



# HELICAL PILING SYSTEM & SOLAR STRUCTURES



Nandikeshwari Engineering LLP  
[www.nellp.in](http://www.nellp.in)

## INTRODUCTION

At Nandikeshwari Engineering LLP our motto is to achieve solutions to complex issues and develop and innovate products that are easy-to-use and cost effective.

The rising demand for convenient and cost-effective methods to lay deep foundations gave rise to Steel Piles. A Steel pile can be a rolled section, a fabricated shape, or a piece of sheet pile. The most important advantage of using a steel pile is its load-carrying capacity. Steel piles are most commonly used for foundations of large structures with heavy loads and can be classified as :

- Screw Piles
- Pipe Piles
- H- Piles
- Disc Piles

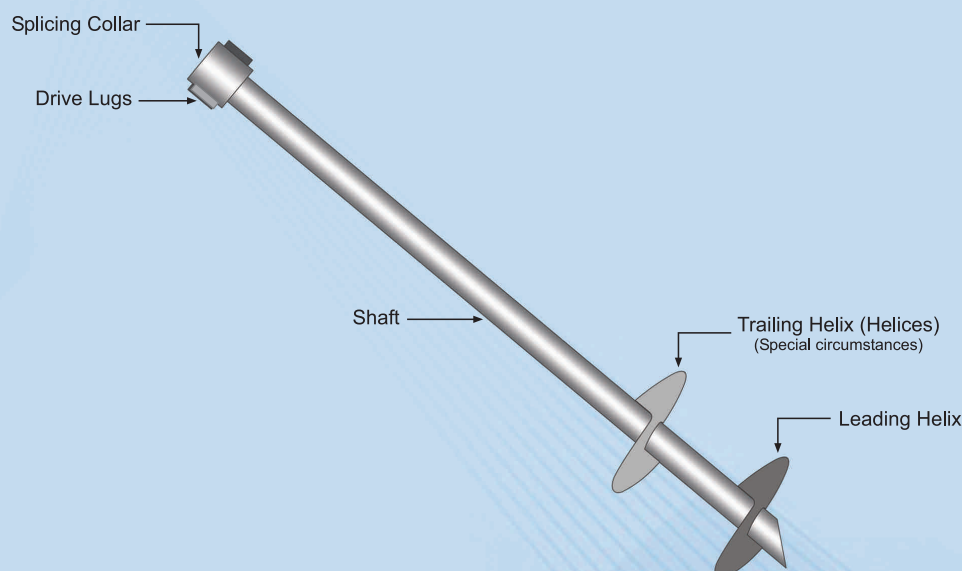
At Nandikeshwari Engineering we specialise in a variety of Piling Tool and Equipment and our **Steel-Screw/Helical Piles**, also known as **Screw/Helical Piers**, **Screw/Helical Anchors**, is the most innovative, cost effective and convenient product amongst precast driven piles.

There are a few differences between Screw / Helical- **Anchors & Piles/Piers**, although the terms are often used interchangeably.

**Anchors-** consist of an extendable steel shaft with helical bearing plates. Anchors are piles utilized only in tension applications like restraining wall tiebacks or vertical ground anchors made to resist overturning forces/ tensile loads which are usually upwards or inclined.

**Piles or Piers-** refer to strong base elements that withstand or transfer compressive loads which are usually vertical / downwards.

Many Helical Units function both as Piers and Anchors.



## WHAT ARE SCREW/HELICAL PILES AND ANCHORS

Screw/Helical Piles and Anchors are made of high strength steel. These form a long shaft that are terminating at the end in the form of a screw base or a helix. The shaft that is employed in the screw piles can be either a hollow one or a solid one.

The number of helices/helical flights or screws, their diameters and position on the pile shaft as well as steel plate thickness are all determined by a combination of:

- The combined structure design load requirement
- The geotechnical parameters
- Environmental corrosion parameters
- The minimum design life of the structure being supported or restrained.

A Screw/Helical Pile and Anchor can be a solid square steel shaft, a round shaft open steel pipe pile or a combination of both square and round with one or more helical plates / helices/ flights / screws welded to the pipe near the tip which is generally a pointy toe also known as “Pilot Point” for better installation into the ground or having sharp structure for rocky soil. Modern screw pile load capacities are in excess of 2,000 kN (220 short tons-force)

### Installation of Screw Piles / Anchors

Screw / Helical Piles and Anchors are installed by rotating the shaft of the pile into the soil by means of an electric motor that help in easy penetration into the strata. This action is much like wood screw. As the shaft rotates, the helical plate advances into the ground “pulling” the shaft with it. Extensions and coupling accessories can be used to achieve piling of greater depth as required. A Helical Pile is generally used to resist compression and lateral loading.



