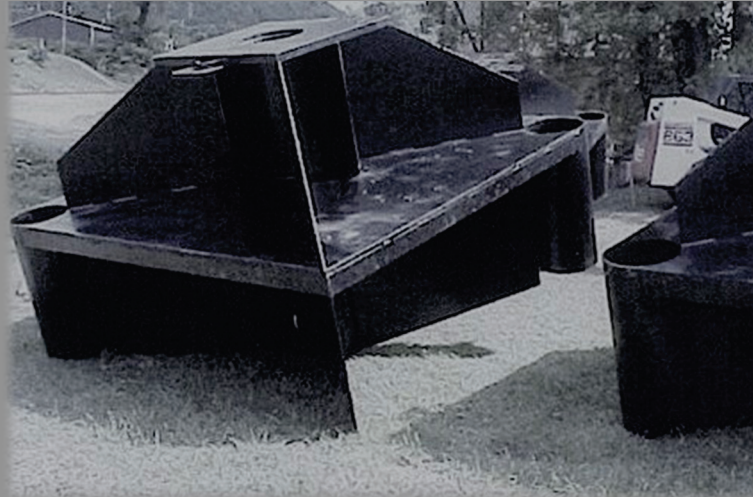
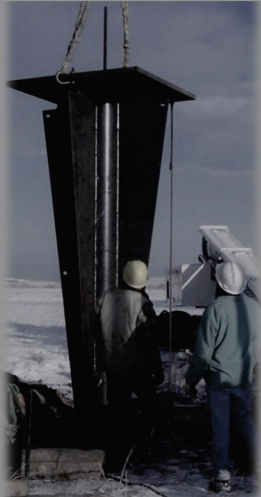




Markets

Serving Engineers, General Contractors, and Project Owners

Wherever you would use deep foundations, piles, pile alternatives, or large concrete pours, consider Structural Foundations first. Structural Foundations is a licensed general contractor that engineers and hydraulically installs high-capacity steel foundations for buildings, industrial structures, and other large applications, saving substantial cost and time.

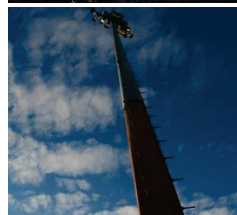
Cost savings of 25% to 50% is common

Over 800 installations across the U.S.

30+ years of field performance

P.E. stamped for the jurisdiction of installation

Available as a general contractor or subcontractor in most states and localities



Buildings

Residential, Commercial, and Prefabricated Buildings

Industrial Facilities

Storage Tanks, Conveyors, Transfer Towers, Equipment Platforms

Lighting Structures

Highway and Athletic Field Lighting

Towers & Columns

Signal Towers, Electric Transmission & Substations, Wind Turbines, Billboards, Signs

Wall Structures

Retaining Walls, Flood Walls

The High-Capacity Foundation System



Structural Foundations are customized for each application and consist of a steel pipe having welded steel fins and a steel top cap. Foundations that primarily resist moment and sliding forces have wide fins, while foundations that primarily provide bearing capacity have tapered fins. Foundations are fabricated in the U.S. by AWS-certified welders using domestic steel and hot-dip galvanized when specified. For high-uplift applications, foundations are mated with our hydraulically-installed anchor systems.

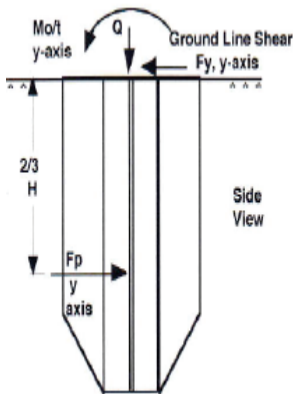
High Capacity!

Individual Structural Foundations have achieved the following impressive capacities:

600+ kips bearing capacity in moderate – strength soils
 300+ kips bearing capacity in very poor soils
 1,000+ ft.-kips overturning moment capacity in poor soils

Designed and installed to most economically suit your application and soil conditions, Structural Foundations can be sized for bearing capacities of as little as 20 kips to over 600 kips.

