

FOUNDATION REPAIR SOLUTIONS

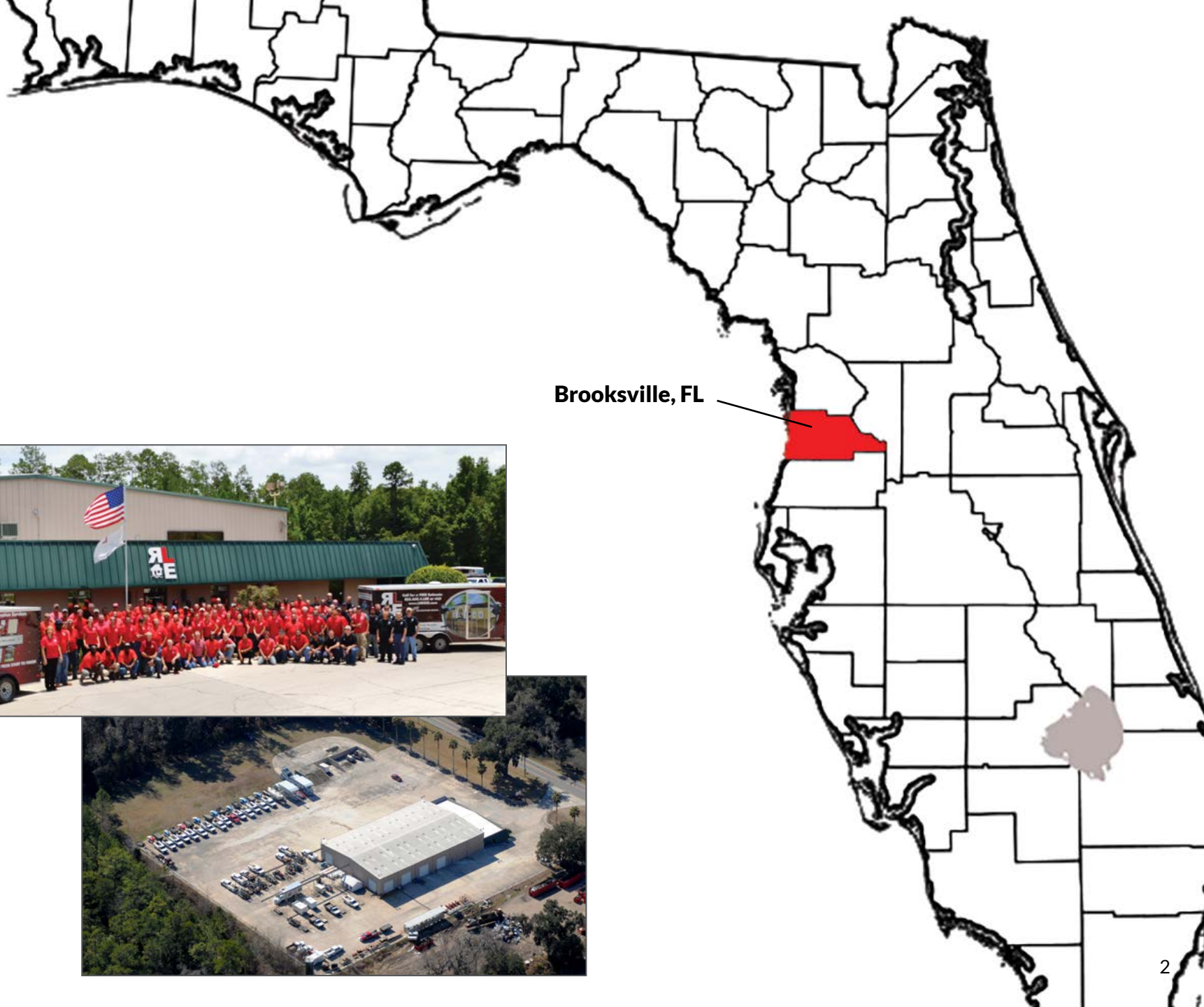
ABOUT L.R.E. GROUND SERVICES



L.R.E. Ground Services, Inc. was formed by Raymond and Susan Woolever in 1989. The company originally formed in Brooksville, FL as Lar-Rays Excavating, Inc. Three years later, it expanded its services to repair foundations and perform pre-construction work, which led to the company name change. What started as a company of three has since grown into a team of over 130 full-time team members, making L.R.E. Ground Services, Inc. the largest privately owned foundation contractor in Florida.

With over a quarter century worth of experience to lean on, sophisticated equipment and 5,500-plus projects successfully completed, L.R.E. is Florida's trusted choice for foundation repair projects.

L.R.E. is the industry leader in foundation repair for commercial properties, roads and anywhere there is a foundation concern or sinkhole condition. Since '89, our proven formula for success includes delivering superior customer service through dedication, hard work, expertise, strong safety guidelines, operating efficiency ... and teamwork!



