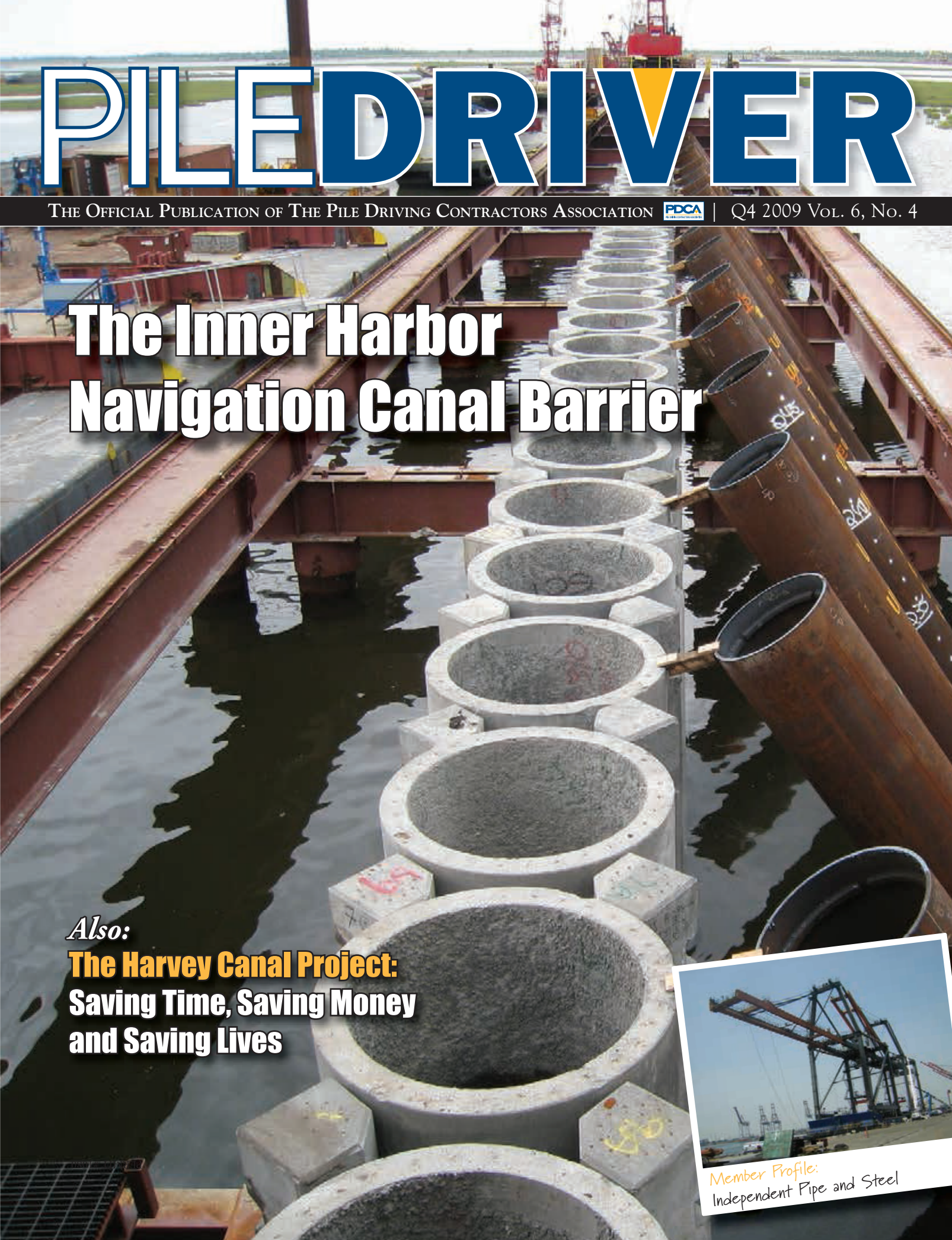
PILEDRIVER

The Official Publication of The Pile Driving Contractors Association PDCA | Q4 2009 Vol. 6, No. 4



The Inner Harbor Navigation Canal Barrier

Also:

The Harvey Canal Project: Saving Time, Saving Money and Saving Lives

Member Profile:
Independent Pipe and Steel

Jinnings Pile Driving Equipment

- Equipment Sales
- Equipment Rentals
- Parts and Services
- Hydraulic Piling Hammers
- BSP SL Models
- BSP CX Models
- Side Grip Vibrating Hammers
- BSP SCV Models
- Power Sources

