HIGH CAPACITY PILES
We are “Connecting People for Good” by manufacturing and supplying products for electric utility, communication and civil infrastructure.

MacLean Power Systems operates out of nine total manufacturing facilities worldwide. We are a division of MacLean-Fogg which is a global enterprise with 26 global manufacturing facilities and a worldwide workforce of more than 3,500 people.

Founded in 1925 MPS has a long history of supporting our customers with Engineering, Manufacturing and Customer Support. In North America, MPS serves both U.S. and Canadian customers with anchoring and piling products in the electric utility and civil construction markets. Working with our National Distribution Network we supply the largest range of anchoring products in our industries.
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GROUTED BOLTED DISPLACEMENT PILES

Utilizing modern grouting techniques to support the greatest loads, our bolted grouted piles are the standard in the Foundation Construction industry. The pile designs are fully customizable from the length and wall thickness to the helix flight and the bolt-hole configuration on the coupling end to ensure maximum compatibility with the most commonly used drive heads in the field.

APPLICATIONS

• Soil Improvement
• Reduced Diameter
• Limited Access
• Compressive Soils

CUSTOM PILE DESIGN

Everything on our bolted piles is customizable in order to best match your foundation design. Our flexible approach allows you to get the right pile to match your needs on the jobsite.
Grouted Bolted Displacement Piles

**LOAD CAPACITIES**

<table>
<thead>
<tr>
<th>PILE DIAMETER</th>
<th>ALLOWABLE STRUCTURAL CAPACITY (KIPS)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.50&quot;</td>
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</tbody>
</table>

*--LOAD CAPACITIES ARE DEPENDANT

**ADVANTAGES**

**GREATER LOAD SUPPORT**
Finished grouted displacement piles have significantly greater maximum load capacities that non-grouted piles.

**SIMPLER INSTALL**
MPS offers adapters to pressure grout while installing to reduce install steps.

**CLEANER JOBSITE**
Using MPS products and methods allow for less grout and a cleaner install on job-sites.

**MORE LOCATIONS**
Grouted columns around the pile allow for consistent load capabilities in a variety of soil conditions.

**LOWER NOISE LEVELS**
Bolted pile installations are quiet, making them ideal for projects in urban areas.

**ENVIRONMENTALLY FRIENDLY**
The minimal effect helical piles have on the terrain, environment and wildlife make for a more green project.

**TECHNICAL DETAILS**

**PILE SHAFT**
- **DIAMETER:** 4.50", 5.50", 7", 7.625", 8.625", and up to 24"
- **LENGTH:** 5', 7.5', 10', 15', 20', 40'
- **WALL THICKNESS:** .290", .310", .365", .382", .415", .482", .500", .545", .582", .750"
- **MATERIAL STRENGTH:** 80ksi, 100ksi

**PILE HELIX**
- **DIAMETER:** 8"–30"
- **PITCH:** 4"–21"
- **THICKNESS:** 1/2", 5/8", 3/4", 1"

**PILE COUPLER**
- **DIAMETER:** 4.50" - 24"
- **HOLE DIAMETER:** Custom sizes available dependent on design
- **HOLE PLACEMENT:** Custom positions as needed
GROUTED THREADED DISPLACEMENT PILES

Our threaded coupler displacement piles are designed with speed and efficiency, making them the most innovative high-capacity piles on the market. Modern drive heads and the ability to pressure grout during installation make these piles a fast, clean and efficient grouted steel foundation solution.

APPLICATIONS

- Soil Improvement
- Reduced Diameter
- Limited Access
- Compressive Soils

CUSTOM PILE DESIGN

Everything on our bolted piles is customizable in order to best match your foundation design. Our flexible approach allows you to get the right pile to match your needs on the jobsite.

DESIGN EXAMPLE WITH PILE CAP
Grouted Threaded Displacement Piles

ADVANTAGES

**GREATER LOAD SUPPORT**
Finished grouted displacement piles have significantly greater maximum load capacities that non-grouted piles.

**PRESSURE GROUTING**
The water-tight seal between threaded couplings allows the pile to be grouted and installed at the same time.

**SIMPLER INSTALL**
MPS offers adapters to pressure grout while installing to reduce install steps.

**MORE LOCATIONS**
Helical piles are often used in remote locations & tight workspaces because heavy equipment is not required.