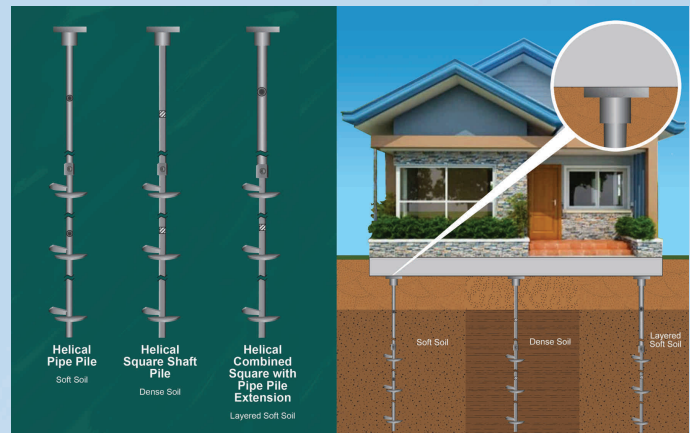


## APPLICATION AREAS

Screw/Helical Piles and Anchors have great application for deep foundations in clay or loose soils. In these areas they help in increasing the bearing area. The installation of pile foundation in these types of soils are made easy by the steel screw piling. The toe can be adapted to penetrate rocky soil, bedrocks and boulders. It should be considered for most applications that would call for a driven pile, drilled pier or mini pile.

### Advantages of Screw Piling System

- Easy and Quick Installation
- Minimal Equipment required
- Light Weighted and easily handled
- Removable and Reusable
- Requires Minimal Dewatering
- High Tensile and Compressive Capacity
- Works well on slopes too
- Minimal Noise and Vibration during installation
- Cost- Effective

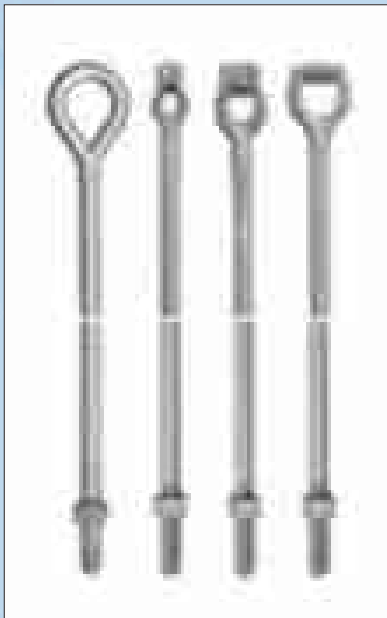




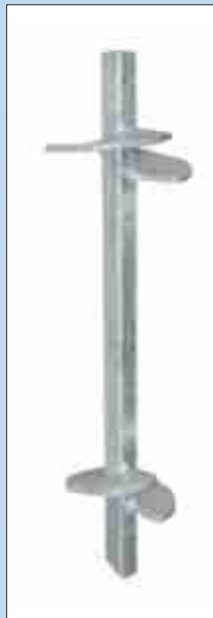
## HELICAL SCREW PILES EXTENSIONS AND IT'S ACCESSORIES

We manufacture and offers a wide range of superior quality helical screw piles, extensions and its accessories. These are manufactured as per our client specifications & design. NELLP offers both bare and galvanised finished product in a wide variety of sizes to suit any foundation application

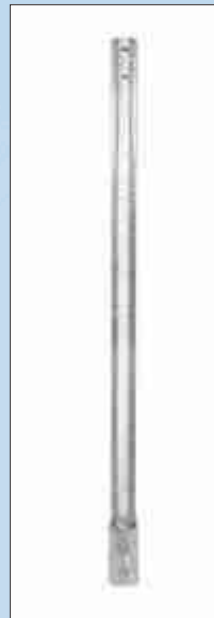
- Seamless Tubes as per ASTM A 106 Grade B A 500
- Solid Steel Bar (RCS) per ASTM A29 with 90 ksi minium yield strength
- Bolt & Nuts as per SAE J429 Grade 8
- Helix Plate: ASTM A36 or as per Indian Standard IS: 2062 Grade (E350)
- T BRACKETS, JACKING PLATE & BRACKETS are manufactured as per customer's requirements
- Corrosion Protection to conform to ASTM A 153 Standard - Hot Dip Galvanising



