. We pioneered the high capacity helical pile industry and today we manufacture helical piles with shaft diameters up to 36". Leave behind any misconceptions you had about helical piles and see what IDEAL has to offer. We're going places.



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GET FAMILIAR

The unit is called a **helical pier** if it resists compressive loads, which are usually downward. It is called a **helical anchor** if it resists tensile loads, which are usually upward or inclined. Many helical units function as both piers and anchors.

A helical unit is installed by simply screwing it into the ground. The central shaft may be round or square and it may be hollow or solid. Hollow (pipe shafts) are often preferred, because they provide a greater section modulus for the same cross-sectional area of steel. Pipe shafts, as compared to solid shafts, generally provide greater resistance to installation torques and buckling under compressive loads.

A typical helical unit is shown to the left. It consists of a central steel shaft, to which can be attached one or more steel helices. The central shaft can be lengthened by adding extension pieces as necessary.

Pipe shafts range anywhere from 2 7/8"" to 36" in diameter, and helices range anywhere from 5" to 48" in diameter and are seldom less than 3/8" thick.

Experience and theory have combined to suggest that the preferred spacing between multiple helices is equal to 3 helix diameters of the preceding helix.

The final component to the helical unit is the Load Transfer Device (LTD). This is used to transfer the tension or compression load from the structure to the helical unit.

Simply put, the helical unit transfers tension or compression load to competent soil strata below incompetent soils.

Our team is often called on to fabricate custom brackets and load transfer devices. Below are examples of brackets which are manufactured by IDEAL. Give us a call if you don't see what you're looking for and we can design the perfect bracket to meet your unique project requirements.


SEWER PIPELINE SUPPORT


SUPPORT OF EXCAVATION


CLEARSPAN BRACKET

APPLICATIONS

A helical pier is a deep foundation. Its purpose is to transfer a structural load to deeper, stronger, and less compressible materials bypassing any weaker and more compressible materials that would be unsuitable for the support of conventional shallow foundations.

As a deep foundation, a helical pier should be considered for most applications that would call for a driven pile, drilled pier, or mini pile.

Helical piles and anchors are usually a great foundation solution to any of the applications below whether it's a new build or existing structure.

COMMERCIAL BUILDING REMEDIATION	SUBSTATIONS	TIE-BACKS/ANCHORS/RETAINING WALLS
SANITARY PIPELINE SUPPORT	LIGHTING <50FT	BULKHEADS
SUPPORT OF EXCAVATION	SOUND WALLS	SHORING PIPELINE
WORK CAMP FOUNDATIONS	BRIDGES/BOARDWALKS/DOCKS	GUY LINES/WIRES
TOWERS – QUAD BASE	ROADWAY SIGNAGE TRAFFIC SIGNALS	TANKS AND SILOS
TOWERS – MONOTUBE	BILLBOARD/SIGNAGE GENERATOR BASES	UNDERWATER SUPPORT
UTILITY ANCHORING	TIE-DOWNS/MOORINGS	MACHINE BASES


BRIDGE REMEDIATION


MUNICIPAL BOARDWALKS


RETAINING WALLS/SHORING


CLEARSPAN STRUCTURES


MACHINE BASES


SANITARY PIPELINE SUPPORT

ADVANTAGES

For many applications helical units may offer significant advantages over other systems. Some of these include:

WIDE RANGE OF LOADS
A wide range of allowable loads. Anywhere from 10-500 tons to be exact.

VERSATILE INSTALLATION ANGLES
Adaptability to a variety of installation angles to accomodate compression, tension, lateral, and overturn.

LESS DEPTH = MORE MONEY
Lower cost than driven or drilled piles. While the cost per foot may be higher, piles can be installed to lesser depths and reach the same required capacities.

RAPID INSTALLATION
Not quite lightning fast, but it's hard to beat the ease and speed of installation.

MINIMAL EQUIPMENT
Minimal support equipment is needed for installation. A drive head, torque indicator, and a few other components and you're up and running. Just by the way, IDEAL offers the most complete drive head packages in the industry.