**LOWER NOISE LEVELS**
Helical pile installations are quiet, making them ideal for projects in urban areas.

**ENVIRONMENTALLY FRIENDLY**
The minimal effect helical piles have on the terrain, environment and wildlife make for a more green project.

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**TECHNICAL DETAILS**

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**PILE COUPLER**
- **Diameter:** 4.50", 24"
- **Threads:** Threaded Tapered Pin & Box

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**LOAD CAPACITIES**

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*—LOAD CAPACITIES ARE DEPENDANT
NON-GROUTED
BOLTED
HELICAL PILES

Made from high-yield steel to support the greatest loads, our bolt-on piles are the standard in the Foundation Construction industry. The pile designs are fully customizable, from the length and wall thickness to the helix flight and even the bolt-hole configuration on the coupling end to ensure maximum compatibility with the most commonly used drive heads in the field.

APPLICATIONS
• Retaining Walls
• SOE Walls
• Geothermal
• Weak Soils

CUSTOM PILE DESIGN
Everything on our bolted piles is customizable in order to best match your foundation design. Our flexible approach allows you to get the right pile to match your needs on the jobsite.
Non-Grouted Bolted Helical Piles

ADVANTAGES

RAPID INSTALLATION
Compatibility with common equipment makes mobilization and installation fast & economical.

IMMEDIATE LOAD CAPABILITY
Eliminates the need for excess pore water pressures to dissipate or grout to harden with non-grouted piles.

MINIMAL SITE DISTURBANCE
Typical helical pile installation produces no soil cuttings. The jobsite is often cleaner and more optimized.

MORE LOCATIONS
Helical piles are often used in remote locations & tight workspaces because heavy equipment is not required.

LOWER NOISE LEVELS
Helical pile installations are quieter, making them ideal for projects in urban areas.

ENVIRONMENTALLY FRIENDLY
The minimal effect helical piles have on the terrain, environment and wildlife make for a more green project.

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TECHNICAL DETAILS

PILE SHAFT
- DIAMETER: 4.50", 5.50", 7", 7.625", 8.625", and up to 24"
- MATERIAL STRENGTH: 80ksi, 100ksi

PILE HELIX
- DIAMETER: 8”–30”
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- THICKNESS: 1/2”, 5/8”, 3/4”, 1”

PILE COUPLER
- DIAMETER: 4.50” - 24”
- HOLE DIAMETER: Custom sizes available dependent on design
- HOLE PLACEMENT: Custom positions as needed
NON-GROUTED
THREADED
HELICAL PILES

Made from high-yield steel to support the greatest loads, our bolt-on piles are the standard in the Foundation Construction industry. The pile designs are fully customizable, from the length and wall thickness to the helix flight and the bolt-hole configuration on the coupling end to ensure maximum compatibility with the most commonly used drive heads in the field.

APPLICATIONS

• Retaining Walls
• SOE Walls
• Geothermal
• Weak Soils

CUSTOM PILE DESIGN

Everything on our bolted piles is customizable in order to best match your foundation design. Our flexible approach allows you to get the right pile to match your needs on the jobsite.

DESIGN EXAMPLE WITH PILE CAP
Non-Grouted Threaded Helical Piles

ADVANTAGES

RAPID INSTALLATION
The threaded coupler design allows for rapid installation, reducing labor costs.

IMMEDIATE LOAD CAPABILITY
Helical piles can be loaded immediately after installation eliminating concrete cure-time or pore water dissipation.

GREATER COUPLING STRENGTH
A locking tapered thread design between pile sections provides couplers with superior strength.

MORE LOCATIONS
Helical piles are often used in remote locations & tight workspaces because heavy equipment is not required.

LOWER NOISE LEVELS
Helical pile installations are quiet, making them ideal for projects in urban areas.

ENVIRONMENTALLY FRIENDLY
The minimal effect helical piles have on the terrain, environment and wildlife make for a more green project.

TECHNICAL DETAILS

PILE SHAFT

<table>
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<th>DIAMETER</th>
<th>LENGTH</th>
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PILE HELIX

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PILE COUPLER

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LOAD CAPACITIES

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*LOAD CAPACITIES ARE DEPENDANT
GROUTED OR NON-GROUTED BUCKET HELICAL PILES

Helical-driven bucket piles utilize a hollow top steel casing which can be used to contain powerline poles and as a means to improve lateral capacities in weak soils for underground foundations. The advantage is that these piles provide an economic solution for transmission lines, utility poles and civil projects that require superior lateral loads. Protecting your log poles with bucket piles keeps them safe from environmental hazards and natural disasters.

