PILEDRIVER

THE OFFICIAL PUBLICATION OF THE PILE DRIVING CONTRACTORS ASSOCIATION | SUMMER 2003 VOL. 4, NO. 3

PDCA
PILE DRIVING CONTRACTORS ASSOCIATION

IN THIS ISSUE:

Project Spotlight:
Hartsfield Airport –
Atlanta's Runway Project

2003 College
Professors'
Piling Institute

PDCA Member
Spotlight:
Ford Pile Foundation's
Woody & Trey Ford

Project Spotlight:
Pine Hills Sinkhole
Remediation Project

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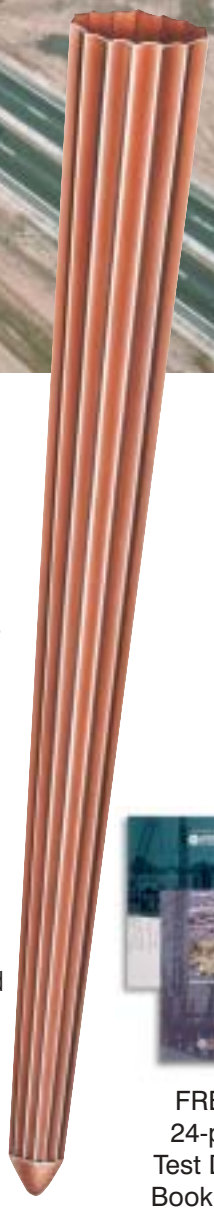

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Contents

Letter from the President
By Jim Frazier 2

2003 PDCA Board of Directors List 3

Letter from the Executive Director
By Tanya Goble 5

PDCA Project Spotlight:
Pine Hills Sinkhole Project 8

PDCA Project Spotlight:
Hartsfield Airport, Atlanta's Runway Project. 15

Member Benefits 23

Membership Application 26

PDCA Resources Form 28

New Member List 30

Member Spotlight:
Ford Pile Foundations 32

Calendar of Events 36

Index to Advertisers 36

Cover:
Pine Hills Sinkhole project. Photo courtesy of Geotechnical and Environmental Consultants.

Inset:
The finished result. Photo courtesy of Giken America Corp.

Economic Effects on Contractor Surety Bonds

By Jim Frazier, PDCA President

The decline in the economy has affected all contractors by increasing bonding rates and/or reducing bonding capacities. Understanding today's surety market allows you to better manage risk, which makes surety bonds the most trusted and valuable risk management tool available.

Surety bonds are written with no expectation for loss and therefore the financial health of the contractor is crucial. The general state of the economy has had an effect on this financial health, thus requiring the surety companies to either keep the company in operation or find another company to complete the obligation.

The economy in the 1990s boomed, interest rates dropped, and surety bonds became profitable for the insurance industry. Surety bonds were plentiful and cheap, giving the perception that anyone could get a bond. However, as the economy slowed, contractor failures increased and the insurance companies paid out $1.8 billion in claims for the years 2000 and 2001. As a result, many insurance companies were forced out of the market and those remaining became more disciplined in their approaches which included increasing rates and reducing bonding capacities. In the last five years, half of the top 10 surety companies have merged or left the market.

To secure a surety bond, a company may be asked for several items. These include complete financial statements, overhead costs, equipment schedules, current workload reports, resumes of key personnel, short-term and long-term business plans, corporate and personal insurance, and an outline of all bank agreements. This allows the surety company to determine the contractor's future profitability to establish a level of surety credit.

For contractors just getting started, or the more experienced ones who would like to increase their bonding capacity, here are a few helpful guidelines. First, make sure you understand the surety's rights and responsibilities. Also, control growth, keep a low overhead and stay within your capabilities. Look for signs of possible failure and communicate these problems with the surety as they surface. Know your surety company and establish a relationship with both your surety underwriter and producer. Develop and maintain business techniques that include analyzing contract documents and bond forms and using construction-experienced CPAs. Lastly, don't bid jobs that have very low profitability just to keep your employees busy.

Subcontractors can anticipate a general contractor requiring a bond from them when they are operating outside their normal geographic area, embarking on a new type of construction, and in tough economic times. They may also require a bond when the subcontractor's contract is the only source or is a large portion of the work. If the general contractor is not familiar with his work or if there is any question with the subcontractor's price or the ability to meet payroll, a bond will almost always be requested.

Contractors that get mega projects could see surety companies asking to divide the project into smaller ones, get the bonding from more than one company or they may need to form joint ventures to spread the risk. Mid-sized contractors may see small increases in rates or slightly reduced bonding capacities and will be the least affected.

Most surety companies find these contractors less risky and focus on them. The small contractors will have a most difficult time meeting the surety standards. Many will have to rely on the U.S. Small Business Administration Surety Bond Guarantee Program.

In the future, you will likely see a more cautious industry affecting all companies. The bonding companies will continue to reduce the amount of risk that they expose themselves to. Still, a contractor that has a good financial statement, can show a profit and has the proper experience should have no problems getting a bond. ▼

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Building Market Share Through Professor Education

By Tanya Goble, PDCA Executive Director

I'm pleased to report that another very successful College Professors' Piling Institute was held in June at Utah State University. This year's event built on the success of last year's inaugural program.

The latest concepts in driven-pile design, installation and quality control were presented to selected professors from around the country who teach foundation engineering courses. To date, almost 50 professors have attended the institute.

A wide range of topics was discussed including a comprehensive review of the design process, an overview of pile materials and pile driving equipment, the geotechnical response of driven piles, subsurface investigations and wave mechanics. Computer workshops on GRLWEAP, DRIVEN, FB-PIER and CAPWAP were also conducted. A very popular event was the field demonstration where a pile was driven, statically load tested and dynamic measurements made. The participants were given the opportunity to predict the pile capacity and compare the results with field observations. Many thanks go to PDCA member Build Inc. for providing the personnel and equipment to conduct the field demonstration.