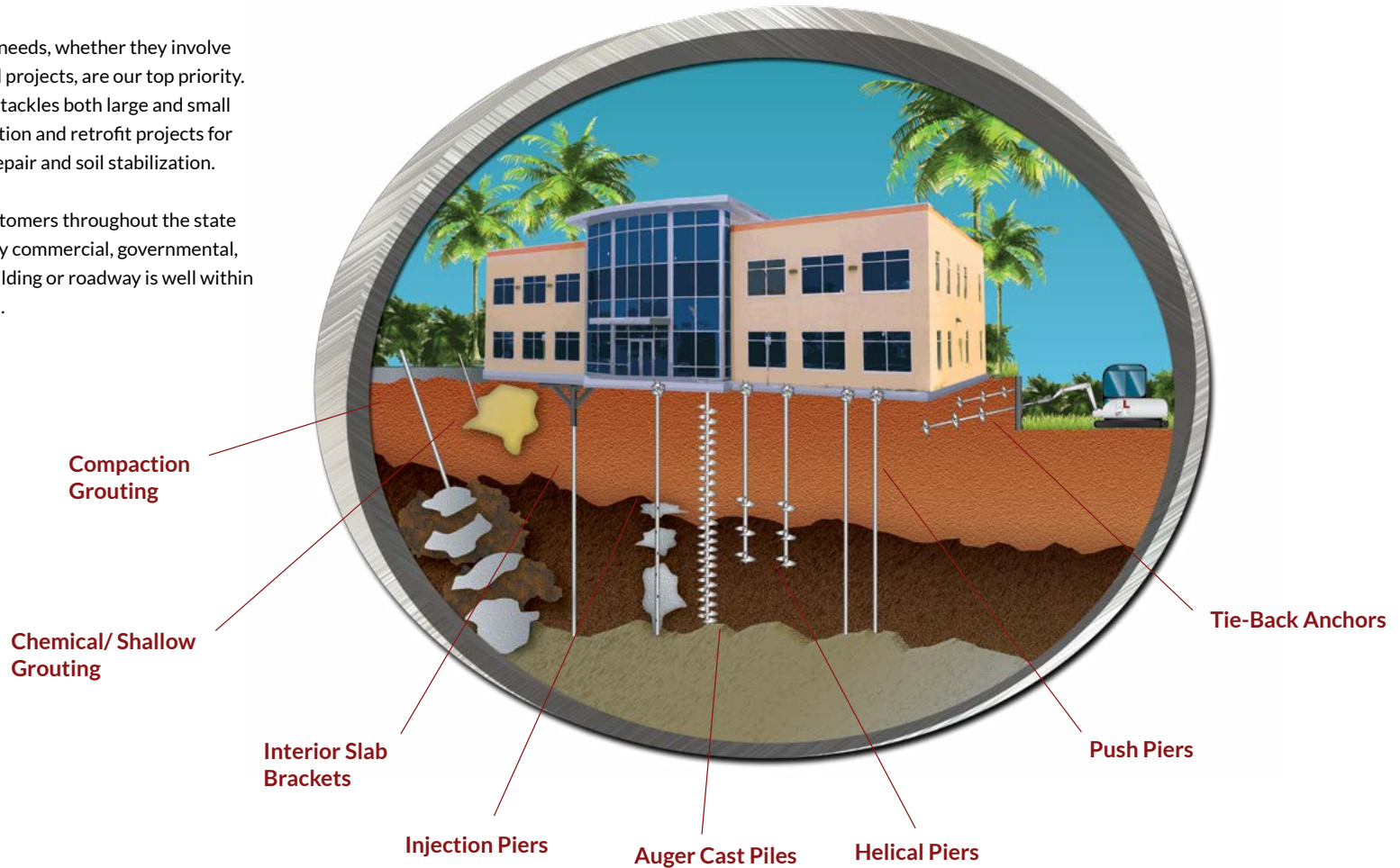
Brooksville, FL



FOUNDATION SOLUTIONS

Your project needs, whether they involve large or small projects, are our top priority. In fact, L.R.E. tackles both large and small pre-construction and retrofit projects for foundation repair and soil stabilization.

Servicing customers throughout the state of Florida, any commercial, governmental, municipal building or roadway is well within our expertise.



FOUNDATION SOLUTIONS

Helical Piers

There are many advantages to retrofit and pre-construction helical piers. Helicals can be installed year-round and are manufactured with a round shaft that has a high resistance to bending. Helicals are also a great below-grade solution; they won't be visible after installation. One of the biggest benefits of helicals is that they can be installed in limited or tight access, as well as areas with noise restrictions.

Chemical Grout

Polyurethane chemical grout is used to improve shallow soil capacities and strengths. It can be completed using two different types of urethane resins. The first is a two-part resin that expands to compact the underlying soils. The second is a single component polyurethane resin that permeates the soil.

Compaction Grout

A form of soil stabilization, compaction grout is done by pumping a cementitious mixture known as grout into the ground through threaded steel casing under high pressure to fill voids or fissures in the limestone. Once the voids or fissures are filled, then compaction of the soils will be done by compressing the soil with grout.