GREAT FOR LIMITED ACCESS
Helical piles are great for low-headroom and other limited-access areas inside, underneath, and in between existing structures.

SIMPLE CUTOFFS
Wlth a band saw or torch, on-site cut-offs are a breeze.

NO CONCRETE DELAYS
No concrete-related delays, and we all know time is money...

INSTALL IN EXTREME WEATHER
Helical piles can be installed in any weather except thunderstorms and whatnot. We play it safe, and you should too.

LIMITED EARTHWORK AND NO SPOILS
Little or no earthwork or spoil material is created during helical pile installation. This is a huge advantage when working at contaminated sites.

MINIMAL VIBRATION AND NOISE
With minimal vibration and noise, helical piles are a perfect fit for historic structures and other urban projects surrounded by fragile people and buildings.

TEMPORARY INSTALLATIONS
Easily removed and reused in temporary applications such as shoring and movable structures.

LOW MOBILIZATION COST
Very low mobilization and demobilization costs. Look at the real costs of installing alternates and you might be as surprised as we were when we did the math.


VARIETY OF INSTALL ANGLES


EXTREME WEATHER


LIMITED ACCESS

INSTALLING

A helical screw pile is rotated into the ground by using a hydraulic drive head, powered by an excavator, pile driving rig, or any other equipment with hydraulic capability. IDEAL requires installers to monitor installation torque and pile alignment during the installation process. This is required for a few reasons.

First, it is important to have a qualitative assessment of the soils being penetrated at various depths. Using a graph, the recorded installation torque and depth is interpreted against the existing soil data to obtain a correlation that enables a simple verification strategy to be determined.

The soil data is interpreted against the installation torque and a correlation is obtained to maintain the integrity of the helical screw pile during installation as well as mitigate damage by exceeding the allowed torsional strength to any of the pile's components. Every helical screw pile has a maximum stress level that must not be exceeded in order to avoid compromising the structural integrity of the helical screw pile unit.

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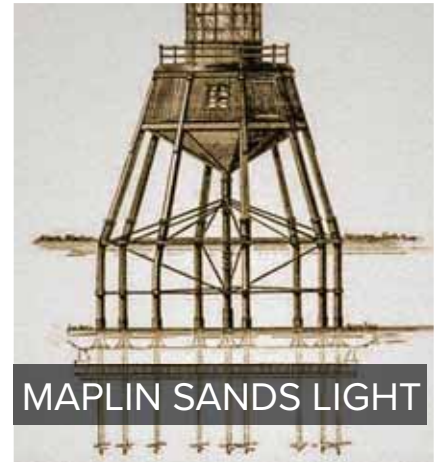
THE HISTORY

The first helical screw pile was invented in the 1830's by a blind Irish marine construction engineer named Alexander Mitchell. His design proved to be a major improvement over traditional straight pile designs, so Mitchell and his son promptly patented the cast iron screw pile. In 1840 the first screw piles were installed to support the Maplin Sands lighthouse at the mouth of the Thames River. This innovative design caught on and made its way across the pond quickly and before long most of the lighthouses in the Mid-Atlantic region were being built on helical pile foundations. There were more lighthouses built on helical pile foundations in Chesapeake Bay than anywhere else in the world. A total of Forty-two helical screw pile lighthouses were built on Chesapeake Bay between 1850 and 1900.

The helical screw pile technology didn't stay on the east coast. Over the next few years, helical screw pile lighthouses could also be found in the Great Lakes Region and the Gulf of Mexico.

The foundation of a typical screw pile lighthouse consisted of one central pile installed in the center and then flanked by another six or eight piles around the perimeter. This design increased the anchoring properties and the bearing power of the helical screw piles. These early helical screw piles were often installed by using large torque bars and the power of men, horses, or oxen.

Alexander Mitchell's helical screw pile design is just as effective today as it was in the late 18th century and continues to be installed around the world.



MAPLIN SANDS LIGHT

EARLY HELICAL PILE

OUR MISSION

To provide our clients and associates with proprietary technology, products, equipment, and support, ensuring excellence in the design and performance of deep foundation and earth anchoring projects.