This important educational program is essential to growing market share for the driven pile. By providing current information and extensive teaching tools, we help to ensure that engineering educators are able to provide the best training to future engineers who will be determining specifications for deep foundation projects.

The PDCA thanks all those who made this event possible. First of all, we wish to recognize the outstanding efforts and energy of Professor Joe Caliendo and the faculty at Utah State, including Loren Anderson, Jim Bay and Ken Jewkes. We also extend our appreciation to Utah State University for making their beautiful facilities available to us. The Institute would also not be possible without the efforts and donated time of our instructors, Dan Brown from Auburn University, George Goble, Garland Likins from Pile Dynamics, Mike McVay from the University of Florida and Kyle Rollins from BYU.

Finally, we wish to recognize the PDCA members that helped make this year's event possible through their generous donations – a complete list is provided on the page 7.

The PDCA looks forward to great success with the College Professors Piling Institute in the future. The next Institute is planned for June 2005 at Utah State University in Logan, Utah. ▼

L.B. FOSTER COMPANY IS PROUD TO BE A UPRR SUPPLIER OF THE YEAR

This May, L.B. Foster Company's Piling Division received a Supplier of the Year Award from the Union Pacific Railroad.

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"The L.B. Foster team's commitment to the UPRR is best illustrated by their reaction to the 2002 Sharon Springs casualty. Friday night the UPRR Maintenance Track Manager contacted L.B. Foster via a pre-established UP emergency phone number. The Foster crew swung into action immediately, putting the customer's needs first, expediting loading and trucking, pushing past normal communications and paperwork procedures. By Saturday afternoon Foster delivered the necessary piling to the job site. Right material, right timing, right supplier.

"L.B. Foster Piling succeeds at the old adage 'the customer is king.' With a spotless track record, a remarkable sense of urgency and a businesslike vision for the future, this company deserves to be a 2002 Supplier of the Year."

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The Sharon Springs Bridge before the fire.

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Pine Hills Sinkhole Project:

A True Collaborative Team Effort

By Lisa Kopochinski, Piledriver Editor

The Pine Hills sinkhole first occurred on June 11, 2002 around 5 pm. Two hours later the ground had fallen to a create a crater the size of half a football field.

Photo courtesy of GEC

While sinkholes are not an uncommon occurrence in Central Florida, the Pine Hills one was a doozy.

Central Florida witnessed its largest sinkhole in two decades last year when the Pine Hills Sinkhole saw the ground fall over a two-hour period to the size of half a football field.

Capturing national attention, the sinkhole, which occurred on June 11, 2002 around 5:00 p.m. at the Woodhill Apts. in Pine Hills, just west of Orlando, created a cavity 150 ft. wide by 60 ft. deep and was situated only 10 ft. away from a two-story apartment buildings and its residents.

While sinkholes are not an uncommon occurrence in Central Florida, the Pine Hills one was a doozy.

The sunken area was deep enough to fit a six-story building. Two 30 ft.-tall oak trees were swallowed along with a sidewalk, exercise equipment and park benches. Sewer and water lines were severed and nearly 100 apartment dwellers had to be relocated for two months.

The catastrophe called for immediate action and brought together several Central Florida companies to rectify the situation and avoid future damage to the apartment structures.

The Wilson Company of Tampa, owners of the apartment complex, hired Orlando-based Geotechnical and Environmental Consultants (GEC) to step up to the plate. GEC then enlisted Giken American Corp.

“Because the rim of the sinkhole was only feet from the apartment building shallow foundations, the stability of

the structures was threatened," explains Gary Huhns, project engineer with GEC. "Protecting the buildings was a race against time that called for extraordinary measures."

Upon arriving at the site, GEC recommended evacuation of a second apartment building that was threatened, rerouting of roof drainage away from the sinkhole and placement of a thick plastic liner over the sinkhole slope adjacent to the buildings to prevent saturation of the soil and potential foundation failure due to impending heavy rain.

A technical team of experts was assembled within 12 hours to evaluate the unstable conditions at the site and formulate an action plan for the temporary and permanent support of the structures.

The first line of defense was pumping a chemical grout mixture into the very loose sands under the structure footings. The chemical grout solidified the loose sands below the foundations to prevent them, at least temporarily, from shearing off into the sinkhole, says Kuhns.

"GEC then devised a plan for permanent stabilization of the buildings by installing a steel wall 50 ft. deep into the ground to effectively separate the buildings from the adjacent sinkhole," he explains. "In order to install such a wall without damaging the buildings, or causing a failure of the steep sided sinkhole, a unique technology, only used once in the U.S., would be needed."

Giken America Corporation, a specialty foundation contractor, installed a unique 200-ft. linear wall of 50-ft. deep interlocking pipe piles between the apartments and the sinkhole using an unconventional method of pressing piles.

Corpac Steel Products of North Miami supplied custom made, 36 in. o/d x 0.500 in. w/t x 50 ft. P-T Interlock Tubular sheet pile in record time to the site.

This was also the first-time use of Giken technology in remedying a sinkhole of this nature and size.

The unique feature, Kuhns added, was that the pile installation equipment

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(the "Silent Piler") was non-vibratory and silent, as well as extremely compact. It can maneuver along the edge of the sinkhole, within a five ft. apron.

Giken's "Silent Piler" installed 200 linear ft. of pipe pile wall with seven-inch diameter P-T interlocks. A total of 56 pipe piles 50 ft. long were "pressed in" with the assistance of an integral auguring system on the slope nearest the buildings. The Silent Piler literally presses pipe piles up to 60 inches in diameter into the ground using a hydraulic jacking system.

"This strategic wall had to be installed quickly and without disrupting fragile foundation conditions. The pipe piles had to be lifted over the tops of the apartment buildings to the sinkhole using a 300-ton [Demag] crane," continues Kuhns. The crane was rented from Beyel Brothers Crane and Rigging in West Palm Beach, specifically for this project.

