GEOPIER®

INTERMEDIATE FOUNDATION® SOLUTIONS

GEOPIER IS GROUND IMPROVEMENT®

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GEOTEHNIC

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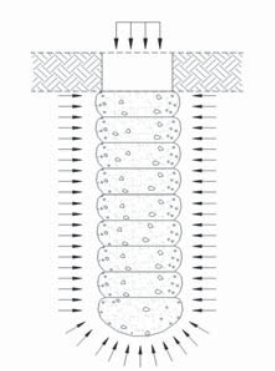
GEOPIER RAP SYSTEM
SOLUTONS

Today's building sites are often challenged by variable and complex soil conditions that require improvement. Geotechnical engineers (like the ones working at Geopier) search for cost-effective, reliable solutions to those problems. Historically, deep foundations and over-excavation were used to improve poor soils, or "bad ground." In 1989, Geopier Foundation Company developed its first system to serve as an alternative to deep foundations and over-excavation. The Rammed Aggregate Pier® (RAP) system provided an efficient and cost-effective Intermediate Foundation® solution for the support of structures.

Thousands of structures worldwide are supported by Rammed Aggregate Pier technologies – GP3®, Impact®, Rampact®, and X1® systems. Geopier Systems are used to reinforce good to poor soils, including soft to stiff clay and silt; loose to dense sand; organic silt and peat; variable, uncontrolled fill; and soils below the ground water table. They are engineered, designed and installed exclusively by representatives of Geopier.

Our patented RAP technologies are constructed by applying direct vertical ramming energy to densely compact successive thin lifts of high quality crushed rock to form high stiffness engineered elements. The vertical ramming action also increases the lateral stress and improves the soils surrounding the cavity, which results in foundation settlement control and greater bearing pressures for design. Depending on site requirements, RAP systems can be installed using replacement or displacement methods.



Watch system installation videos at www.geopier.com

GEOPIER SYSTEMS

- GP3
- Impact
- Rampact
- X1
- Armorpact
- GeoConcrete Columns
- Densipact
- SRT

APPLICATIONS

- Foundations
- Floor Slabs
- Liquefaction Mitigation
- Industrial Facilities
- Storage Tanks
- MSE Walls & Embankment Support
- Slope Stabilization
- Uplift
- Wind Turbines

GEOPIER RIGID INCLUSION
SYSTEMS

Through continued research and development, Geopier expanded its system capabilities to ensure high performance and reliability while providing value compared to deep foundation alternatives. Geopier's design-build engineering support and site-specific modulus testing, combined with the experience of providing settlement control for thousands of projects, provide an unmatched level of reinforcement and reliability for virtually any soil type and groundwater condition across many applications.

Geopier Rigid Inclusion systems are high stiffness elements constructed of cement treated aggregate, grouted aggregate, or plain concrete and are used to transfer loads through weak soils, such as soft clays and organics, down to a suitable bearing stratum. Geopier Rigid Inclusion systems include Armorpact®, GeoConcrete® Columns and the Grouted Impact® system. Each of these ground improvement systems provide additional Intermediate Foundation® solutions that are cost-effective, reliable engineered foundation systems to meet your everyday geotechnical challenges.

GEOPIER GP3 SYSTEM

The original Geopier® system was developed in 1989 as an efficient and cost-effective Intermediate Foundation solution for the support of settlement sensitive structures. Today, the patented Geopier GP3® system uses replacement (drilled) Rammed Aggregate Pier (RAP) elements to reinforce good to poor soils, including soft to stiff clay and silt, loose to dense sand, organic silt and peat, and variable, uncontrolled fill. Like the original Geopier system, the GP3 system allows for visible inspection of the spoils, and the opportunity to address changing ground conditions as they happen. However, advances in the process provide even greater efficiency and economy than the original system. GP3 is an effective alternative for massive over-excavation and replacement or deep foundations, including driven piles, drilled shafts or auger cast-in-place piles.

KEY PROJECTS

- Medical Center of Southeast Texas
- Carroll Wind Farm, IA
- Castle Oil Bulk Diesel Storage, NY
- Big River Resources Ethanol Plant, MO
- Amtrak Platform, RI
- Sienna Parkway MSE Wall, TX
- Marquee Condominiums, CA

“Would I consider a Geopier system in the future? Absolutely!”