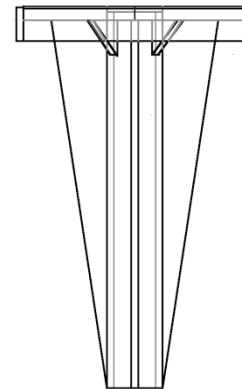
Moment Foundations



For high moment and sliding forces, the wide fins of our moment foundations multiply moment resistance per foot of depth, providing superior economics and performance.



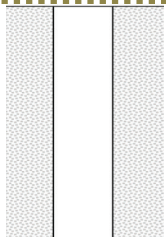
Bearing Foundations



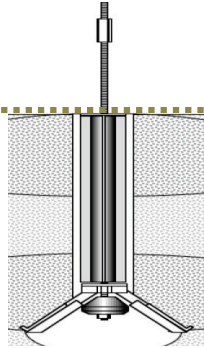
For high-capacity applications and especially those in poor soils, our bearing foundations achieve the highest capacities at the shallowest foundation depths, providing the most economical solution.

Rapid Installation

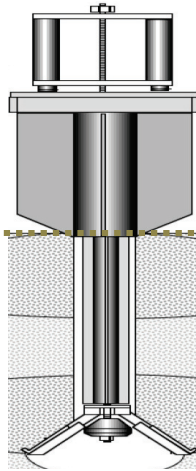
Ground Level



Step 1: Small-diameter hole drilled.

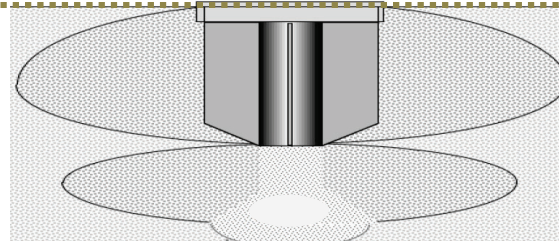


Step 2: Anchor inserted, hydraulically actuated, and soils pre-stressed.



Step 3: Steel foundation hydraulically installed using anchor rod.

Just weld or bolt your structure to, or pour concrete over, the installed foundation!



Step 4: Anchor removed (or kept in place for high-u/lift applications). Hydraulics removed. Voids filled with the excavated material. Steel foundation secure and ready to be built upon.

Installation Time

After drilling, most foundations require only mere minutes up to an hour.

Equipment

Equipment with a drilling attachment or a small drilling rig+ Front-end loader or small crane to lift foundations + Compact hydraulic system.

Disposal

None! Spoils from drilling are minimal and most can be returned to the pipe of the foundation or easily and thinly spread in the vicinity.

Vibration

None from foundation installation! Minimal vibration from drilling.



Cost savings of 25% to 50% is common.

Example 1: Low-Rise Hotel Foundation

Three-story steel frame. Ultimate column loads = 140 kips. Poor soils at surface and to 10 ft. below ground surface, improving modestly at greater depth.

Original Specification

H-Piles \$375,000

Structural Foundations

\$220,000

Savings

\$155,000 41.3%

Example 2: Residential Foundation

Two-story wood frame building with approximately 5,500 sq. ft. footprint, having full basement and garage footing walls. Poor soils at surface, improving to moderately poor at 8 to 10 ft. below ground surface.

Original Specification

Helical Piers \$234,000

Structural Foundations

\$137,500

Savings

\$96,500 41.2%

Example 3: Retaining Wall

112 ft. long retaining wall of 12 ft. average height (1,344 sq. ft.) and 16 ft. at highest. Surcharge from large masonry patio. Moderate-strength soils with weathered sandstone starting at 5 to 7 ft. below ground surface.

Original Specification

Auger-Cast
Caissons \$215,040

Structural Foundations

\$147,840

Savings

\$67,200 31.3%



Hundreds of Kips... Installed the Same Day

Structural Foundations has performed projects requiring the installation of over 100 foundations, completed in days, not months. We have also installed single foundations with bearing capacities exceeding 600 kips in one day, not weeks. All of our installed foundations were immediately ready to build upon.