The "Giken wall" was used for soil stabilization and shoring of two apartment buildings with its untraditional piling method of hydraulically pressing in piles with a reaction-based system.

"The most unusual and innovative technique that was utilized on the project was our integral continuous flight auger called the "Crush Piler," explains John Santos, marketing manager for Giken America Corp. "The auger is an integral pre-augering system that is used in conjunction with our Press-In piling procedure. Unlike conventional piling, when the pre-augering takes place first and then the piledriving, Giken performs both actions at the same time, which is a great time and money saver."

As for challenges, there were plenty.

"Our biggest obstacle," remarks Santos, "was the tight space of only 10 ft. to work in between the building and the sinkhole and the fact that there was no access to the back of the apartments. We had to have all our machines and material pitched completely blind over the three-story building using only radio voice commands."

Adds GEC's Kuhns: "The greatest obstacles were time and weather. The buildings had begun to settle with noticeable cracking occurring in floor slabs and walls within a few days after the sinkhole appeared. Daily rains were causing groundwater levels to rise and further eroding and destabilizing the steep slope of the sinkhole adjacent to the buildings. The solution had to occur quickly and without causing further stability that could lead to foundation failure."

Soil conditions also proved to be torturous.

The soils beneath the building foundations were very loose to a depth of about 15 to 20 ft. At that depth, says Kuhns, a five to 10 ft. thick layer of medium dense sand was encountered that was underlain by loose silty sand. "At a depth of 40 to 50 ft., the silty sands became medium-dense to dense, and a firm limestone was encountered at about 60 ft."

However, the surface of the limestone layer dropped quickly to deeper than 200 ft. progressing away from the structures across the width of the sinkhole. Groundwater within the sinkhole throat was deeper than 60 ft. at the time of collapse. The water level began to rise

Protecting the adjacent apartment buildings was a race against time.

Photo courtesy of GEC

Photo: Giken America Corp.

Photo: GEC

quickly over the next few days and weeks to within 20 ft. of the ground surface.

As for logistical problems, there were plenty.

Torrential summer rains were a daily occurrence making site conditions, particularly the steep side slopes of the sinkhole, very fragile. Access was limited, with sometimes less than 10 ft. between the sinkhole and the apartment structures.

In the end, Giken was successful in completing the wall on July 11, 30 days after the sinkhole first appeared. The apartments were saved without any structural damage. Minor settlement caused some cosmetic cracking that was easily repaired. Apartment residents were able to move back into their homes.

Says Giken America's Santos: "This is the first time in the company's history that our system was used for a "rescue" emergency project. We are proud that we performed our job without incident or injury considering the tight confined spaces and inability to see the crane operations."

Concurs Corpac President Jorge Woldenberg: "It usually takes months to plan a project like this. We [were proud] to be able to supply the materials in record time, as well as being involved with a team of professionals who saw the benefits of implementing a Tubular Pile solution."

Adds Kuhns, "The sinkhole has now been turned into a landscaped green space with terraced wooden bulkheads overlooking a small pond. A potential disaster was turned into a community benefit with timely team work and highly innovative technology." ▼

Giken America Earns PDCA Project of the Year Award

Giken America Corp. was a runner-up for PDCA Project of the Year Award for its pile-driving efforts on the Pine Hills Sinkhole Remediation Project.

This project used a driven pile in which no other pile would meet the requirements and no other system would be able to install them on this particular site.

The mandatory elements for this project included quick decisions and actions, strong piles and quiet solutions. It had to be a pre-fabricated driven pile, as no other pile type would suffice.

Giken's innovative method of the hydraulic "Press-In" piling operates on a reaction-based system that utilized the reaction of the previously driven piles. The model PP260 piling machine, used on this project, uses a pair of hydraulic rams to advance the 36-in. O.D. 50 ft.-long pipe piles to final grade at ground level. A total of 56 piles were installed equaling approximately 200 wall ft.

To increase production and assist in penetrating a dense sand layer in the lower strata, Giken also utilized an integral auguring system. The continuous flight auger was installed inside the Tubular sheet piles. Together with the Silent Piler, the Tubular sheet piles were driven to final grades.

Design considerations for the use of driven piles

The tight confines of the site did not allow for insitu-cast piling. In addition, the retaining wall needed to be designed and installed quickly. The steel pipe used for the retaining wall provided sufficient support. Pre-fabricated materials were also a must due to loose raveled soil conditions. Driven piles could be delivered to the site quickly and installed to protect the apartment structures.

Conventional piling systems were impossible due to limited workspace, strict restrictions on vibratory and impact piling and restrictions on the use of water jetting to advance piles. The narrow profile Giken system that operated on a reaction-based hydraulic "Press-In" method was perfectly suited for this project. Giken also utilized its integral continuous flight auger system that assisted with the installation of the 36 in. O.D. Tubular Sheet piles.

The benefit to the public was that their residence was saved from destruction. Giken was able to save the three apartment structures valued at $1.5 million each.

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Runway Project at Atlanta Airport Takes Off!

By Lisa Kopochinski, Piledriver Editor

Photo: Skyline Steel

While the $350 million runway expansion project at the William B. Hartsfield Atlanta International Airport is only part of the airport's $5.4 billion plan, its importance cannot be understated.

Once completed, the new 9,000-ft. runway will alleviate heavy congestion at the world's busiest airport. (Approximately 76 million passengers passed through the terminals in 2002. That figure is expected to increase to around 120 million by 2015).

The new runway will be one of the most complex structures of its kind in the world, reports www.atlanta-airport.com. It will span across an interstate highway (a total of 18 lanes). This will necessitate the construction of bridges/tunnels to span I-285. The construction of these structures will also require the maintenance of traffic along I-285 and will provide for additional frontage roads and lane expansion capabilities in the future.