Cellular Grout

This material is a lightweight concrete made by replacing some or all of the stone aggregate used in standard concrete with uniform air cells (voids). Its density can be varied from 20 to 120 lbs. per cubic foot, and its comprehensive strength from 20 to 3,000 psi. Applications include load-reducing fill, backfill for tunnels and retaining walls, annual grouting for tunnels, fill for bridge approaches, and fill for sinkholes and abandoned underground tanks, pipelines and mines. Cellular grout can be produced in both a pervious and non-pervious blend.



FOUNDATION SOLUTIONS

Auger Cast Piles

Also known as continuous flight auger piles (CFA), auger cast piles are deep foundation solutions that are cast-in-place, using a hollow stem auger with CFA. The auger is drilled into the soil and/or limestone to the specifications of the engineer. The auger is then slowly extracted, removing the drilled soil/rock as concrete or grout is pumped through the hollow stem. Reinforced steel is then lowered into the wet concrete or grout. The completed design resists comprehensive, uplift and lateral loads.

L.R.E.'s Capabilities Include:

- CFA (Continuous Flight Augers)
- Displacement Piles
- Caisson Piles

Types of Continuous Flight Auger Projects:

- Buildings
- Sound walls
- Bridges
- Environmental
- Parking garages
- Warehouses

Benefits that come with L.R.E.'s Continuous Flight Auger Equipment:

- Quick setup and tear down
- Quick mobilization
- Ability to work in tight spaces
- Ability to penetrate rock
- Data system that provides live feedback to engineers and general contractors
- Data system that insures a perfect pile every time



FOUNDATION SOLUTIONS

Exterior and Interior Underpins

Push piers are utilized due to various circumstances that may require a structure to be re-leveled or re-supported; such as sinkhole activity, buried organics, muck, clay shrinking, plumbing problems, etc.

Tie-Back Anchors

Also known as helical anchors, tiebacks provide lateral stability to foundation walls and retaining walls with unbalanced earth pressures. Helical anchors can be installed with a several different pieces of equipment. Tie-backs' versatility, along with the ability to immediately load and test the anchors, make helicals a convenient and economical solution for a wide variety of projects.

Injection Piers

Injection piers are underpins that have several 1 1/2" openings in the steel casing. The perforated pipe allows L.R.E. to pump grout through the casing to permeate the soil surrounding each pier. This gives the underpins more stability and enables L.R.E. to compress and compact soil around the pins.



DEPARTMENT OF TRANSPORTATION

L.R.E. is FDOT Pre-Qualified and experienced in road repairs.

Our capabilities range from compaction grouting to fill deep soil voids, to chemical grouting shallow soils. We can utilize our PolyLEVEL product to re-level uneven concrete and eliminate trip hazards. In addition, L.R.E.'s auger cast equipment is efficient in road work, such as the installation of sound walls.



ELIMINATE TRIP HAZARDS

PolyLEVEL® System

L.R.E. Ground Services, Inc. uses a PolyLEVEL system utilizing high-density polymers to stabilize and level concrete. With multiple formulations available, PolyLEVEL is able to fit the needs of any job, large or small. PolyLEVEL is a two-part urethane polymer that expands into rigid, structural foam to fill voids, stabilize and lift concrete, and offer solutions to a wide range of geotechnical and structural applications. Polyurethane has been used beneath slabs for decades, and it has proven to be a superior solution compared to traditional methods of grout injection and concrete replacement.

Applications include:

- Railroads
- Roadways
- Commercial Structures
- Airports



HIGH PROFILE PROJECTS



Busch Gardens



Crystal River Nuclear Power Plant



McDonalds



MacDill Air Force Base

And More!

FOUNDATION SUPPORTWORKS®

L.R.E. Ground Services, Inc. has both geotechnical and structural engineers at its disposal through Foundation Supportworks for product design and quality assurance of products. Their engineers are available to assist with preliminary designs and provide technical support to engineers, architects, building departments and general contractors. Foundation Supportworks' engineers are true experts in the industry and routinely present technical information and case studies to design professionals throughout North America.

L.R.E. was founded on the principles of integrity, quality, and service and it is our goal to provide innovative solutions that are appropriately tested, expertly installed and dependable to perform as promised. A key to our success is a strong emphasis on product quality and proven installation techniques. All of our products are produced in facilities that are ISO 9001 certified and are regularly spot-checked by our engineers to ensure precision and quality.



CREDENTIALS, MEMBERSHIPS AND PARTNERSHIPS

L.R.E. Ground Services, Inc. is a Brooksville-based, family owned & operated and state-certified building contractor, registered with various municipalities throughout Florida since 1989.

Our company is fully licensed (CBC1256398) and insured with coverages including general liability insurance, automobile and property damage insurances and workers compensation. L.R.E. also has bonding capabilities.

L.R.E. is the largest privately owned foundation repair company in Florida. We have earned an A+ grade with the Better Business Bureau and a superior credit rating with Dun & Bradstreet. L.R.E., which prides itself in supporting our military and community, is a proud member of dozens of organizations, and partnered with the Tampa Bay Lightning.

In addition, L.R.E. has been named a Tampa Bay Times Top Workplace two consecutive years, received the USF Fast 56 award and been a Top 10 Finalist for the Bright House Regional Business of the Year award.

Proud partner of:



WHY CHOOSE L.R.E.?

