Strength squared
Our highest capacity helical foundation system ever.
Success stories: multiple-story buildings solidly stabilized using the CHPP™ foundation system

New foundations in unstable soil
Fairfield Resort—New Orleans, LA
Fairfield Resort renovated a six-story building next to the French Quarter and extended to nine-story and demolished an adjacent six-story building, retained its masonry façade and built a nine-story building. The total footprint area was 18,000 sq-ft.

The soil borings indicated a four to five blow count soil, high water table and a six-foot dense sand layer at a depth of fifty three feet. The CHPP™ was selected because of low overhead clearance and without damaging vibration from conventional piles. The CHPP was installed and tested to 140 KIPS to prove out the application. A total of 268 piles were required with an ultimate load requirement of 100 KIPS per pile and were installed to a torque of 20,000 ft-lbs. The entire building was supported on the CHPP at the completion of the project.

Building from the inside out
Reagan Ranch Center—Santa Barbara, CA
The 1907 Neal Hotel in Santa Barbara was chosen as the location for the Reagan Ranch Center, an educational center and public museum commemorating Ronald Reagan’s Western White House, Rancho Del Cielo.

The goal was to construct a new four-story building inside the older existing shell, along with a fourth-floor roof top structure, with a new foundation that would support both, plus resist seismic tremors.

Soil borings discovered several stratas of compressible clay and a high water table. There was also low overhead clearance inside the building, the façade had to be protected during construction. The required ultimate load capacity was 110 KIPS.

A total of 104 piles were installed to a depth of 30 feet. A backhoe fitted with a hydraulic torque motor installed the CHPPs™ quickly and simply. The piles withstood up to 20,000 ft-lbs of torque, and were filled with 4,000 psi concrete rather than higher-cost grout. The vibration-free installation also protected the exterior façade.
A radically innovative helical foundation system—the Composite Helical Pipe Pile (CHPP)™

MacLean-Dixie’s highest load capacity pile

Large structures built on unsuitable sites and soils often require foundation systems with higher load capacities. MacLean-Dixie’s innovative Composite Helical Pipe Pile (CHPP)™ foundation system is engineered to develop loads to 250 KIPS. The CHPP’s unique design develops compression load both from bearing on the helices as well as friction on the outer walls of the pipe.

A patented design that withstands maximum torque

The typical CHPP™ consists of a lead section with helices on an RCS or round shaft to advance the CHPP™ to the required depth. A transition unit couples the lead to the eight-inch diameter pipe segment. Using a patented process, MacLean-Dixie cold forms the ends of the eight-inch diameter pipe into mating square sections, which bolt together. Installing torque is transferred through the square socket section—not through bolts, which maximizes pile capacity and eliminates shear load on the bolts.

Hollow pipes allow for strength reinforcement

For additional strength up to 250 KIPS, the pipe piles can be filled with concrete or grout. Threaded rebar can also be added for additional tension capacity. The enclosed pile system permits a visual inspection of the installed pipe interior for a precision-controlled addition of reinforcing materials.

Why CHPP™ is the preferred alternative to driven and auger cast piles

- No installation vibration and low noise levels
- No spoils (no soil removal to dispose of)
- Compression up to 250 KIPS
- Vertical and lateral load capabilities
- Installs at any angle
- Friction and end bearing load
- Environmentally friendly
- Installs easily in limited-access sites
- For new construction or foundation repair
- Commercial and residential applications
- Application in seismic prone areas
- Installed to any depth
- Engineered to specific site conditions, soil information and anticipated loads up to 250 KIPS
- Galvanized or non-galvanized
- Lower equipment mobilization costs

Typical 8” Composite Helical Pipe Pile

Cold-formed, square-shaped ends

The cold-formed, square-shaped ends of each pipe section form a male-to-female, socket-type coupling that works as a mechanical engagement system to apply torque to the pipe pile sections. Other round helical pipe piles rely on thick-walled pipe with connecting thru bolts as the means to apply torque, which are in shear as installing torque is transmitted through them.

Recessed connecting bolt heads

The CHPP’s™ square ends allow four connecting bolts to be recessed within the radius of the pipe’s outer walls.

Hollow interior pipes

The hollow 8” I.D. pipe piles allow for adding threaded rebar for additional strengthening with low-cost concrete.

10” or larger helices

Helices with 3/8” or 1/2” thickness and 10” or larger diameter are welded to the 8” diameter pipe shaft extensions as needed.

CHPP™ Transition Unit

A tapered transition progressively displaces soil from the lead section to the 8” pipe pile O.D. The soil compressed onto the pipe provides friction. The transition also prevents soil from entering the pipe pile during installation for an unobstructed view for inspection and for filling with an exact and controlled volume of concrete.

RCS square shaft multi-helix anchor

Helical anchor lead and extensions can be attached to the CHPP™ Transition Unit depending on application requirements. A tranverse hole permits connection to the extension section with a bolt and nut.
MacLean-Dixie. 
Built on a solid foundation.

MacLean-Dixie is part of MacLean-Fogg, a diversified international manufacturing enterprise with more than half a billion dollars in sales. A result of the acquisition and merger of Joslyn and Dixie, two prominent soil anchor manufacturers, MacLean-Dixie is now one of the leading suppliers of steel deep foundation systems for use in residential, commercial and marine applications. Our comprehensive product line for residential and commercial applications includes engineered solutions for tension, compression and structural stabilization in many different soils.

Quality that is second to none.
Why do installers and engineers across the nation choose MacLean-Dixie products time and time again? Perhaps it is because our impeccable quality standards and rigorous testing procedures ensure that our products are second to none.

Every welder certified under AWS D1.1.
Our standards are just as high with our employees as they are with our products.

Materials are traceable to the steel mill.
We can trace every lot of steel back to the original mill that produced it. So we know that the chemistry, plus physical and dimensional properties are in accordance to our stringent standards.

State-of-the-art fabrication.
With one of the largest manufacturing facilities in the industry, we’re equipped to turn products around faster, more efficiently and more cost effectively.

Visit www.MacLeanDixie.com for more information and technical specifications.

Notes:
Pipe material: 8” pipe with 0.188” wall thickness (8.625” O.D.). ASTM A53 and ASTM A500, grade B, minimum yield strength 50 KSI.
Coupling: Male/female sockets cold formed.
Helix material: High strength low alloy ASTM A1011 HSLA55 steel (3/8” or 1/2” thick material) with 55 KSI min. yield.
Coupling bolts: (4) 3/4” diameter x 1-1/2” long hex head per ASTM A354 grade BD and 3/4” grade 8 hex nuts per ASTM A563.
Axial capacity: Ultimate axial capacity up to 250 KIPS when filled (100 KIPS, hollow pile).
Welding: Welders certified under Section 5 of the AWS Code D1.1.
Galvanizing: Standard CHPP™ is black. Add suffix “G” for hot dip galvanized conforming to ASTM A153.
Combo pile: Assorted Round Corner Square Shaft (RCS) and pipe piles are available.
Transition unit: Use standard MacLean-Dixie leads.

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