A new FAA Air Traffic Control Tower (ATCT) is also required to provide a clear line of sight to the new runway complex. The existing tower site will be removed with the vacated space being utilized by the development and expansion of Concourse "E."

5R Construction of Atlanta is the general contractor on this mega project, in a joint venture with Matthews Construction, APAC Georgia and Thrasher Trucking Co. Southern Foundation of Commerce, GA is performing pile-driving duties, while Skyline Steel of Norcross, GA supplied the H-pile.

Runway Preparation

It's a mega project indeed. Approximately 28 million cu. yds. of dirt have been carted in from several miles away to form the base for the new concrete runway.

The transporting of all this runway dirt (the amount could fill the Georgia Dome Football Stadium more than five times) is being done by a conveyor belt that was constructed on compacted earthwork and railroad ties. The conveyor belt, which required five miles of power cable, has been operating night and day moving 8,000 tons of dirt an hour. The belt has shuttles to four discharge stations, each equipped with twin 110-ton discharge bins, hydraulics and air compressors. Construction of the conveyor belt had to be approved by more than 20 regulatory agencies, including the Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers, and the Georgia Department of Transportation.

Even before the dirt was placed on the conveyor belt, workers needed to transform the rock and soil at the quarries into a uniform material. For instance, too much rock could make the area too dry, while too much dirt could make it too wet. With the moisture level affecting how well the material "sticks" together, 5R had to erect "scalping machines" to sift the rock and soil through large screens. Separate crushing plants pounded large slabs into more manageable pieces.

5R is also using 26,000 8.5-ft. x 12-ft. slabs that are 15 in. thick from a runway rehabilitation job as subgrade for the new runway.

RUNWAY STATS

Official Name:
William B. Hartsfield Atlanta International Airport

Official Shortened Name:
Hartsfield Atlanta International Airport/ATL

Owned by:
The City of Atlanta. Operated by the Department of Aviation.

Distance from Downtown:
10 miles

Total Airport Area:
3,750 acres

Terminal Complex:
130 acres or 5.7 million sq. ft.

Runways
1. 9,000 ft. long
2. 11,889 ft. long
3. 10,000 ft. long
4. 9,000 ft. long
5. The new runway will also be 9,000 ft. long when completed

People Mover
The airport's underground-automated people mover, connecting all concourses with the terminal, consists of nine four-car trains operating on a 3.5-mi. loop track. The time between trains, at any of the 13 stations is approximately two minutes.

Photo: Skyline Steel

Fifth runway for Airport

This is the fifth runway project in the airport's 10-year expansion plan. Once the runway is completed, Benjamin DeCosta, the airport's general manager, says he expects $250 billion in long-term benefits from the runway project and related projects.

The contract called for the construction of a new box culvert founded on drilled shafts. A combination of wet weather and difficult to predict soil conditions conspired to make that foundation choice untenable, which led to delays. An abundance of rain flooded the excavation and hindered the installation of the drilled shafts. The drilled shafts that were installed were 60 ft. longer than originally planned. The project was switched from drilled shafts to H-pile in order to speed up completion and also because the length of the drilled shafts was longer than anticipated.

"The largest challenge," explains Jay Nichols of Skyline Steel, "was the short amount of time and the changing [pile] lengths on the project. The soil borings indicated longer lengths than what was actually needed. We overcame both problems with our large supply of stock and were able to supply several different [pile] lengths for the contractor while still meeting [the] tight schedule."

Skyline Steel's Bill Thomas concurs and says that on the original bid for the project, one of the contractors had proposed steel H-pile, but "the city of Atlanta and engineer thought the H-piles would run too long, so they did not allow [this]. This gave the advantage to the low bidder as he was connected to a drilled shaft company."

"The project was about four months behind schedule for the drilled shafts. [This was happening for] several reasons – one was they were going longer [than anticipated] and the other was that due to the rain, they could not perform drilled

The ready availability of steel piles and speed with which they could be driven made the difference on this project. The use of driven piles proved to be a cost-effective, winning solution to the problems presented by this site.

Continued on page 19.

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... Continued from page 16.

shaft work," explains Thomas.

"The city had another contract that was going to be affected if they did not finish the box culvert by June 1. The liquidated damages were $20,000 per day and a four-month delay would greatly impact the city of Atlanta. The general contractor realized the only way to complete the job in time was to change to steel piles."

Skyline Steel first received a call from Thalle Construction Co. of Briarcliff Manor, NY (the general contractor on a drainage project for the runway) in early February of this year requesting a price and fast delivery of 1,248 pieces of 14 inch x 73 lb H-piles.

"On February 10, the general contractor gave Skyline an order for 50,000 lineal feet of H pile. Between February 14 and March 7, [Skyline] delivered 41,434 lineal feet of stock H-piles in up to 60-ft. lengths," Thomas reports.

The ready availability of steel piles and speed with which they could be driven made the difference on this project. The use of driven piles proved to be a cost-effective, winning solution to the problems presented by this site.

The runway is expected to be completed in 2005. ▼

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MEMBERSHIP BENEFITS

General Membership Information

We are the premier association for pile-driving contractors

The PDCA was founded in 1996 to promote use of driven-pile solutions in all cases where they are effective. We strive to build and maintain working relationships among end users, manufacturers, government agencies, educational institutions, engineers and others involved in the design, installation and quality control of the driven pile.

We are dedicated to advancing the driven pile

As the only organization solely dedicated to pile-driving contractors, we know that you understand the superiority of the driven pile in most applications. We are the only association addressing the intrusion of non-driven solutions that take away business from the driven-pile contractor. The PDCA understands that to survive in today's competitive marketplace, a pile-driving contractor must strive to stay abreast of the latest trends and technologies in the industry. That is why we maintain close ties with the world's leading suppliers to the industry. It's why we provide a broad range of educational programs for university professors, practicing engineers and contractors. And, it's why more and more contractors, engineers and suppliers are realizing that the PDCA significantly increases their value in the marketplace.