Anchor Rods



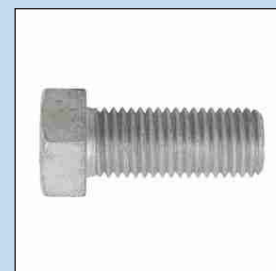
Lead Section



Extension



Helix Screw Anchor



Hardware



U Shape Brackets



Shackles



Brackets/Caps/LTD



Transitions

## STANDARD HELICAL PRODUCTS

### SQUARE SHAFT PRODUCTS

#### SQUARE 1.5" (RCS) MEDIUM DUTY

| Description | Square Shaft Size | Lenght (feet) | Helix (inch)  | Galvanised weight (kg) |
|-------------|-------------------|---------------|---------------|------------------------|
| Lead        | 1.5" Sq. Shaft    | 7             | 12            | 31                     |
| Lead        | 1.5" Sq. Shaft    | 7             | 8             | 28                     |
| Lead        | 1.5" Sq. Shaft    | 5             | 8,8           | 23                     |
| Lead        | 1.5" Sq. Shaft    | 5             | 10, 10        | 26                     |
| Lead        | 1.5" Sq. Shaft    | 5             | 10, 12        | 28                     |
| Lead        | 1.5" Sq. Shaft    | 5             | 12, 12        | 30                     |
| Lead        | 1.5" Sq. Shaft    | 5             | 8, 10         | 24                     |
| Lead        | 1.5" Sq. Shaft    | 7             | 10, 12        | 34                     |
| Lead        | 1.5" Sq. Shaft    | 7             | 12, 14        | 38                     |
| Lead        | 1.5" Sq. Shaft    | 7             | 8, 10, 12     | 38                     |
| Lead        | 1.5" Sq. Shaft    | 10            | 8, 10, 12, 14 | 57                     |
| Extension   | 1.5" Sq. Shaft    | 3             | n/a           | 14                     |
| Extension   | 1.5" Sq. Shaft    | 5             | n/a           | 22                     |
| Extension   | 1.5" Sq. Shaft    | 7             | n/a           | 29                     |
| Extension   | 1.5" Sq. Shaft    | 10            | n/a           | 40                     |





## STANDARD HELICAL PRODUCTS

### SQUARE SHAFT PRODUCTS

#### SQUARE 1.75" (RCS) HEAVY DUTY

| Description | Square Shaft Size | Lenght (feet) | Helix (inch)  | Galvanised weight (kg) |
|-------------|-------------------|---------------|---------------|------------------------|
| Lead        | 1.75" Sq. Shaft   | 7             | 8             | 37                     |
| Lead        | 1.75" Sq. Shaft   | 5             | 8,8           | 29                     |
| Lead        | 1.75" Sq. Shaft   | 5             | 10, 10        | 32                     |
| Lead        | 1.75" Sq. Shaft   | 5             | 10, 12        | 34                     |
| Lead        | 1.75" Sq. Shaft   | 5             | 12, 12        | 36                     |
| Lead        | 1.75" Sq. Shaft   | 5             | 8, 10         | 31                     |
| Lead        | 1.75" Sq. Shaft   | 7             | 10, 12        | 43                     |
| Lead        | 1.75" Sq. Shaft   | 7             | 12, 14        | 46                     |
| Lead        | 1.75" Sq. Shaft   | 7             | 8, 10, 12     | 47                     |
| Lead        | 1.75" Sq. Shaft   | 10            | 8, 10, 12, 14 | 70                     |
| Extension   | 1.75" Sq. Shaft   | 3             | n/a           | 19                     |
| Extension   | 1.75" Sq. Shaft   | 5             | n/a           | 29                     |
| Extension   | 1.75" Sq. Shaft   | 7             | n/a           | 39                     |
| Extension   | 1.75" Sq. Shaft   | 10            | n/a           | 54                     |