- Jerry Perry, General Contractor, office space in Florida

RAMMED AGGREGATE PIER SYSTEMS

GEOPIER IMPACT SYSTEM

The Geopier Impact® system uses a patented displacement mandrel to reinforce good to poor soils, including loose sand, soft silt and clay, mixed soil layers, uncontrolled fill, contaminated soils and soils below the groundwater table. The displacement process allows for installation with no spoils and eliminates the need for casing. Its performance and cost-effectiveness make it the ideal solution for soils that are subject to caving. *Grout may also be added to create a rigid inclusion.

> *"We were looking for speed and predictable cost, and we found that with Geopier technology."*
>
> *– Jeff Garrett, Regional Project Manager, Apartments in Georgia*

> *"The Impact system doesn't generate spoils, so there are fewer equipment and transportation needs, which also provides a cost benefit."*
>
> *– Ken Lightbody, Project Manager, Student housing complex in Maryland*

KEY PROJECTS

- Bogazici Shipyard, Turkey
- KIA Auto Manufacturing Facility, GA
- Kinder Morgan Liquid Tanks, TX
- Purzien Wind Park, Germany
- BMW Dealership, UT
- Large Power Plant, MD

RAMMED AGGREGATE PIER SYSTEMS

GEOPIER RAMPACT SYSTEM

The Geopier Rampact® system is recommended for installation in soils subject to caving because construction is facilitated using a patented tapered displacement mandrel, eliminating casing risks and increasing installation productivity. The Rampact system provides unsurpassed strength, stiffness and superior levels of performance for foundation settlement control and support that can replace massive over-excavation and replacement and deep foundations, including driven piles, drilled shafts or augered cast-in-place piles.

KEY PROJECTS

- Ethonal Plant, NE
- Costco, IL
- Midland Battery Plant, MI

GEOPIER X1 SYSTEM

The Geopier X1® system is a combination of both replacement and displacement methods, which allows for construction flexibility and the ability to build through caving zones that are encountered during drilling operations. Like the original Geopier systems, the X1 systems drilling operation allows for visual inspection of the hole and the opportunity to address changing ground conditions as they happen. Its performance, flexibility, and cost-effective qualities make it the ideal solution for reinforcing a variety of different soil types.

KEY PROJECTS

- Refrigerated Distribution Center, TN
- Whole Foods, AR
- Mantador Grain Storage Bin, ND

“By using Geopier technology, we were able to create good soils out of bad soils.”