We are a direct link to decision makers

Major manufacturers take an active role supporting the PDCA. At our conferences, we bring together the world's leading design manufacturers and technical application experts to assist you in advancing the driven pile as a superior product.

The PDCA works closely with the technical community to format design codes and installation practices. We offer seminars throughout the country for engineers and educators on the capabilities and advantages of the driven pile. We also work with agencies such as the Federal Highway Administration and state DOTs, which develop specifications for highway building and other infrastructure project that use driven piles.

We offer timely, valuable services

The PDCA improves your company's bottom line, as well as your stature in the construction industry, through a variety of programs and services:

Job Referrals

We are the only organization that provides contractor referrals to end users of driven piles. You tell us where you will drive piles and we will refer you to end-users. We also provide referrals to our supplier and technical members.

Peer-to-Peer Opportunities

With more than 100 contractor members, networking opportunities abound at the PDCA. Whether at our Winter Roundtable, our regional seminars or by just picking up the phone, you'll develop long-lasting professional relationships and friendships in the industry.

Annual Membership Directory

As a member, you'll receive PDCA's annual Membership Directory, a directory of our contractor, supplier and technical members. Your company is listed along with the piling solutions you employ and states in which you work. This directory is provided throughout the year to construction users on a complimentary basis.

Educational Conferences and Meetings

The PDCA offers cutting-edge education for contractors, engineers, geotechs and anyone else interested in the driven pile and its applications at two major conferences annually. Members receive discounts on exhibit and registration fees.

- The Winter Roundtable, held each February since 1997, is a nationally recognized conference that brings together leading technical experts, suppliers to the piling industry and contractors. This conference focuses on the key issues faced by pile-driving contactors and features discussions and presentations as well as an extensive exhibit area.

- The Design and Installation of Cost-Efficient Driven Piles Conference (DICEP), held each September since 2000, is a nationally recognized two-day conference that brings together geotechnical and design engineers, college professors and contractors to discuss the latest trends in understanding, analyzing and controlling piling costs.

Industry Development

The PDCA continually strives to expand market share for the driven pile. The PDCA sponsors the College Professors Piling Institute, held at Utah State University in Logan, Utah. Up to 25 professors, from major engineering schools, are invited to participate in an intensive, week-long program that presents them with the latest concepts in driven-pile design, installation and quality control. Some of the leading faculty in the deep foundation field has attended the institute to date. The program supplies the educators with the tools and knowledge to be able to teach their students about the advantages of the driven pile. It promises to have a long-term impact on market share for the driven pile.

Publications and Reference Materials

As a PDCA member, you will receive our quarterly publication, "*Piledriver*," which presents articles on issues and trends of interest to our industry. As a member, you'll receive discounts on advertising in the magazine.

"Through its programs and services, PDCA has presented our company with numerous opportunities to continue our business success. It is certainly a cornerstone for growth in a very competitive business."

D.R. Jordan, President and CEO, Jordan Pile Driving, Inc.

All PDCA members receive a complimentary copy of the PDCA's codebook, "*Recommended Design Specifications for Driven Bearing Piles*," now in its third edition. This book covers all required guidelines for driven piles and includes a suggested bid and payment schedule.

The PDCA also sells "*The Pile Design Manual*," an FHWA manual on the design and construction of driven piles. Order forms are available on the PDCA Web site.

Connect Worldwide at www.piledrivers.org

The PDCA's newly redesigned Web site at www.piledrivers.org lets you research the latest trends in the industry and find direct links to manufacturers, suppliers, engineers and others. PDCA members receive a free listing in our member search area, which is being used by an increasing number of end users to find pile driving contractors and services. Our forums area makes it easy for you to connect with others to discuss issues and problems.

Leadership Opportunities

Membership in the PDCA provides opportunities for recognition and leadership. Positions are available on the PDCA Board of Directors and various committees that impact the industry. The PDCA recognizes noteworthy contributions to the industry with our "Driven Pile Project of the Year" award, giving opportunities for high profile recognition.

Membership is available to you

There is strength in numbers and we at the PDCA need to count your company when telling government agencies, engineers and suppliers that we are interesting in keeping your business viable and in growing market share for the driven pile. We need your ideas and efforts in working together toward a common goal: The use of driven-pile solutions. You can contribute your expertise and assist the Association in developing:

- A greater focus on safety
- The quality of driven pile products
- The formatting of codes and specifications for the driven pile
- Support for a program to help educate students in the use of driven piles

Join today. Be part of a growing and vibrant organization the will play a key role in the future of deep foundations. Support your industry by completing the membership application in this issue. You will immediately begin to enjoy benefits of membership. ▼

PDCA

MEMBERSHIP APPLICATION

Step 1: Select Membership Type

I wish to apply for the following membership status (check one)

❑ **Contractor ($650 / year)**
A Contractor Member is defined as a specialty subcontractor or general contractor who commonly installs driven piles for foundations and earth retention systems. Includes one primary membership. Secondary memberships are $75 each.

❑ **Associate ($650 / year)**
Associate Members of the Association shall consist of firms or corporations engaged in the manufacture and/or supply of equipment, materials, testing or other services to the pile driving industry. Secondary memberships are $75 each.

❑ **Technical Affiliate ($95 / year)**
Technical Affiliate Members of the Association shall consist of individuals who are involved with the design and installation of driven piles or in teaching the art and science of pile design and installation. They may be employed engineers, architects, government agencies, or universities. Employees of contractors are not eligible to become Technical Affiliate Members. Note: Technical Affiliate Membership category is for individuals only. For a company listing in the directory and on the Web site, you must join as an Associate Member.