## STANDARD HELICAL PRODUCTS

### ROUND SHAFT PRODUCTS

#### ROUND 2 - 7/8" - 0.203" SEAMLESS TUBES

| Description | Pipe OD (inch) | Wall Thickness (inch) | Lenght (feet) | Helix (inch)  | Galvanised weight (kg) |
|-------------|----------------|-----------------------|---------------|---------------|------------------------|
| Lead        | 2.875          | 0.203                 | 7             | 8, 10         | 25                     |
| Lead        | 2.875          | 0.203                 | 7             | 10, 12        | 29                     |
| Lead        | 2.875          | 0.203                 | 7             | 12, 14        | 33                     |
| Lead        | 2.875          | 0.203                 | 7             | 8, 10, 12     | 31                     |
| Lead        | 2.875          | 0.203                 | 7             | 10, 12, 14    | 37                     |
| Lead        | 2.875          | 0.203                 | 10            | 8, 10, 12, 14 | 48                     |
| Extension   | 2.875          | 0.203                 | 5             | n/a           | 20                     |
| Extension   | 2.875          | 0.203                 | 7             | n/a           | 25                     |



#### ROUND 2 - 7/8" - 0.276" SEAMLESS TUBES

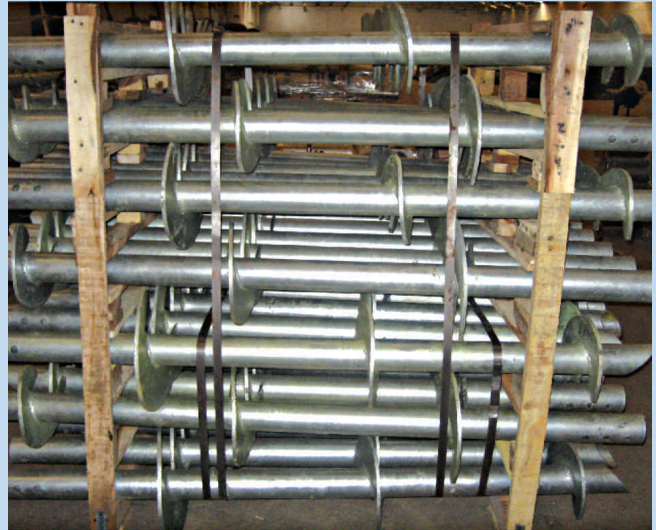
| Description | Pipe OD (inch) | Wall Thickness (inch) | Lenght (feet) | Helix (inch)  | Galvanised weight (kg) |
|-------------|----------------|-----------------------|---------------|---------------|------------------------|
| Lead        | 2.875          | 0.276                 | 7             | 8, 10         | 32                     |
| Lead        | 2.875          | 0.276                 | 7             | 10, 12        | 36                     |
| Lead        | 2.875          | 0.276                 | 7             | 12, 14        | 40                     |
| Lead        | 2.875          | 0.276                 | 7             | 8, 10, 12     | 38                     |
| Lead        | 2.875          | 0.276                 | 7             | 10, 12, 14    | 44                     |
| Lead        | 2.875          | 0.276                 | 10            | 8, 10, 12, 14 | 57                     |
| Extension   | 2.875          | 0.276                 | 5             | n/a           | 26                     |
| Extension   | 2.875          | 0.276                 | 7             | n/a           | 32                     |

## STANDARD HELICAL PRODUCTS

### ROUND SHAFT PRODUCTS

#### ROUND 3.5" - 0.3" SEAMLESS TUBES

| Description | Pipe OD (inch) | Wall Thickness (inch) | Lenght (feet) | Helix (inch)  | Galvanised weight (kg) |
|-------------|----------------|-----------------------|---------------|---------------|------------------------|
| Lead        | 3.5            | 0.3                   | 7             | 8, 10         | 41                     |
| Lead        | 3.5            | 0.3                   | 7             | 10, 12        | 44                     |
| Lead        | 3.5            | 0.3                   | 7             | 12, 14        | 48                     |
| Lead        | 3.5            | 0.3                   | 7             | 8, 10, 12     | 46                     |
| Lead        | 3.5            | 0.3                   | 7             | 10, 12, 14    | 52                     |
| Lead        | 3.5            | 0.3                   | 10            | 8, 10, 12, 14 | 69                     |
| Extension   | 3.5            | 0.3                   | 5             | n/a           | 33                     |
| Extension   | 3.5            | 0.3                   | 7             | n/a           | 42                     |