Customer Service

- Your customer satisfaction is a top priority
- Comprehensive warranty(ies)
- Same-day response
- Flexible scheduling/work hours
- Accommodate occupants/residents

Efficiency

- 130 full-time and fully trained employees
- Customized equipment for your project(s)
- Over 20 crews available
- Follow the engineer's recommendations
- Leave/maintain clean work sites

Experience

- Ensure the repair is done right the first time
- Same ownership since 1989
- Nearly 6,000 projects successfully completed
- Work with multiple professional organizations
- High profile projects
- FDOT pre-qualified

Communication

- Dedicated project team
- Available to you 24/7
- Coordinate scheduling between all parties
- Clear and consistent communication
- Regular comprehensive inspections

Safety First

- Established safety program
- OSHA 10-Hour and 30-Hour Compliant
- Full-time safety manager
- Drug-free workplace
- Full-time monitoring on site for movement
- Company vehicles-only on site

L.R.E.'S COMMERCIAL PROJECTS



7 Eleven
Bank of America
Bay Care Health Systems
Beacon Community Church
Busch Gardens
City of Brooksville Utilities
City of Crystal River
City of Oviedo
City of Zephyrhills
Cotee Rivery Elementary School
Dairy Queen
Dollar General
Dr. James Cummings Medical Building
Duke Energy
Fedex
Florida Citrus Bowl
Florida Credit Union
Florida Department of Military Affairs
Florida Fire College
Forest Lake Condominiums
Fox TV
Goodwill
Gulfview Motors Service Facility
Green Dolphin Condominiums
Hardees's
Hernando County
J.O. DeLotto & Sons, Inc.
K-MART

Laguna Palms
Lennar Homes
Lexington Homes
Lone Oak Baptist Church
MacDill Air Force Base
Mariner Blvd. Project
Marion County
McDonalds
Memorial Park Cemetery
M/I Homes of Tampa, LLC
Orchid Springs Condominiums
Pasco County
Pasco County Public Works
Pasco County School Board
Patrician Oaks Condominiums
Peter Brown Construction, LLC
Pizza Hut
Progress Energy
Pulte Homes
Racetrac
Ridgewood High School
Sammonds Road Project
Shady Hills Power Plant
Skanska USA Building, Inc.
Solana Bay Apartments
Spring Hill Fire Administration Building
State of Florida
St. George Greek Orthodox Church

St. Vincent De Paul Catholic Church
SunTrust Bank
Suwannee River Water District Management Offices
Tampa General Hospital
Taylor Morrison Homes
Texaco
UCH Medical Office Center
University of South Florida
University of Tampa
Verizon
WAWA
Wendy's
Westminster Bradenton Manor
Willow Brooke Apartments
Zephyrhills Correctional Institute
And More!

CASE STUDY

WESTMINSTER BRADENTON MANOR

LOCATION: BRADENTON, FL

DATE: MAY, 2011

Challenge:

Built in 1961 the Westminster Bradenton Manor's South Elevation was slated for renovation. It was decided to bring the building up to code by removing the entire facade. Hurricane resistant windows, new stucco with Mediterranean detailing and a new mansard roof were planned. Due to the renovation generating additional loading to the existing wall footing, it was determined that there would be differential settlement between the new footer and existing. A deep foundation was recommended to transfer the load from the new footer to the limestone below. To minimize vibration and possible damage to the existing structure, helical piers were chosen as the deep foundation to support for the new footer.

Solution: Helical Piers

Helical piers were chosen as the ideal deep foundation system because they can be installed with smaller equipment, with less vibration and disturbance to the existing structure. L.R.E. Ground Services, Inc. was chosen to install the helical pier system for this project. L.R.E. utilized fifty-four (54) Foundation Supportworks, Inc (FSI) 287 helical piers, with 8" - 10" lead sections, installed to 14-foot average depths. The helical piers were installed on 4.5-foot centers to achieve a design working load of 20 kips per pier. Utilizing a FSI retrofit bracket at each location and hydraulic cylinders, L.R.E. uniformly loaded each bracket. Upon completion, the retrofit brackets and tops of the helical piers were encapsulated into the new footer and foundation. The detail of the footer also consisted of doweling into the existing footer and floor slab.

Project Summary

Architect: James E. Toth Architecture

Structural Engineer: Mcelroy Engineering

Geotechnical Engineer: Nodarse & Associates

Construction Manager: Hennessey Construction

Certified Installer: L.R.E. Ground Services, Inc.

Products Installed: (54) FSI 287 - 8" - 10" helicals to an average depth of 14 feet 4.5 feet on center.



CASE STUDY

FLORIDA FIRE COLLEGE

LOCATION: OCALA, FL

DATE: SEPTEMBER, 2011

Challenge:

Florida Fire College in Ocala, Florida had been experiencing settling in recent years due to an uncommon Florida problem: clay soil expansion and contraction below the foundation. Some areas of the structure had experienced visibly large cracks in the brick walls. The Florida Department of Management Services retained the architectural services of Lewis & Whitlock, PA in order to formulate a plan to stabilize the building. It was determined that the best approach to stabilize this structure was to install 3" push piers under the foundation, at the affected areas. This method is known as 'Foundation Underpinning'; a post-construction foundation remediation method which is extremely effective in stabilizing existing structures.