❑ **Retired Industry Member ($50 / year)**
A retired member shall be defined as any individual who has reached retirement age as defined by U.S. law, who has left active employment and who wishes to remain a member.
I am retiring as a: ❑ Contractor ❑ Associate ❑ Technical Affiliate

Step 2: Demographic Information

Title: ❑ Mr. ❑ Mrs. ❑ Ms. ❑ Dr. ❑ Prof. ❑ Other

Business Title _____ Business Phone _____

Name _____ Business Fax _____

Company Address _____ Primary Email _____

Business Address _____ Home Page _____

City/State/Zip _____

Step 3. Company Description (complete only the category for which you are applying)

A. Contractor Only Company Description (check all that apply):

❑ Bridge Building ❑ Docks &Wharves ❑ Marine
❑ Bulkheads ❑ Earth Retention ❑ Pile Driving
❑ Deep Dynamic Compaction ❑ General ❑ Other _____
❑ Deep Excavation ❑ Highway & Heavy Civil ❑ Other _____

B. Associate Company Only Company Description (check all that apply):

Accessories

❑ Cutter Heads & Drill Bits ❑ Lubricants & Greases ❑ Safety Equipment
❑ Dock & Marine Supplies ❑ Pile Cushions ❑ Other _____
❑ Hammer Cushions ❑ Pile Points & Splicers
❑ Hoses & Fittings ❑ Rigging Supplies

Applications By Systems

❑ Aluminum Sheet Piles
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❑ Specialized Rigs & Equipment
❑ Other

Services

❑ Consulting
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❑ Marine Drayage
❑ Surveying
❑ Testing
❑ Trucking
❑ Vibration Monitoring
❑ Other _____

General

❑ Rental ❑ Sales ❑ Other _____ ❑ Other _____

C. Technical Affiliate Only (check all that apply)

❑ Analysis
❑ Civil & Design
❑ Consulting
❑ Educational/Association
❑ Geotechnical
❑ Materials Testing
❑ Pile Driving Monitoring
❑ Surveying
❑ Vibrating
❑ Other

Step 4. Geographic Areas Where Contracting, Products and Services Available

(All applicants check all that apply)

❑ All States	❑ CT	❑ ID	❑ MD	❑ NC	❑ OH	❑ TN	❑ WV
❑ AK	❑ DC	❑ IL	❑ ME	❑ ND	❑ OK	❑ TX	❑ WY
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Step 5. Sponsorship: Who told you about PDCA?

Member Name_____

Step 6. Method of Payment

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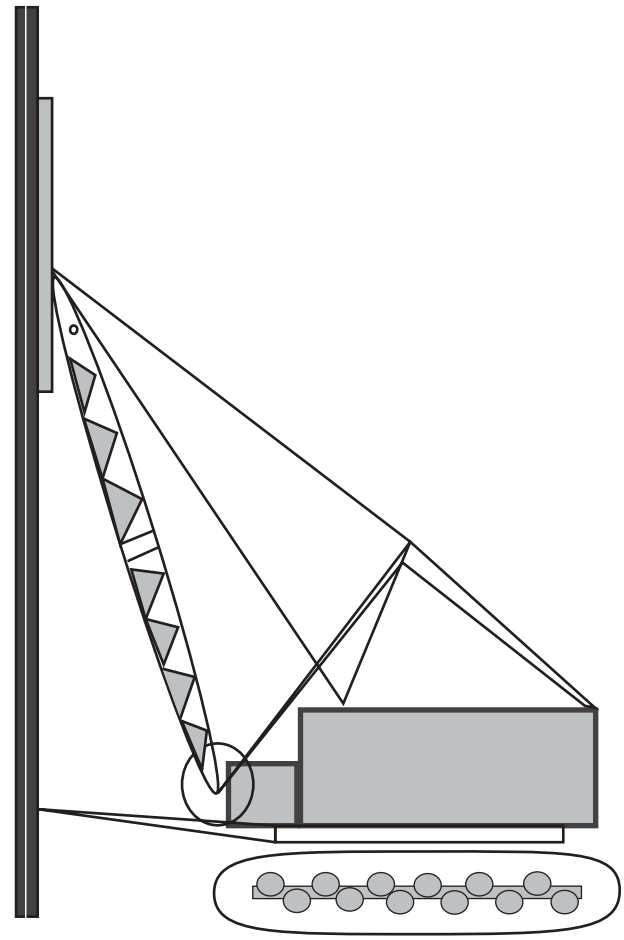

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PDCA

PDCA New Member List

We would like to welcome the following companies as new members. Please visit the PDCA Web site at www.piledrivers.org and click on Member Search for complete contact information on all PDCA members.

NEW CONTRACTOR MEMBERS

Cape Romain Contractors
Wando, South Carolina
Contact: Robert Musselwhite
Services Provided: Bridge Building, Bulkheads, Docks & Wharves, Earth Retention, Marine, Pile Driving

C.L. Benton and Sons
Myrtle Beach, South Carolina
Contact: Carson Benton
Services Provided: Bulkheads, Deep Dynamic Compaction, Deep Excavation, Earth Retention, General, Highway & Heavy Civil, Marine, Pile Driving

P+H Construction
Mobile, Alabama
Contact: Pat Hensley
Services Provided: Bridge Building, Bulkheads, Docks and Wharves, Earth Retention, Highway and Heavy Civil, Marine, Pile Driving

NEW ASSOCIATE MEMBERS

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Sandhill Trucking
John's Island, South Carolina
Contact: Leroy Cohen
Services Provided: Trucking/Freight

S&ME, Inc.
Mount Pleasant, South Carolina
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Services Provided: Geotechnical, Design, Consulting, Testing, Vibration Monitoring

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The Pile Driving Contractors Association (PDCA)

is soliciting nominees for the

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As a means of recognizing noteworthy contributions to the industry, PDCA will recognize an outstanding project that utilized driven piles to solve foundation problems.

Qualification for nomination requires projects only to involve driven piles, that the piledriving be completed during 2002 or 2003, and that at least one participant was a PDCA member during the year as a contractor, technical affiliate or as associate member. Projects will be judged on qualities such as, but not limited to, uniqueness, timeliness, unusual aspects of piledriving or unusual solutions to foundation problems, value engineering or value to the public or industry.