Time Savings

- Save 7 to 28 days
- No cure time
- Same-day installation
- Year-round installation

Don't wait until next spring!

Structural Foundations are entirely prefabricated and can be installed and built upon the same day, regardless of the ambient and ground temperatures (including frost). Installation time ranges from mere minutes to an hour, depending upon foundation size.

As set forth by the American Concrete Institute (ACI) Committee 301, minimum time for concrete curing corresponds to 70% of its specified compressive strength. In common practice, this usually is seven days' cure time for small-volume concrete installations and 14 to 28 days' cure time for large-volume installations. That's seven or more days until concrete achieves sufficient strength to be built upon.

Structural Foundations accelerates the construction schedule, saving project costs, and yielding earlier use / revenue for project owners.

Earlier project completion = Earlier use / revenue.



Moment foundation installed in under 30 minutes and ready for immediate construction. Wind turbine installation in Jackson, Michigan.



Versatile Installation

- Installs in poor soils and rock
- Few equipment needs
- Well suited to both remote and urban areas
- No disposal necessary for excavated materials

Geotechnical conditions pose little challenge to the installation of Structural Foundations. Structural Foundations consolidate and compact soils, improving their load bearing, and the method of installation accurately measures soils' minimum bearing capacities. In contrast, traditional foundation systems are designed to utilize existing strengths of soils, and where soils are deficient, require uneconomical soils remediation in installation or larger safety factors in design. As well, inconsistencies in soil conditions across an installation site challenge the performance of traditional foundation design. Structural Foundations can be installed in soils where traditional concrete and / or pile systems are impractical or highly uneconomical.

Equipment requirements for installation aren't intensive. Most sizes of Structural Foundations can be installed quickly and capably with a small crane and a compact hydraulic system. Structural Foundations can be equally valuable to projects in remote areas with rugged terrain as in densely populated cities where jobsite space is scarce. An added benefit of Structural Foundations is minimal excavation requirements, with all excavated materials returned to the foundation system during installation.

Install virtually anywhere.



Structural Foundations installation for a cellular phone signal tower. Located atop Pea Ridge in the Appalachian Mountains, near Charleston, West Virginia.

Verified Bearing

- Verified bearing capacity established before use
- Settling and creep virtually eliminated
- Small or large applications, with bearing capacities from 1 ton to 300+ tons

In installation, the bearing capacity of Structural Foundations is measured and verified. Impressive bearing capacities exceeding 300 tons (600 kips) per foundation have been achieved. A geotechnical investigation is prepared before foundation engineering begins, identifying soil strata and types.

Structural Foundations are hydraulically installed. This supplies an accurately applied and known force throughout the installation, including foundation and soils in its zone of influence. The installing force is applied in either a stress or strain controlled manner as dictated by soil conditions. This process directly pre-stresses and pre-tests the strength of the surrounding soils and the system's overall ability to meet and exceed the loads specified.

The Structural Foundations system and method of installation consolidates or compacts soils and combinations of soils and rock. This is accomplished by any combination of (1) applied bearing forces that develop and / or utilize the soils' bearing capacity, and (2) frictional forces that enact, develop, and / or utilize the passive lateral strengths of soils. This virtually eliminates settling and creep of the structure at loading equal to or less than the applied installing load.

Structural integrity.



Bearing capacity is precisely calculated upon the hydraulic system's pressure gauge reading and hydraulic cylinder specifications.





Maintenance-Free

- 100+ year durability
- Galvanized coating for superior corrosion resistance
- 30+ years of field performance data

Fabricated from high-strength structural steel and galvanized in accordance with ASTM A123 / A123M standards, Structural Foundations can achieve a maintenance-free lifetime of 100+ years. These are robust materials with known durability and properties, providing superior corrosion resistance both beneath and above ground. Galvanized coatings are ubiquitous on construction materials and hardware having steel substrates. With installations since 1986, not one Structural Foundations product has required maintenance.