#### ROUND 4.5" - 0.337" SEAMLESS TUBES

| Description | Pipe OD (inch) | Wall Thickness (inch) | Lenght (feet) | Helix (inch)   | Galvanised weight (kg) |
|-------------|----------------|-----------------------|---------------|----------------|------------------------|
| Lead        | 4.5            | 0.337                 | 7             | 12, 14         | 67                     |
| Lead        | 4.5            | 0.337                 | 7             | 14, 16         | 73                     |
| Lead        | 4.5            | 0.337                 | 10            | 12, 14, 16     | 100                    |
| Lead        | 4.5            | 0.337                 | 10            | 14, 16, 18     | 110                    |
| Lead        | 4.5            | 0.337                 | 12            | 12, 14, 16, 18 | 131                    |
| Extension   | 4.5            | 0.337                 | 5             | n/a            | 50                     |
| Extension   | 4.5            | 0.337                 | 7             | n/a            | 63                     |



## SOLAR STRUCTURE

- a) Solar Ground Mounted Anchors i.e. Helical Anchors/Screw piles
- b) Solar Module Mounting Structure (MMS) made of Steel or Aluminium

NELLP Module Mounting Structures are designed and engineered for each customer's site specific conditions to minimize the field installation labor and require no field welding, drilling or other on-site fabrication.

- Suitable for flat and slightly sloped roofs
  - Suitable for several module dimensions with a panel width from 950 to 1050 mm
  - Total dead load of panels with steel structure and ballast below 10kg/m<sup>2</sup> of roof achievable
  - Standard and angle regulation from 50 °C to 300 °C
- c) Solar Purlins Sections  
Z and C Purlins / C Channels, bracing, angles and column post are members of Module Mounting structure. They are rolled formed by using pre-galvanised, post galvanised or made of galvano steel.

### Why NELLP Solar Structures?

#### NELLP Solar Structure advantage

- Easy and fast to assemble
- 25 years of maintenance free life
- Optimal surface treatment for high corrosive resistance (Hot dip galvanised up to 85 microns)
- Structures are well protected against adverse climatic conditions
- Strong Durable and Total Safety





## QUALITY

NELLP is a company with a robust quality management system. We at NELLP are committed to manufacture quality products and deliver the same to complete customer satisfaction.



**Visual Inspection**



**Dimensional Checks**



**DFT Checking**

### We Believe in

- Involvement of all people in our organisation throughout Training and Education
- Introduction of Quality Management System throughout the organisation
- Ensuring Continual Improvement

### Quality Objectives

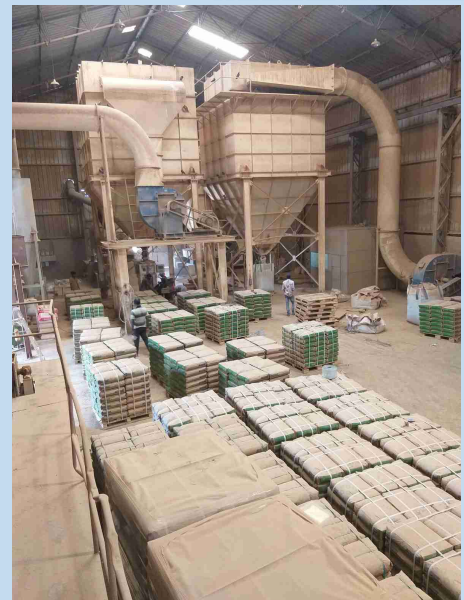
- Improving Adherence to Production Plan
- Reduction of Rework and Errors
- Increasing Customer Satisfaction Score
- Increase of Training Man Days

## OUR GROUP COMPANY

### Amrfeo Private Limited (estd.1994)

- An Export house with Govt of India accreditation
- Crisil rated
- ISO 9001 : 2015 Quality system
- Member - Capexil | MCC
- One of the finest bentonite processing plants in India. Located near Bhuj, Gujarat on land area of 55000 sqm. It is not just the production capacity of the plant which is 100 tpd but the process by which we make it. Being meticulous and perseverance is our guiding force. The end product is not just bentonite. Proud to say that we are passionate with what we do!
- We make polymers too. To compliment the civil engineering business we started making inhouse polymers like PHPA and cellulose. To be able to provide the solution in drilling it was an important decision for us to have ventured out.
- After successfully making foam again for drilling application we are now into organo-inorganic nano compound processing. This can be an exciting future.

At Amrfeo we manufacture and supply bentonite products for a wide range of application. Our Bentonite products for Civil Engineering industry are suitably developed for Piling, Diaphragm Wall, HDD, Tunneling, Grouting etc and can be adapted as per requirement. Please contact us for any assistance.





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