CUSTOM PILE DESIGN

Everything on our bucket piles is customizable in order to best match your foundation project design. Our flexible approach allows you to get the right pile to match your equipment needs on the jobsite.

KEY FEATURES

- Extends life-span of powerlines & utility poles
- Dramatically increases lateral capacity of deep foundations
- Keep utilities running more reliably by allowing simpler installation

LOG POLE VS LOG POLE IN BUCKET PILE
Grouted or Non-Grouted Bucket Helical Piles

ADVANTAGES & APPLICATIONS

GREATER LOAD SUPPORT
Steel foundations provide excellent compression, lateral and axial load support in a variety of soils.

MORE LOCATIONS
Bucket piles are a perfect application for swampy, wet, unsupported soil conditions.

BOLTED OR THREADED
Bucket piles can utilize bolted or threaded connecting couplers to fit your application.

LOWER NOISE LEVELS
Bucket pile installations are quiet, making them ideal for projects in urban areas.

SIMPLER INSTALL
MPS offers install adapters to make installation of Bucket Piles easier and more efficient.

ENVIRONMENTALLY FRIENDLY
The minimal effect helical piles have on the terrain, environment and wildlife make for a more green project.

PILE SHAFT

| DIAMETER: | 4.50", 5.50", 7", 7.625", 8.625", and up to 24" |
| LENGTH:   | 5', 7.5', 10', 15', 20', 40' |
| MATERIAL STRENGTH: | 80ksi, 100ksi |

PILE HELIX

| DIAMETER: | 8"−30" |
| PITCH:   | 4"−21" |
| THICKNESS: | 1/2", 5/8", 3/4", 1" |

PILE COUPLER

| DIAMETER: | 4.50" - 24" |
| THREADS: | Threaded Tapered Pin & Box |
| INSTALL METHOD: | Using our Bucket Pile install adapter, common drive heads can install our Bucket Piles |

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Technical information subject to change
Composite pile configurations were designed to provide an alternative means to drilled shafts used in the transmission and distribution industries. Size ranges for these foundation systems run from 6ft. diameter up to 16ft. diameter and incorporate solid steel construction. These caps cover moment loads from 830 ft-kip to 18,438 ft-kip. For larger sizes of the composite foundation, we incorporate pile groupings and a concrete cap structure to cover moment loads from 19,000 ft-kip up to 30,000 ft-kip. The foundation’s construction allows for seamless installation of individual piles instead of trying to establish a single large-diameter drilled shaft. This system’s main benefits are encompassed around a weldless cap assembly that incorporates threading to post-tension the pile cap to the piling foundation.

CUSTOM PILE DESIGN

Everything on our Composite Pile Foundations are customizable in order to best match your foundation project design. Our flexible approach allows you to get the right foundation design to match your installation equipment on the jobsite, so you can use the tools you trust to get the results you need.
Drilled-Shaft Alternative Composite Pile Foundation

ADVANTAGES & APPLICATIONS

GREATER LOAD SUPPORT
Steel foundations provide excellent compression, lateral and axial load support.

LESS LABOR
Composite piles simplify process involvement to establish each foundation, reducing the required labor.

LIMITED ACCESS FRIENDLY
Works well in tight work areas or areas with overhead restrictions. No need for large-diameter piling equipment.

MORE LOCATIONS
Pile foundations can be installed in a wide variety of soil conditions, making them ideal for most projects.

SIMPLER INSTALL
Simple, systematic set of events that limit the time needed to make a foundation. Drilling holes is not required.

ENVIRONMENTALLY FRIENDLY
The minimal effect helical piles have on the terrain, environment and wildlife make for a more green project.

ALLOWSABLE MOVEMENT

<table>
<thead>
<tr>
<th>CAP</th>
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<th>ALLOWABLE MOVEMENT</th>
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TECHNICAL DETAILS
TRUSTED TRADITIONAL
PILE CAP
BARE OR STUDDED

Nelson Stud Pile Caps are easy to install by hand, taking little time and effort. As with all our products, MPS pile caps can be customized to accommodate any modifications to suit the needs of engineers or project designers, so you are guaranteed to have a complete deep foundation solution that is tailored to your unique specifications.