Solution: Push Piers

L.R.E. Ground Services, Inc. was selected to install the push pier system for this project and retained Ramos Engineering and Associates, L.L.C. (RE&A) to design the layout of the pier locations and monitor their installation. Per RE&A's recommendations, fifty-six (56) FSI 288 push piers were installed to an average 32-foot depth, with an FSI retrofit brackets, at each location, and I-beams/ spreader beams, at selected locations, in order to transfer building loads to stable soils. After installation of the push piers and brackets, L.R.E. hydraulically loaded the brackets. Using a laser level and measuring devices at each location, the structure was then raised 1/32" to 1/16" in order to transfer foundation loads through the push piers into the underlying competent soils/limestone. At locations with severe cracking, minor lifting of the foundation was performed to minimize the dimension of the existing cracks.

Project Summary

Architect: Lewis & Whitlock PA

Geotechnical Engineer: GEO Tech

Certified Installer: L.R.E. Ground Services, Inc.

Products Installed: (56) FSI 288 – push piers to an average depth of 32 feet.



CASE STUDY

MARINER BOULEVARD

LOCATION: MARINER BLVD., SPRING HILL, FL

DATE: DECEMBER 2012

Challenge:

Following Tropical Storm Debby, a portion of Mariner Blvd. between Claymore and Little Streets collapsed. The massive amount of rainfall triggered several sinkholes on Mariner Blvd. near Little St. Hernando County temporarily backfilled the depressions and repaved the areas.

Solution: Compaction Grout

Professional Service Industries, Inc. (PSI) was contracted by Hernando County to determine if the underlying soils were stable. PSI investigated two areas north of Little St. and one area West of Mariner Blvd. on Little St. PSI determined that sinkhole activity was present and formulated a repair program. PSI recommended compaction grouting was needed to stabilize the deep soils at the three areas. L.R.E. Ground Services, Inc. was contracted by Hernando County to remediate the sinkhole activity. Utilizing PSI recommendations and monitoring of the project, L.R.E. performed compaction grouting at the three areas. This was accomplished utilizing 23 grout points to an average depth of 72 feet and 708 cubic yards of grout.

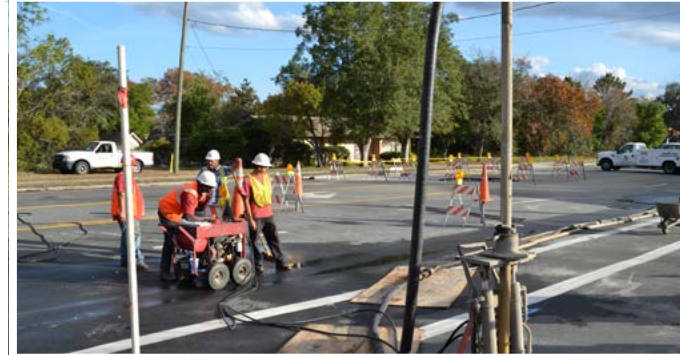
Project Summary

Geotechnical Engineer: Professional Service Industries, Inc.

Owner: Hernando County

Contractor: L.R.E. Ground Services, Inc.

Compaction Grout: 23 points to an average depth of 72 feet with a total of 708 CY of grout.



CASE STUDY

BEACH HOUSE CONDOMINIUM

LOCATION: PASS A GRILLE, FL

DATE: JUNE, 2014

Challenge:

The project consisted of a seven-story condominium with a ground floor parking garage. Duke Energy had a transformer on grade near one of the columns. At some point the transformer leaked hazardous material into the soil. Duke Energy hired a remediation company to excavate down and remove the hazardous materials. Some of the materials traveled under one of the column pads. Duke Energy hired Master Engineering to provide a comprehensive plan to remediate the remaining hazardous materials.

Solution: Helical Piers

The comprehensive plan called for removing the concrete slab adjacent to the contaminated column pad, installing two temporary column pads at either side of the column. The plan called for twelve (12) FSI 288 helical piers. Six for each temporary column pad, to support 10 kips of working compression capacity each. Then L.R.E. installed two each W8x40 temporary columns at each side of the existing concrete column, attached to the temporary column pads. Two 18x76 beams were then installed horizontally at either side of the existing concrete column. A custom made bracket was installed atop the support beams and bolted through the existing column. The existing concrete column was loaded onto the support beams utilizing four 100 ton jacks. Once loaded on the existing column pad, a portion of the column and contaminated soils were removed by others. L.R.E. then installed fourteen (14) FSI 288 helical piers, then formed and poured a new permanent column pad. The Phase 2 load transfer of the existing column to the new permanent column pad was completed using four HSS 6x6 temporary columns. Once loaded, the existing column was poured into the new column pad and all temporary steel support was removed. Three load tests were required, one prior to the temporary column pad and one prior to the permanent pads being cast. An additional load test was required due to some of the helical piers spinning out prior to reaching the required torque correlation.