- For more information on products, availability, or pricing, contact us at:
  Toll Free: 877-546-6464 | Fax: 260-447-4363 | E-mail: info@jinnings.com
- **Jinnings Equipment, LLC** | 4434 Allen Martin Drive | Fort Wayne, IN 46806

www.jinnings.com

PILE DRIVING CONTRACTORS ASSOCIATION
1857 Wells Road, Suite 214
Orange Park, FL 32073

P.O. Box 66208
Orange Park, Florida 32065
Phone: 904-215-4771
Toll-free phone: 888-311-PDCA (7322)
Fax: 904-215-2977
www.piledrivers.org
e-mail: steve@piledrivers.org

Published by:
Lester Publications, LLC
140 Broadway, 46th Floor
New York, NY 10005
Toll-free phone: 866-953-2189
Toll-free fax: 877-565-8557
www.lesterpublications.com

President
Jeff Lester

Vice President
Sean Davis

Sales Director
Steve Urias

Managing Editor
Toban Dyck

Design and Layout
Myles O'Reilly

Advertising Executives
Kristin Bedard, Quinn Bogusky, Louise Peterson

Visit the PDCA Web site at www.piledrivers.org

For reprint information, contact
Lester Publications, LLC at 877-387-2700
For a media kit, visit www.piledrivers.org

Individual articles can be provided upon request to the PDCA office. Requests should be submitted to the PDCA via e-mail at steve@piledrivers.org or by calling 888-311-PDCA (7322).

Piledriver is published quarterly.
Please contact us by mail at
P.O. Box 66208, Orange Park, FL 32065
Phone: 904-215-4771 | Fax: 904-215-2977
or by e-mail at steve@piledrivers.org

Printed in Canada.
Please recycle where facilities exist.

PILEDRIVER

The Official Publication of The Pile Driving Contractors Association | Q4 2009 vol. 6, no. 4

Contents

PILEDRIVER

PDCA Member Profile:

PDCA Associate Member Profile:

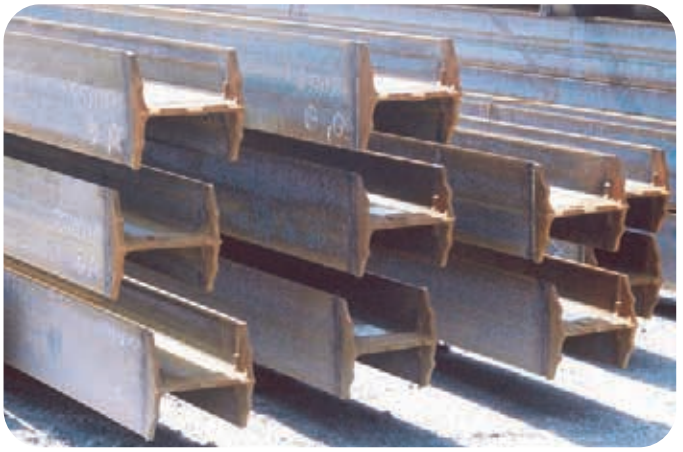
Project Spotlights:

Feature Articles:

International Articles:

On the cover:
The Inner Harbor Navigation Canal Barrier

H-Piling • Sheet Piling • Pipe Piling • Piling Accessories • Wide Flange
Structural Shapes • Bar Products • Steel Plate • Bridge Decking
ERW Tubing • Reinforcing Bar • Angles • Channels • Tie Backs
Fabrication Services • Industrial Coatings & Galvanizing



Trusted Stocking Distributor Since 1983

Barge, Rail and Truck Served
Call Today for Availability and Pricing

QUALITY ✦ SERVICE ✦ PRICE

Buy Quality + Buy Experience
Buy American

R.W. CONKLIN STEEL

Steel

100% Melted & Manufactured in the USA

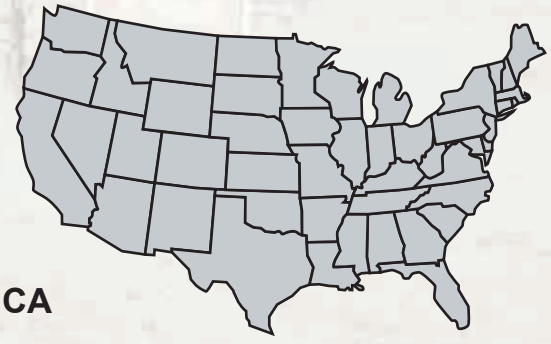
We Service You From Mill Rollings
We Service You From Stock!