Structural Foundations have been installed in high-moisture, high-erosion areas without any observed or measurable degradation in structural integrity. Our galvanized foundations have been installed for multiple riparian flood walls, where submersion in water is common.

Lifetime reliability and low costs.



Galvanized foundation for a 120-foot tall road lighting tower in Charleston, West Virginia.



Removal of Structural Foundations begins either with a front-end loader to lift the foundation, or for especially large foundations, with our anchors, which provide hydraulic lifting in the reverse manner as in installation.

Removable and Reusable

- Can be removed and installed over and over again
- Quick removal
- Minimal infill of soils necessary
- Portable, one-piece integral design
- Desirable in jurisdictions requiring environmental restoration and reclamation

With minimal site disruption, installations of Structural Foundations can be removed and reused. This can be particularly beneficial for industrial uses that include conveyors and transfer towers in the mineral, logistics, and manufacturing industries. Quick removal, often ranging from five minutes to under one hour depending upon size, is accomplished with a similar hydraulic process as in installation. Structural Foundations can be reused again and again as uses and locations change. One-piece integral design provides portability and ease in re-installation. Where removed, only minimal infilling of soils is necessary. Structural Foundations may be particularly attractive for installation in jurisdictions that regulate environmental restoration and reclamation. With Structural Foundations, you pay once for a foundation that could have many uses and installation locations.



Suited for permanent and temporary uses.



Environmentally compatible

- Ideal for sensitive environments
- Minimal site disruption
- Lower carbon footprint than concrete foundations

Sensitive environments, where site disruption and major excavation compromise fragile ecosystems, watersheds, and compliance with regulation, may especially benefit from Structural Foundations. Site disruption and deformation of ground cover is minimal.

The minimal heavy equipment needs for Structural Foundations installation reduces soil compaction and damage to vegetation. Installations can be accomplished within the immediate vicinity of buildings, trees, and utilities. Most overhead obstructions from vegetation do not require removal.

Made of steel, Structural Foundations have a smaller carbon footprint than concrete foundations designed for similar bearing capacity.

Stewardship of natural resources.



Validated Performance

- Third-party validated performance
- Withstood 100% of design loads

The National Wind Technology Center (NWTC), a department of the National Renewable Energy Laboratory (NREL), conducted a Cooperative Research and Development Agreement (CRADA) on our custom foundation installation for a 50kW wind turbine in Colorado. The CRADA was prepared by Dave Corbus and Jason Cotrell, and released May 17, 2004. It also evaluated the viability of our installation for large and small wind turbines. Significantly:

"[The] bearing foundation is unique among wind turbine foundations in that the foundation strength is proven during the installation process as the hydraulically applied installing load is the same as the uplift and bearing capacities. Another unique feature of the foundation is the ability to increase the natural bearing capacity of the soil, the installation test was designed to show the system's ability to greatly increase this bearing capacity within the load bearing zone of influence."

"The confined compressive strength of the soil was increased 3.4 times during installation of the foundation."

"Further testing would not be required, as the bearing foundation system exceeded all of the design requirements. It is recommended that the bearing foundation system be considered for use in appropriate wind turbine applications."



Confidence.

BUILD ON IT TODAY.™ ➤

- Over 800 installations across the United States.
- First installation completed in 1986.
- Over 30 years of field performance.
- Professional Engineer (P.E.) stamped foundation designs.
- Foundations and anchors fabricated in the U.S. by American Welding Society (AWS) certified welders using domestic steel.
- Seven issued U.S. patents, multiple issued foreign patents, and additional patents pending.
- Foundation engineering and installation performed for these notable clients and end-users:

FirstEnergy Corporation
nTelos (now Sprint Corporation)
U.S. Department of Energy
Federal Emergency Management Agency (FEMA)
West Virginia Department of Transportation
Marietta College (Marietta, Ohio)





BUILD ON IT TODAY.TM 

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Licensed General Contractor # WV056746

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Construction Office Located in Vienna, WV

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