Entry forms and rules are available at:
PDCA Web site: www.piledrivers.org
PDCA office: 888-440-7453 (PILE)

The winning project will be presented an award at the PDCA 2004 "Winter Roundtable."

Nominations will close December 1, 2003.

Ford Pile Foundations:
A True Family Success Story

Woody and Trey Ford of Ford Pile Foundations in Virginia Beach.

By Jennifer Bernal

Ford Pile Foundations is a true success story. Not many companies can boast of having three generations of family members involved spanning a timeframe of more than 60 years.

It all began when Woodrow Ford founded the company in Virginia Beach in the mid 1940s.

"He came from a family that had installed piling all over the southern U.S., Caribbean Islands and Panama Canal Zone," recalls his son Woody. "Pile driving was in his blood and he loved his work better than anyone I have ever met."

The Fords had moved from Florida to Virginia in the late 1930s. Today, the 40-employee company is run by Woody and his son Trey.

The company installs timber, steel pipe, prestressed concrete piling, steel H-piling, steel sheet piling and other types of pile.

"We have performed projects in North and South Carolina, Georgia and Florida," Woody says. "Some of our projects include high-rise buildings, power plants, paper mills, hospitals, schools, bridge piling, permanent steel sheet piling and temporary steel sheet piling. We have also installed earth anchors and auger cast in place of piling.

The Fords have been involved in projects for many companies over the years including Turner Construction, Brown & Root, J.A. Jones, Kiewit, Gilbane, Armada/Hoffler and the W.M. Jordan Company.

Of their numerous portfolio of projects,Woody recalls a particularly interesting one: "One of the most unusual jobs we have performed required drilling through limestone that was 30 ft. to 36 ft. below ground and then placing a steel H-pile

through the hole and driving it another 30 ft. The limestone formation varied from almost nothing to as much as six ft. in many areas. This job was in Georgetown, South Carolina and we returned to the site on several occasions for different general contractors at later stages of the power plant construction."

"One thing that is really important for the future of pile driving is ensuring college professors are educated properly."

– Trey Ford

Both Fords are also very active in PDCA. Woody became involved when the association was founded in 1996.

"I went to an organizational meeting in Chicago at O'Hare Airport and met with about 25 other contractors, material and equipment suppliers. It was an opportunity to meet with other pile-driving contractors and find out what they were experiencing with new equipment and installation techniques that they had tried with success or failure."

Trey became involved with the association a few years later and is currently on the Board of Directors.

"PDCA is a great vehicle for a lot of small- to medium-sized companies," he says. "[It] gives them some industry standardization and recognition like other trades have. I enjoy meeting with other people from different parts of the country and finding out that the things I go through are not unique -- that everybody is facing the same kinds of issues."

Both gentlemen believe that one major challenge for the industry is education.

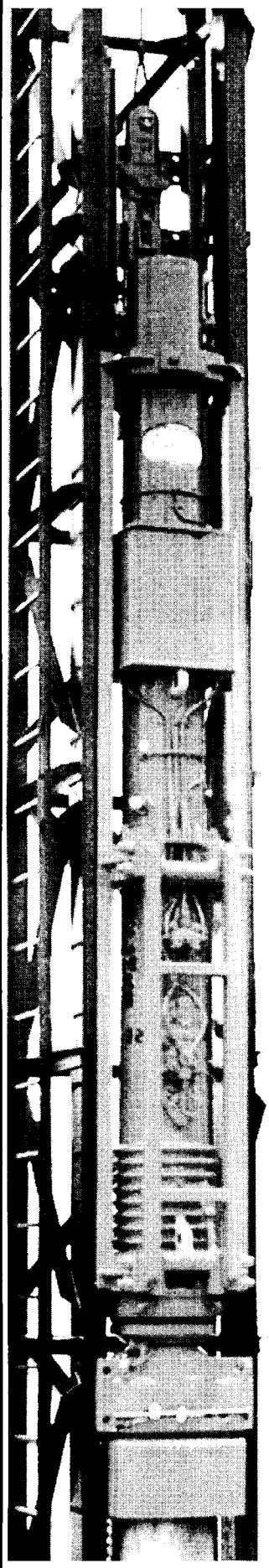
"One thing that is really important for the future of pile driving is ensuring college professors are educated properly. Some engineers do not have any experience with piles, so they may choose another option that is less cost efficient and beneficial than a driven pile would be," Trey explains.

Material improvements have helped the company in its projects. "In the 1970s, it was rare to install a typical high-capacity pile beyond 60 tons. Today, we are installing that same pile to a capacity of 105 tons," Woody explains.

The Fords also believe that pile driving has received an undeserved reputation for noise pollution.

"Installing driven pile with consideration to others is the same as treating your neighbor as you want to be treated," says Woody. "If you are working near residential neighborhoods, wait until 8 a.m. to start working. We have heard many experts speak about vibration and they all agree that it is not the problem that everyone assumes it to be. Piles are generally needed in areas where the ground is soft. Vibrations through soft material is an oxymoron."

The goal for the future of Ford Pile Foundations is to keep the family business successful. And, to do so, Woody says they will continue to concentrate on what they know best. "Do a first class job and they will call on you again." ▼



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AN INNOVATIVE WAY TO REPAIR A DAM

The CONTRACTOR: Trevicos/Rodio Joint Venture

DATE OF AWARD: 14 August 2001

NOTICE TO PROCEED: 4 October 2001

SCOPE OF WORK: In order to eliminate seepage in the karsts formation (limestone with sinks, underground streams and cavern) beneath the foundation of the Walter F. George Dam Structures (navigation lock, spillway, powerhouse and non over flow), Trevicos/Rodio JV designed a concrete cutoff wall to be installed and tied into existing cutoff walls established in the levees on either side.

