

Helical Mini-pile & Screw Pipe Pile

HMP



Geologic Hazard Application

- Soft/Loose Soil
- Contaminated Soil
- Slope Stability

Depth Limit
100 ft (27 m)

Compatible Soils
Sand (SP, SM, SC)
Silt (ML, MH)
Clay (CL, CH)
Contaminated Soil
Undocumented Fill

Bearing Capacity Range
20 kips (89 kN)
to
200 kips (890 kN)

Key Advantages

Small equipment for tight access
Ideal for repair/retrofit
Minimal site impact
No spoils
No vibrations

Key Considerations

High material cost
Steel below water
Weld splice for SPP

Comparable To

Micro-piles
Soil-nails
Concrete piers
Driven piles

Overview

Helical Mini-pile (HMP) system is a high strength, manufactured steel, component pile with helix plates that are screwed into the ground to develop bearing and tension resistance for the support of light, medium, and heavy foundation loads. The HMP offers a well-defined, component steel pile with reliable support of foundation loads in soft soil. HMP construction produces low noise and no vibrations with virtually no spoil. An HMP is used in the same way as a pin-pile or micro-pile to support a structure load on soft and weak soil at a deeper more competent soil. The HMP obtains capacity at a deeper soil layer in bearing on the helix screw plates. HMP are sometimes used for temporary bracing of historic building walls or new construction tilt panels. The HMP can be installed with low headroom equipment, in tight access areas, and in new construction for foundation bearing and uplift forces. HMP are a versatile, cost effective, foundation pile for supporting foundations, bracing, and retrofit repair projects.

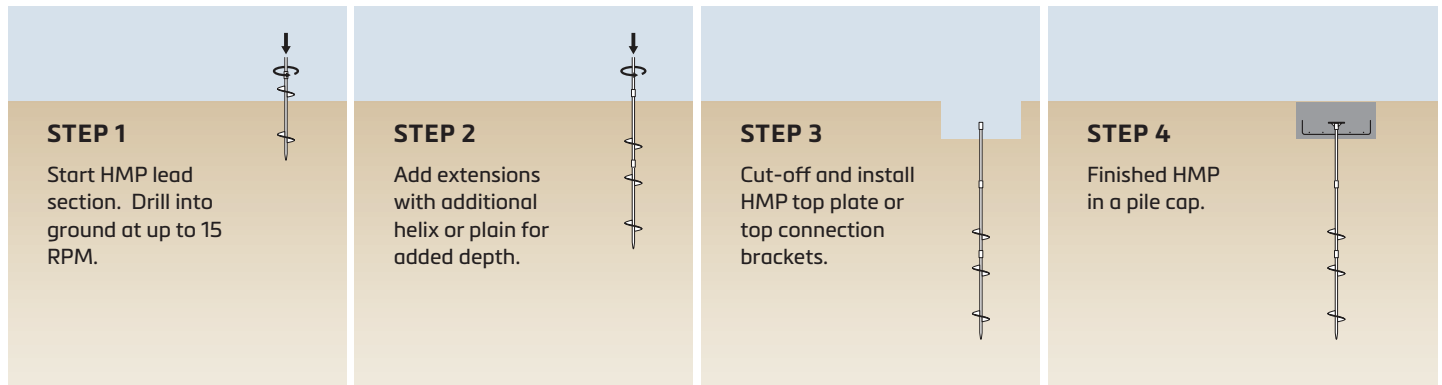
HMP Applications

HMP is commonly applied to new foundations seismic tension anchors, seismic retrofit, foundation underpinning, and wall tiebacks. The ideal applications for HMP occur at:

- 1) Tight access areas for bracing and anchors.
- 2) Seismic retrofit of existing buildings.
- 3) Sensitive project sites near critical structures.
- 4) Foundation upgrade and retrofit in contaminated soil.
- 5) Groundwater protection regions.



HMP 4-Step Construction Process



Technical Details

Helical Mini-pile system (HMP) offers fast, tight access, foundation support with nearly instant force resistance after installation. Each HMP consists of a lead section and one or more extension sections that are screwed into the ground by application of crowd and torsion. The HMP lead looks like a screw with single to multiple 6" to 14" (152 to 356mm) diameter helices. Each helix is formed to a clockwise downward spiral with all radial sections normal to the shaft's central axis $\pm 3^\circ$ and with a 3" (76mm) nominal pitch. HMP capacity is initially monitored by the installation torque when installed into soil. The torque resistance is a function of the soil type and size of helix components. HMP extension sections are added as the pier is further advanced into the ground. Once the design depth and installation torques are reached the HMP is cut off and a load bearing plate or new construction bracket is attached.

The HMP and bracket are used to support new foundations, upgrade old foundations, arrest settlement of foundations, and help lift a foundation (as the structure will allow) to adjust the level of building walls. Full-scale load tests are performed on most HMP projects to confirm design capacity and torque relationship to HMP bearing and uplift capacity.

Farrell uses excavators and compact track loaders that are equipped with a drill to install HMP. HMP are commonly installed to depths of 15 to 75 feet (4 to 23 m). The rig slowly screws the HMP into the ground at 15 rpm or less. The installation torque is monitored to determine the HMP capacity and to preserve HMP components. Depending on HMP components, installation torque can vary from 5,000 up to 50,000 ft-lbs (6.8 to 67.8 kN-m).

Helical Mini-pile HMP is a fast, versatile, shallow and deep foundation pile that supports your project to *Go Vertical with Confidence®*.

Testimonial



Baker Beach
 Rehabilitation Project
 San Francisco, CA

"Through it all, the Farrell crew were very professional in working with full time onsite inspectors, Presidio Trust Representatives and unknown conditions underground. The entire job went smoothly and finished two days ahead of schedule."

Deanna Bohler

Project Manager
 Tricorp Hearn Construction