Inventories, depots and sales offices throughout North America

- Cincinnati, OH
- Hamilton, OH
- Fort Wayne, IN
- Chicago / NW IN
- Steele, MO
- Cofield, NC
- Elizabeth, NJ
- Baltimore, MD
- Philadelphia, PA
- Pittsburgh, PA
- Salt Lake City, UT
- Atlanta, GA
- Stockton, CA
- Rancho Cucamonga, CA
- Minneapolis, MN
- Denver, CO
- Seattle, WA
- Vicksburg, MS
- Fairfax, VA
- Dauphin Island, AL

Western Canada

- Calgary, AB
- Edmonton, AB
- Vancouver, BC



www.conklinsteel.com

Toll Free 888-CONKLIN

Sales Facsimile 513-769-0610

PILEDRIVERS piledriving on

By John King

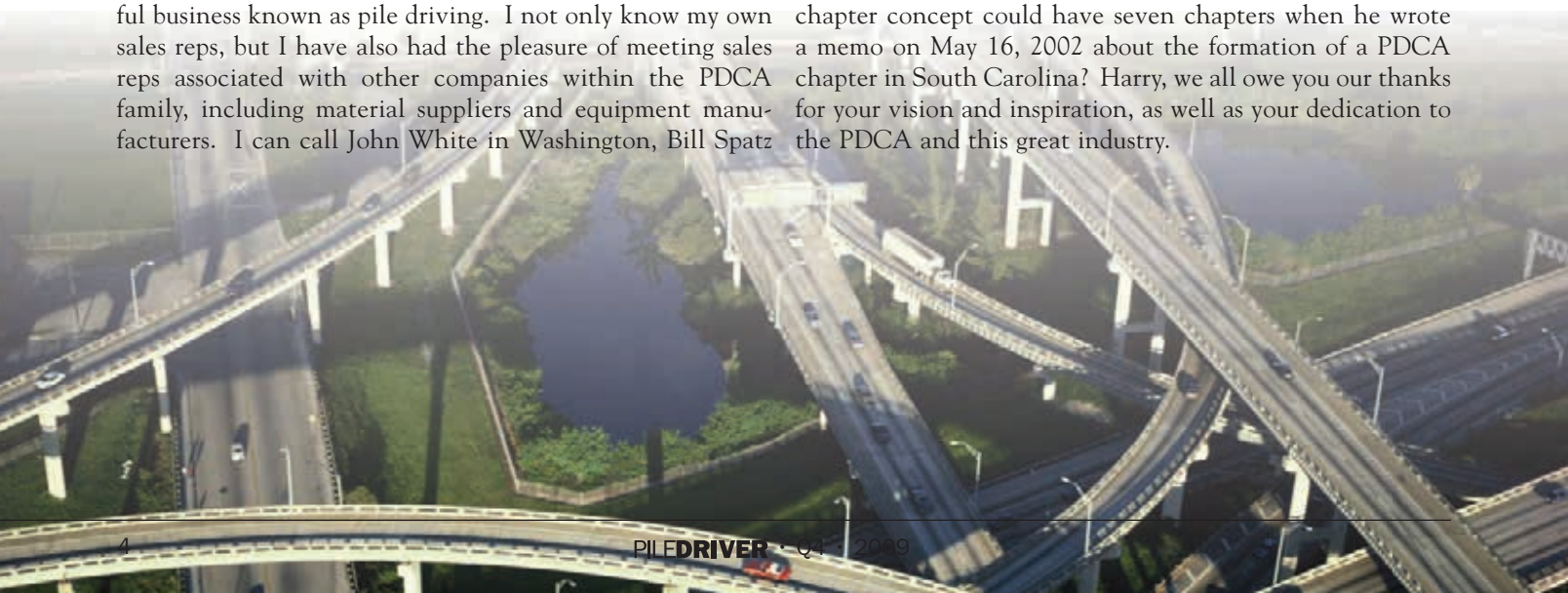
Winston Churchill once stated, "If you have an important point to make, don't try to be subtle or clever, use a pile driver." Well I'm a pile driver and I like what he said, but I also like Ted Nugent's comment when he said "Winston was a whack'em and stack'em kind of guy—the kind I respect and admire." Everything good in life is a direct result of pile drivers pile driving on. I piledrive at all costs – I am a PILE DRIVER!