CUSTOM PILE CAP DESIGN

Our Nelson Stud Pile Caps finish off our helical piers using either a bolted coupler or threaded coupler. Each has their own advantages.

KEY FEATURES

- Easy to level
- Maintains full load potential of the pile
- Threaded caps screw directly into threaded piles
- True weldless approach
- Can be installed without heavy equipment
- No on-site surveyors required
- Small ground crews
- Locking screw on threaded cap ensures tight finish

PRECISION MANUFACTURED
HIGH QUALITY STEEL

CAP COMPONENTS
Each project is different so we work with your team to make custom foundation solutions tailored to your project. From the deepest underground soil layers to the point of contact with your structure above ground, we provide the most effective foundation designs on the market.

MacLean Power Systems provides a wide selection of piling components to create your complete foundation solution—a solution that is customized for you and delivered at a competitive price.
## DISPLACEMENT PILES

### GROUTED DISPLACEMENT PILE - 80 KSI YIELD STRENGTH STEEL

<table>
<thead>
<tr>
<th>PIPE O.D. (INCHES)</th>
<th>WALL THICKNESS (INCHES)</th>
<th>PIPE I.D. (INCHES)</th>
<th>STEEL AREA, $A_s$ (SQ. IN)</th>
<th>$F_y$ (KSI)</th>
<th>$F'c$ (KSI)</th>
<th>EQUIVALENT GROUT DIAMETER (INCHES)</th>
<th>INTERIOR GROUT AREA, $A_{inside}$ (SQ. IN)</th>
<th>EXTERIOR GROUT AREA, $A_{outside}$ (SQ. IN)</th>
<th>COMPOSITE ALLOWABLE COMPRESSION (KIPS)</th>
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<tbody>
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$$F_a = 0.6f_yA_s + 0.33f'cA_{inside} + 0.3f'cA_{outside}$$

### GROUTED DISPLACEMENT PILE - 110 KSI YIELD STRENGTH STEEL

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# HELICAL PILES

## Mechanical Properties

### HELICAL HIGH CAPACITY - 80 KSI YIELD STRENGTH STEEL

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<td>0.489</td>
<td>17.30</td>
<td>80</td>
<td>830</td>
<td>692</td>
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<tr>
<td>13.375</td>
<td>0.514</td>
<td>20.77</td>
<td>80</td>
<td>997</td>
<td>831</td>
</tr>
</tbody>
</table>

$F_y = 0.6f_y A_s$  
IBC Table 1810.3.2.6 Section 3 (helical piles)

### HELICAL HIGH CAPACITY - 110 KSI YIELD STRENGTH STEEL

<table>
<thead>
<tr>
<th>PIPE O.D. (INCHES)</th>
<th>WALL THICKNESS (INCHES)</th>
<th>STEEL AREA, $A_s$ (SQ. IN)</th>
<th>$F_y$ (KSI)</th>
<th>ALLOWABLE COMPRESSION (KIPS)</th>
<th>ALLOWABLE TENSION (KIPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5</td>
<td>0.29</td>
<td>3.84</td>
<td>110</td>
<td>253</td>
<td>211</td>
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<tr>
<td>5.5</td>
<td>0.416</td>
<td>6.64</td>
<td>110</td>
<td>439</td>
<td>365</td>
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<tr>
<td>7</td>
<td>0.408</td>
<td>8.45</td>
<td>110</td>
<td>558</td>
<td>465</td>
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<tr>
<td>7.625</td>
<td>0.5</td>
<td>11.19</td>
<td>110</td>
<td>739</td>
<td>688</td>
</tr>
<tr>
<td>8.625</td>
<td>0.5</td>
<td>12.76</td>
<td>110</td>
<td>842</td>
<td>702</td>
</tr>
<tr>
<td>9.625</td>
<td>0.545</td>
<td>15.55</td>
<td>110</td>
<td>1026</td>
<td>855</td>
</tr>
<tr>
<td>11.75</td>
<td>0.489</td>
<td>17.30</td>
<td>110</td>
<td>1142</td>
<td>951</td>
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<tr>
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<td>0.514</td>
<td>20.77</td>
<td>110</td>
<td>1371</td>
<td>1142</td>
</tr>
</tbody>
</table>

$F_y = 0.6f_y A_s$  
IBC Table 1810.3.2.6 Section 3 (helical piles)
Other Quality MacLean Products

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