Project Summary

Structural Engineer: Master Consulting Engineering

Specialty Foundation Engineer: Ramos Engineering & Associates, LLC

Geotechnical Engineer: SM&E Engineering

Construction Manager: KAM Construction

Certified Installer: L.R.E. Ground Services, Inc.

Products Installed: (26) FSI 288 8" - 10" Helix Configuration



CASE STUDY

SOLANA BAY CONDOMINIUM

LOCATION: TAMPA, FL

DATE: 2012

Challenge:

The subject property is comprised of 16 two-story masonry structures and a pool building, with a total of 110 units. Initially one building was tested in September 2010 and found to have sinkhole activity. Several other buildings started to experience settling. The HOA requested all structures be tested. Central Florida Test Laboratories, Inc. was hired to investigate and found sinkhole activity at the entire site.

Solution: Helical Piers/Compaction Grout/Chemical Grout

Central Florida Test Laboratories, Inc. recommended compaction grouting to stabilize the deep subsurface soils. It was recommended that all the structures be remediated. This was accomplished utilizing 1,030 grout points to an average depth of 48 feet. Following the compaction grouting, it was recommended that the upper loose soils needed to be addressed. It was recommended that the perimeter of the structures and interior load bearing walls be stabilized with chemical permeation grout. Upon completion of the compaction grout, chemical grout was installed along the perimeter of the structures and along the interior load bearing walls. This process densifies and tightens the loose upper soils. L.R.E. also removed and replaced all concrete sidewalks and driveways on this project.

Project Summary

Geotechnical Engineer: Central Florida Test Laboratories, Inc.

Contractor: L.R.E. Ground Services Inc.

Compaction Grout: 49,000 feet of injection pipe and 3,550 CY of compaction grout installed.

Chemical Permeation Grout: 2,700 gallons installed.



CASE STUDY

DART CONTAINER

LOCATION: PLANT CITY, FL

DATE: JAN. 2014

Challenge:

A new 379,800 sq. ft. warehouse was proposed on a site that had been previously used to dispose of mine waste (slimes). A geotechnical investigation discovered fill soils over slimes and waste clays as deep as 40 feet within the proposed building footprint. The surficial fill soils were determined to be competent to support the relatively light design compression loads. However, deep foundations were considered to resist the uplift loads, thereby eliminating the need for massive concrete column pads. The design uplift loads were 58, 64 and 70 kips for the interior column pads, columns along two exterior wall lines and the center column line, respectively. The failure criteria was very stringent. No more than 0.25 inch of movement (uplift) would be allowed at service load conditions.

Solution: Helical Piers

Helical piles were proposed to be cast into the concrete column pads to support the design tension loads. One or two piles would be used at each column location to reduce individual pile loads to 30.2 to 58 kips. Spacing efficiency modifiers were used to determine capacities of piles in the two-pile caps where pile spacing was less than three times the diameter of the largest helix plate. Thirty-two (32) Model 288 (2.875-inch OD by 0.276 wall) round shaft helical piles with a custom helix plate configuration consisting of either four or five 12" helix plates were installed to resist design working tension loads from 30.2 to 33.3 kips. One-hundred twenty-seven (127) Model 350 (3.50-inch OD by 0.313-inch wall) round shaft helical piles with a helix plate configuration consisting of either 12"-14"-16"-16"-16" or six (6) 12" plates were installed to resist design working tension loads from 36.8 to 58 kips. The helical piles were installed to an average depth of 46 feet below grade to achieve torque-correlated ultimate capacities of at least twice the design working loads ($FOS \geq 2$). Prior to installing the production piles, six tension load tests were performed at the site on sacrificial piles to verify pile capacities and monitor deflections. The pile load tests were planned within days of the test pile installations, which would not allow for full redevelopment of soil strengths around the helix plates and along the pile shafts. The tension piles would also not be pretensioned following installation. Therefore, 3/32-inch shims were added within the extension couplers during installation of both the sacrificial test piles and the production piles to control vertical movements and meet the stringent deflection criteria.

Project Summary

Architect/Structural Engineer: Bergmann Associates

Specialty Foundation Engineer: Ramos Engineering & Associates, LLC

Geotechnical Engineer: Professional Services, Inc.

Construction Manager: Freund Andrus Construction

Certified Installer: L.R.E. Ground Services, Inc.

Products Installed: (32) FSI HP288 helical piles, (127) FSI HP350 helical piles, average pile depth of 46 feet, design working tension loads from 30.2 to 58 kips



CASE STUDY

L'AMBIANCE CONDOMINIUM

LOCATION: NAPLES, FL

DATE: DEC. 2014

Challenge:

Building #300 at L' Ambiance Condominium started experiencing settling in recent years. In order to formulate a stabilization plan for the structure geotechnical testing was performed. It was decided the best approach to stabilize the structure would be to install 3.5" helical piers. This deep foundation method is effective in stabilizing existing structures and preventing future settlement.