- Kent Megorden, Project Manager, Three-level parking deck in Georgia

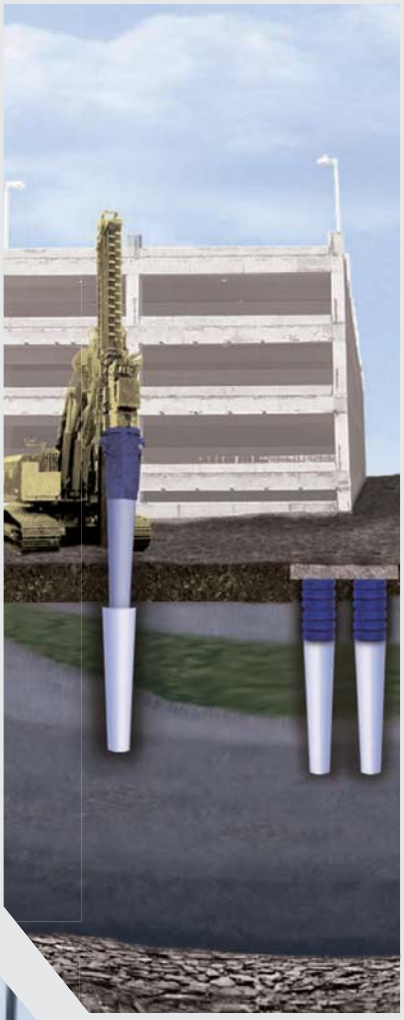
RIGID INCLUSION
SYSTEMS

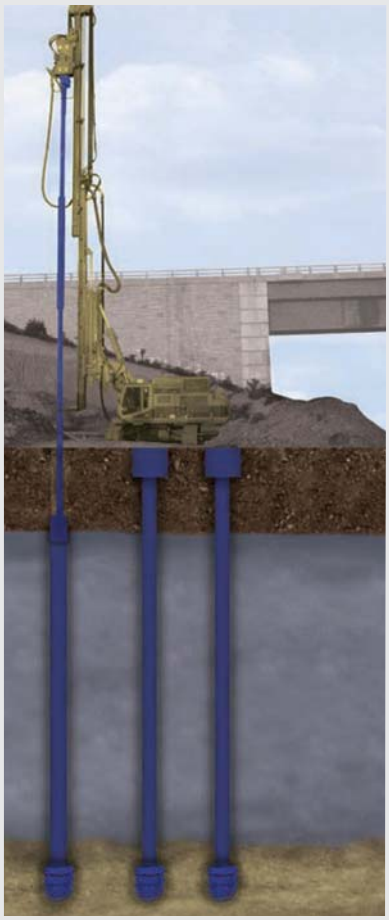
GEOPIER ARMORPACT SYSTEM

The Geopier Armorpact® system is an ideal solution for supporting buildings and structures in soft clay and organic soils. Construction begins by driving a patented Armorpact sleeve to the design depth. Aggregate is placed within the confining sleeve and compacted with the mandrel. Applied loads are supported by the densely compacted aggregate that is laterally confined by the sleeve. The system provides greater economy for settlement control in soft, compressible soils.

KEY PROJECTS

- CarMax Auto Superstore, SC
- Automated Freezer Warehouse, IA
- Elven Sted Apartment Buildings, WI





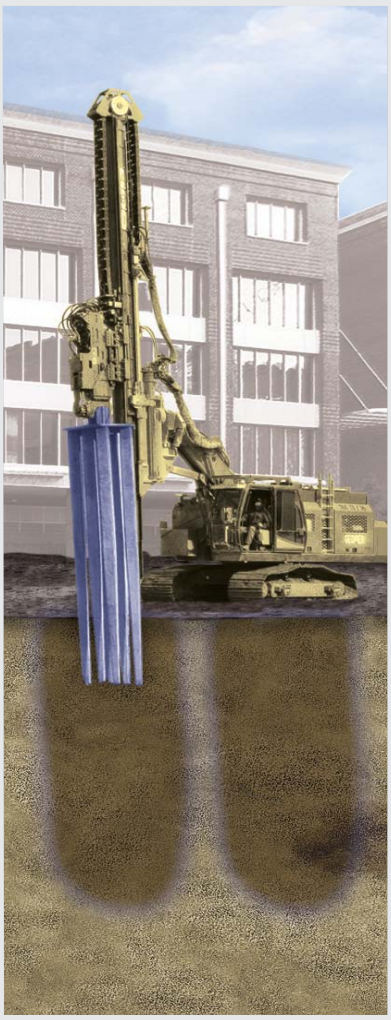
GEOPIER GEOCONCRETE COLUMNS

Geopier GeoConcrete® Columns (GCC's) provide a unique solution to support heavy applied loads and control settlement at sites with weak and compressible cohesive and organic soils overlying dense soils or rock. The system provides this reinforcement by installing high modulus elements into the low modulus soil to control settlements. GeoConcrete Columns are an effective replacement for deep foundations including driven piles, drilled shafts or augercast-in-place piles.

KEY PROJECTS

- 11th Street Bridges, Washington, D.C.
- South Dundas Wind Project, Ontario
- College Avenue Project, CT

"Geopier performed their critical path soil improvement work in less than three weeks, ensuring that the 16-month construction schedule would be completed on time." - *Glenn Hofer, Project Executive, Apartment building in Minnesota*



GEOPIER DENSIPACT SYSTEM

The Geopier Densipact® system improves loose granular soils to depths of up to 25 ft. by creating Rammed Compaction® zones with greatly improved relative densities. The patented Densipact system is a cost-effective method for improving loose to medium dense granular soils (SP, SP-SM, SM) where an increase in relative density is needed for static and/or post-liquefaction settlement reduction.

KEY PROJECTS

- Rochling Auto Plant, OH
- Clarksville Grain Bin, IA
- Park Summit Apartments, MN

GEOPIER SRT SYSTEM

The Geopier SRT® system allows for the stabilization of new slopes and active slides up to 15 feet thick. The patented system is comprised of Plate Pile™ elements, that are rapidly driven through unstable soil into a competent layer in a staggered spacing based on slope grades and soil properties to form a series of horizontal barriers. The Plate Pile elements transmit slide forces to the underlying stable soil to resist lateral movements and increase the factor of safety against instability. Designed to stabilize slopes where the soil conditions consist of an upper zone of weathered, loose, soft or disturbed soil over a stable zone of soil or soft rock. Plate Pile installations are fast and allow for immediate stabilization without the need for massive earthwork and site disruption.

KEY PROJECTS

- VDOT HOT Lanes Slope Reinforcement, VA
- New Madrid Power Plant, MO
- Pleasant Hill Slide Repair, CA

“Small, mobile equipment allowed for work to be performed directly on the slope with no interruption of regular traffic patterns.” – CE News, August 2013

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