In another trade magazine's President's Message, the president of the company was asked the same question I have been asked a lot as president of the PDCA; "Is it (The PDCA) worth all the time and effort?" or "How does your small company afford allowing you to spend so much time on industry activities?"

My answer is similar to his in that I have gotten more back from the PDCA than I have given. Through discussions with my fellow pile driver engineers, suppliers and manufacturers, I know why and how driven piles are better than other deep foundations options. I have also learned about different options for driving a pile when something out of the ordinary pops up. And most importantly, I have friends from Maine to Florida to Texas to Indiana to California who I can call regarding any part of this wonderful business known as pile driving. I not only know my own sales reps, but I have also had the pleasure of meeting sales reps associated with other companies within the PDCA family, including material suppliers and equipment manufacturers. I can call John White in Washington, Bill Spatz in Louisiana, Randy Kelly in New Jersey, or Ahti Knopp in Kuopio, Finland - all are willing to take the time to speak to me about this industry and answer my questions or concerns. How can you put a price or value on that type of resource? They say time is money and knowledge is power – through the PDCA, I have knowledgeable resources that provide me with the power to save my company time and money.

Another example: I know a pile driver on the East Coast who called a pile driver on the West Coast about a problem he encountered with a contract while using a mutually known general contractor. The West Coast contractor was able to resolve a similar contractual problem, eliminating payment issues and thereby getting paid for work that may have otherwise been disputed. So the benefits of being a PDCA member might be worth millions to some.

I just returned from an organizational meeting for the new PDCA of the Northeastern U.S. chapter hosted by new PDCA member Linde-Griffith Construction Company. The formation of this chapter will be the PDCA's sixth chapter. PDCA is also discussing another chapter and by next issue hopefully I will report on the newly formed PDCA of the Upper Midwest chapter, which will be our seventh. I wonder if Harry Robbins would have ever dreamed that the local chapter concept could have seven chapters when he wrote a memo on May 16, 2002 about the formation of a PDCA chapter in South Carolina? Harry, we all owe you our thanks for your vision and inspiration, as well as your dedication to the PDCA and this great industry.



MANDAL PIPE

PORT OF HOUSTON EXPANSION

BUILT ON LARGE DIAMETER STEEL PIPE

The Port of Houston is a 25-mile-long complex of diversified public and private facilities located just a few hours' sailing time from the Gulf of Mexico. The port is ranked first in the United States in foreign waterborne tonnage and second in the U.S. in total tonnage. More than 225 million tons of cargo move through the Port of Houston annually. A total of 8,053 vessel calls were recorded at the Port of Houston during the year 2008. All together, the port authority and its neighbors along the ship channel are a large and vibrant component to the regional economy.

The Port of Houston has an impressive listing of firsts, from unloading the world's first container ship to becoming the country's first port to receive ISO 14001 compliance. In order to meet future demands, an expansion was undertaken in late 2008 which required the building of the heavy foundations needed to support the new dock cranes used to unload the vessels.

MANDAL PIPE COMPANY supplied the large diameter steel caissons necessary for supporting the heavy loads by shipping 19000' of 48" and 5000' of 36" Spiralweld pipe in 50' lengths. All in all, over 125 truck loads of pipe were delivered on time and within the specification required by the design engineer. Another product "Melted and Manufactured" in the USA provided my MANDAL PIPE helping to keep our infrastructure prepared for the future.

MANDAL PIPE COMPANY
P.O. Box 927
Snellville, GA 30078
Ph: 1-770-573-3022 • **Fax:** 1-770-573-3380

Mandal Pipe Company... RELIABLE, EXPERIENCED, EFFECTIVE

www.mandalpipe.com

THINK PIPE...THINK *MANDAL!*

What can a local PDCA chapter do for you? Who cares as much about your market as you?