Solution: Helical Piers (Retrofit)

L.R.E. Ground Services, Inc. was contracted to install the Helical Pier system for this project. L.R.E. followed LCM Engineering recommendations and layout of the pier locations. LCM Engineering provided full-time monitoring of the installation process. Eighty-three (83) FSI 350 helical piers were installed to 50-foot average depths. A FSI retrofit bracket was installed at each location. Multiple areas required the use of I/spreader beams to transfer the loading at window and door openings. After installation of the retrofit brackets, they were hydraulically loaded. Using a laser level and measuring devices at each location the structure was stabilized and minimally raised.

Project Summary

Structural Engineer: LCM Engineering, Inc.

Geotechnical Engineer: Florida Geotechnical Engineering, Inc.

Owner: L' Ambiance Commons Association, Inc.

Contractor: L.R.E. Ground Services, Inc.

Helical Piers: (83) FSI 3.5" helical piers to an average depth of 50 feet



CASE STUDY

PASCO SCHOOL ADMINISTRATION

LOCATION: LAND O' LAKES, FL

DATE: MAY 2015

Challenge:

The renovation of Pasco County District Office Building #4 included a new elevator. Due to the limited space for the excavation of the elevator pit, it was determined that soil stabilization would be required. There was also an existing 7'-6" X 7'-6" column pad adjacent to the excavation. The column pad had a service load of 150 kips and could be compromised if adjacent soil was removed. A limited soil test also determined dewatering would also be required.

Solution: Permeation Grout/Helical Piers

L.R.E. Ground Services was asked to formulate a plan to stabilize the perimeter of the area to be excavated. Ramos Engineering and Associates was retained to develop a stabilization plan. It was determined that 31 permeation grout points would be installed around the perimeter of the proposed elevator pit. The permeation grout points extended from two feet below the bottom of the proposed pit up to the surface in 12" lifts. One-hundred fifty-four (154) gallons of grout material was injected. Prior to the permeation grout injection process, two (2) FSI-288 helical piers with an 8"x10" lead were installed at the exposed side of the column pad and attached with retrofit brackets. The piers were installed to 35 and 47-foot depths at 2,600 and 2,300 psi, respectively. Prior to L.R.E.'s work the area was excavated approximately 2'-6" to the bottom of the existing column pad and dewatering equipment was installed. The stabilization program resulted in a cost savings to the project and expedited the construction schedule over traditional methods.

Project Summary

Architect: Reynolds Smith & Hill, Inc.

General Contractor: Ajax Building Corporation

Geotechnical and Specialty Foundation Engineer: Ramos Engineering & Associates, LLC

Certified Installer: L.R.E. Ground Services, Inc.

Products Installed: FSI permeation grout and (2) FSI-288 helical piers with an 8"-10" helix configuration



CASE STUDY

ST. GEORGE GREEK ORTHODOX CHURCH

LOCATION: NEW PORT RICHEY, FL

DATE: OCTOBER 2009

Challenge:

The St. George Greek Orthodox Church had sinkhole issues in 2006 and the solution provided by the engineer was to compaction grout the church. Less than three years later, the church showed signs of sinkhole activity and another engineer was dispatched to make recommendations to repair the structures.

Solution: Compaction Grout/Push Piers

The engineer of record determined that in addition to compaction grouting, underpinning was necessary to support the two structures. L.R.E. Ground Services, Inc. was the contractor chosen to do the work as we were familiar with the location as we completed the original project in 2006. Although a great deal of grout was estimated for the repair, the actual amount was significantly less due to the previous project. The number of underpins estimated for the project remained the same.

Project Summary

Geotechnical Engineer: Westcoast Forensics Consulting Group

Certified Installer: L.R.E. Ground Services, Inc.

Product Installed Sanctuary Building: compaction grouting: 56 Points 5,097 lineal feet of injection pipe, 456 cubic yards of grout.

Underpinning: (88) 3" push piers 4,257 total lineal feet.

Product Installed Fellowship Hall: compaction grouting: 60 Points 4,157 lineal feet of injection pipe, 355 cubic yards of grout.

Underpinning: (81) 3" push piers 2,964 total lineal feet.



CASE STUDY

PRE-CONSTRUCTION HELICAL PIERS

LOCATION: PRIVATE RESIDENCE IN BROOKSVILLE, FL

DATE: 2014

Challenge:

This property is located in Central Hernando County, FL. Due to concerns over high clay soils and sinkhole activity in this part of Florida, the owner hired a Geotechnical engineer. SPT and soil borings were completed and soil samples collected. Due to the highly expansive clay soils found during the testing, it was recommended that piers be installed.

Solution: Pre-Construction Helical Piers

Helical piles were recommended for this project. Helical piles install quickly with little to no vibration and there is no waiting period after installation. This allows the contractor to pour the footers and column pads as the pier installation is completed. Using specialized software it was determined that a 10" - 12" Helix configuration would be required for the specified loading. The piles were installed to depths below the clay soils to help isolate the foundation and prevent shrink/swell movement. The final installation depths were determined by the torque correlation method. In order to achieve the desired loading, hydraulic pressure is monitored using specialized equipment. The top of the piles are fitted with a pre-construction cap that is cast into the concrete footers and column pads.