THE REPAIR WORKS MAINLY CONSIST OF:

- Constructing a 24-inch minimum thickness concrete cutoff wall from the bottom of the lake to an elevation of -5 feet, for a distance of approximately 1,831 linear feet, immediately upstream of the Dam structures, performed in a maximum of 100 feet of water.
- A concrete cap on top of the new wall that will tie into existing concrete monoliths of the Dam structures in order to seal the seepage from the top.

PHASES OF CONSTRUCTION

- Excavation and installation of the concrete underwater Apron having minimum dimension of 7.0 feet wide and 6.5 feet deep.
- Excavate for secant wall on water, from the bottom of the lake and throughout the apron to an elevation of -5 and fill up with plastic concrete material.
- Excavate for a slurry wall on land from approximate elevation 211 to elevation - 5 and fill up with concrete material.
- Disposal of excavated material by pumping in selected areas on bottom of the lake.
- Cleaning of the top portion of the plastic concrete wall and the face of the Dam structure and removal of top portion of Apron in order to place a concrete cap Beam over the wall.

ICE EQUIPMENT USED: Trevicos/Rodio JV decided to use an ICE Model 160 Hydraulic Impact Hammer to drive the casings through the concrete; ICE Model 44-50 and 66-80 Vibratory Drivers/Extractors for extraction.

VIBRATOR	UNITS		MODEL 44-50		MODEL 66-80	
Eccentric Moment	in-lb	kg-m	4,600	507	6,600	76
Frequency	rpm		1600		1600	
Centrifugal force	tons	kn	180	1423	240	2139
Amplitude	inches	mm	1.17	30	1.23	31
Max. line pull for extraction	tons	kn	80	712	80	712
Suspended weight without clamp or hoses*	lbs.	kg	11,500	5216	15,200	6,917
Non-vibrating weight	lbs.	kg	4,000	1814	4,550	2064
Length (L to K)	inches	cm	97	246	97	246
Width (F to B)	inches	cm	19.5	50	21.80	55
Throat Width	inches	cm	14.5	36	14.25	36
Height without clamp*	inches	cm	83.25	211	99.75	253

* Charted weight does not include clamp or hoses.

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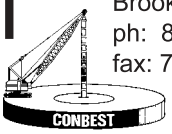

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Wyndham Orlando Resort, Orlando, Florida

Advertiser Index

ABI, Inc 22
All American Underpinning & Shoring Inc. 33
American Engineering Testing, Inc. 14
American Piledriving Equipment, Inc. . . . . OBC
Associated Pile & Fitting, LLC 17
Carolina Pole 25
Converse Consultants 36
Drive-con, Inc. 25
Geokon, Inc. 19
Geosciences Testing and Research, Inc. 14
GRL Engineers, Inc. 19
GZA GeoEnvironmental, Inc. 17
International Construction Equipment, Inc. . . . 2, 35
Junttan 21
Juri Jalajas, Consulting Construction Engineer . . . 7
L.B. Foster. 6
Lally Pipe & Tube 7
Liebherr Nenzing Crane Co. 18
M, G & B Services, Inc. 7
Mississippi River Equipment Co. Inc. 7
Mississippi Valley Equipment Co. 16
Monotube . . . . . IFC
Municon Consultants 2
National Ventures Inc. 25
Naylor Pipe Co. 25
Nucor-Yamato Steel Co. . . . . IBC
PK Pipe & Tubing, Inc. 20
Pennstate Fabricators. 35
Pileco 34
Skyline Steel Corp. 30
Slurry Systems, Inc. 14
Specialty Piling Systems, Inc. 20
Steel Dynamics 10
Stroer & Graff, Inc. 33
Timber Piling Council 14
TXI Chaparral Steel 13

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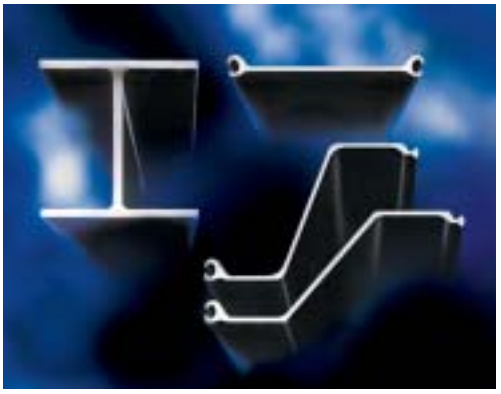

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AND ASTM 690

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HP12x53	HP12x63	HP12x74	HP12x84
HP8x36		HP10x42	HP10x57

SHEET PILING TECHNICAL DATA

Section Designation	AREA		WIDTH		HEIGHT		WEIGHT (MASS) PER SINGLE		WEIGHT (MASS) PER WALL		MOMENT OF INERTIA		SECTION MODULUS Per Single		SECTION MODULUS Per Wall		SURFACE AREA Total Area		SURFACE AREA Nominal Area*	
	in^2	cm^2	in	mm	in	mm	lb/ft	kg/m^2	lb/ft^2	kg/m^2	in^4	cm^4	in^3	cm^3	in^3/ft	cm^3/m	ft^2/ft	m^2/m	ft^2/n	m^2/m
PZ22	11.9	76.6	22.0	559	9.0	228.6	40.4	60.1	22.0	107	151	6301	32.5	532	17.7	952	4.92	1.50	4.48	1.37
PZ27	12.1	78.2	18.0	457	12.0	304.8	41.2	61.3	27.5	134	282	11734	45.3	742	30.2	1622	4.93	1.50	4.48	1.37
PS27.5	13.4	86.6	19.7	500	—	—	45.6	67.9	27.8	136	5.02	209	3.19	52.2	1.94	104	4.58	1.40	3.88	1.18
PS31	15.2	98.2	19.7	500	—	—	51.8	77.0	31.5	154	5.51	229	3.35	55.0	2.04	110	4.58	1.40	3.87	1.18

*Note: Nominal coating area excludes socket interior and ball of interlock.

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