Project Summary

Architect: Arthur Rutenberg Homes

Structure Engineer: Ramos Engineering & Associates, LLC

Geotechnical Engineer: Ramos Engineering & Associates, LLC

Specialty Foundation Engineer: Ramos Engineering & Associates, LLC

Certified Installer: L.R.E. Ground Services, Inc.

Products Installed: (134) 2.88" helical piles, 10" - 12" helix configuration, average pile depth of 23 feet, design working compression loads of 28.8 kips.



CASE STUDY

LONE OAK MISSIONARY BAPTIST CHURCH

LOCATION: PLANT CITY, FL

DATE: NOVEMBER 2012

Challenge:

The Sanctuary building constructed in 1983 experienced settling issues in 2009, mainly at the northeast quadrant of the building. An engineers investigation by another firm and repairs by another contractor were completed in July of 2009. Soon after this work was completed more settling was observed. West Coast Forensics Consulting Group, Inc. was hired to investigate and found the original repair was not adequate.

Solution: Compaction Grout/Chemical Grout/Push Piers

West Coast Forensics Consulting Group, Inc. recommended additional compaction grouting was needed to stabilize the deep soils. This was accomplished utilizing 50 grout points to an average depth of 85 feet. In addition it was recommended that the perimeter of the structure, the interior slab, load bearing walls and column footers be underpinned. This was accomplished with seventy-six (76) exterior 3" push piers to an average depth of 58 feet around the perimeter of the structure, two interior slab brackets to an average depth of 75 feet, and a total of thirty-four (34) 3" push piers with retrofit brackets at the load bearing walls and interior column footings. Upon completion of the underpinning, 1,000 lbs of polyurethane grout was installed to fill the voids below the slab and the underlying soils.

Project Summary

Geotechnical Engineer: Westcoast Forensic Consulting Group, Inc.

Contractor: L.R.E. Ground Services, Inc.

Products Installed 133 Total Piers: (23) Interior slab brackets and (34) retrofit brackets at the load bearing walls and the interior column footers to an average depth of 75 feet.

Exterior: (76) push piers to an average depth of 58 feet.

Compaction Grout: 50 points to an average depth of 85 feet.

Chemical Grout: 1,000 lbs installed under interior slab.



TESTIMONIALS



“There are numerous moving parts on each piece of equipment, hoses and pipes working under significant pressure on the drill rigs and grout pumps and heavy pipes and tools used on each job presenting hazards. I commend L.R.E. for identifying various hazards and taking a proactive approach to minimize risks. All four crews we randomly observed worked very carefully always being mindful of their surroundings working together in an efficient and safe manner. Great teamwork and excellent communication was observed on all four job sites.”

*Matt Long, Senior Loss Prevention Specialist
Summit Holdings*

“The L.R.E. Ground Services field workers did the best job I have ever seen. I own my own business, but I’ve never seen workers that work so well and hard together. I was very impressed with their work. Thank you L.R.E. Ground Services for the excellent work that was done on my job site.”

*Ricky Johnson
Jacksonville, FL*

“I would recommend L.R.E. to anyone who asked for a referral for a soil stabilization or restoration company. They did a great job and were very responsive along the way. The work was done timely and the supervisor in charge of the project was excellent. I would recommend you use them as much as you can. Your insured will be happy with the work they do.”

*Frank Gemma
Safety Harbor, FL*

“Very impressed with your company, L.R.E. Ground Services, Inc. The crews were very careful not to cause any damage. Having owned a large company for many years, I would have been proud to have any one of these gentlemen work for me. The crew leader was great, very courteous, professional, and informative. I always knew where we were at in the process and follow up. L.R.E was great from start to finish!”

*Ronald Fee
Spring Hill, FL*

"This is the second time in the past few months that I have personally been involved with L.R.E. I am not only impressed with your management team, but with your field staff as well. I have been in the construction business for over 20 years. I wish that every subcontractor that I used was as professional as your team."

*Brian Forret, Vice President
Team Development Corporation*

"I would like to extend my thanks to your crew and L.R.E. for completing our project in a most professional and timely fashion. The short completion time, the 'simplicity' of the scope of work, but most importantly, the successful end result, were all noteworthy. Thank you again for your services."

*Tom Buss, Manager
Wildwood Store*

"Madrid Engineering Group has worked together with L.R.E. Ground Services, Inc. for nearly 15 years as the Engineer of Record on many varied successful projects. We consider the L.R.E. team a developmental partner who has proven to be creative in problem resolution, reliable in time commitments, and consistent in meeting both our and the customer's expectations."

*Larry Madrid, Owner
Madrid Engineering Group*

"As a professional in the industry, we know an exceptional contractor when we see one, and L.R.E. fits that description after seeing them in action at Busch Gardens. L.R.E. clearly is experienced in commercial foundation and soil stabilization. Their efficiency, expertise, flexibility, professionalism, and state-of-the-art equipment were consistently on display and made a lasting impression on our company. L.R.E. was all around impressive en route to successfully carrying out the repair needed at Busch Gardens. We wouldn't hesitate to work with L.R.E. again if the opportunity presented itself."

*Michael W. Sultenfuss, President
J.H. Sultenfuss, Inc.*



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