Since I'm most familiar with the South Carolina chapter, here are a few things we have done in our six years of existence: we hold quarterly meetings, we conduct a one-day driven pile seminar every other year, with great speakers like Van Komurka, Jerry DiMaggio, Mike Justason, Pat Hannigan, George Goble, James Bay, Dan Brown, Paul Mayne, Charles Dowding and local pile driving legend Mr. Tommy Parker, who at 86 years young has been driving piles for over 50 years and remains a constant source of valuable information. The chapter holds a yearly oyster roast and a Crane Operators Certification Course. We have conducted concrete, steel and timber plant tours to show engineers the quality control and quality assurance that goes into the manufacturing of all our products. We have sponsored four professors at the Professors' Driven Pile Institute. The chapter works with The Citadel on their outdoor soil labs and we have had the honor of hosting Professor Brian Anderson and his engineering students from UNC Charlotte for a plant tour and a job site visit. On the tour students saw how the piles are cast, loaded for transport, unloaded at the jobsite and then driven. The chapter is also very proud of our scholarship fund, which is presented to a deserving engineering student at The Citadel every year. The scholarship, which is named after and in honor of McLeod Nigels, a prominent local Charleston, SC engineer, will be presented this December for the third consecutive year. In January 2010, John Parker's (Parker Marine) 2 year term as chapter President will end and Sonny Dupree (Cape Romain Contractors) will become the chapter's 4th President.

The Mid-Atlantic Chapter was the second PDCA chapter and is run by President Irv Ragsdale (Clark Foundations). The Mid-Atlantic chapter was the first chapter to host the DICEP conference with PDCA national and set the standard of attracting over 100 participants. The chapter also conducts various social and industry events, including quarterly chapter meetings.

PDCA's Gulf Coast Chapter, led by President Michael Kelly (Gulf South Piling and Construction) was the third PDCA chapter. The Gulf Coast Chapter also holds quarterly meetings and introduced a Crawfish Boil and Fish Fry party in 2009, which was attended by 100 chapter members and guests. The Gulf Coast Chapter was second to host the DICEP conference. Although delayed by hurricane Ivan last year, which lead to moving the DICEP conference from September to November, the chapter still reached the goal of over 100 attendees.

The California PDCA Chapter was the fourth chapter to affiliate with the PDCA, even though their existence precedes PDCA national by many years. The California Chapter will host the 2009 DICEP conference. The California PDCA also has a scholarship program and conducts an annual luncheon.

Then came Florida! The PDCA of Florida Chapter is our fifth chapter. During their formation, they asked PDCA for help and we gave them our best – Van Hogan (Ed Waters and Sons). Remember my opening comment about affording all the time away from the office, well between Van Hogan

and Wayne Waters (president, Ed Waters and Sons), Ed Waters and Sons has given far more than their fair share of time in support of the PDCA. Thanks so much Wayne and Van! The newly formed PDCA of Florida Chapter held its inaugural dinner meeting on August 28th in Orlando, FL. The event was attended by over 105 engineers, pile driving contractors, suppliers and manufacturers. Thanks so much to Van Hogan, Kylie Williams (Skyline Steel), Kike Carter (Giken America) and Keith Waugh (Leware Construction) who were so instrumental in getting the chapter off the ground and running. Sara Harrison (Hammer and Steel) is the membership chair and would be happy to discuss your joining this new PDCA chapter.

Then we have what I call the un-official eighth Chapter – The Rusty Signor Road Show! Rusty has been independently holding driven pile presentations for over a year now. Rusty is inviting local engineers to spend a portion of their day with him to watch demonstrations on pile driving, dynamic testing and learn more about the advantages of driven pile in the Austin, TX and surrounding area. If every pile driver promoted the wonders of what we can do with a driven pile to a fraction of the extent Rusty does, I don't think there would be any other type of deep foundation.

After continued efforts by Mike Wysockey (Thatcher Engineering), the PDCA has agreed to a one-day driven pile seminar, which will be co-sponsored by the PDCA and DFI. The program will be held in the northern Virginia area, on March 12, 2010. Billy Camp (S&ME) along with PDCA member and DFI driven pile committee chair, Tom Nichols (Skanska) will be heading up the joint effort.

Just Remember DRIVEN PILES ARE TESTED PILES. ▼

"If you have an important point to make, don't try to be subtle or clever, use a pile driver." - *Winston Churchill*

JOYTECH

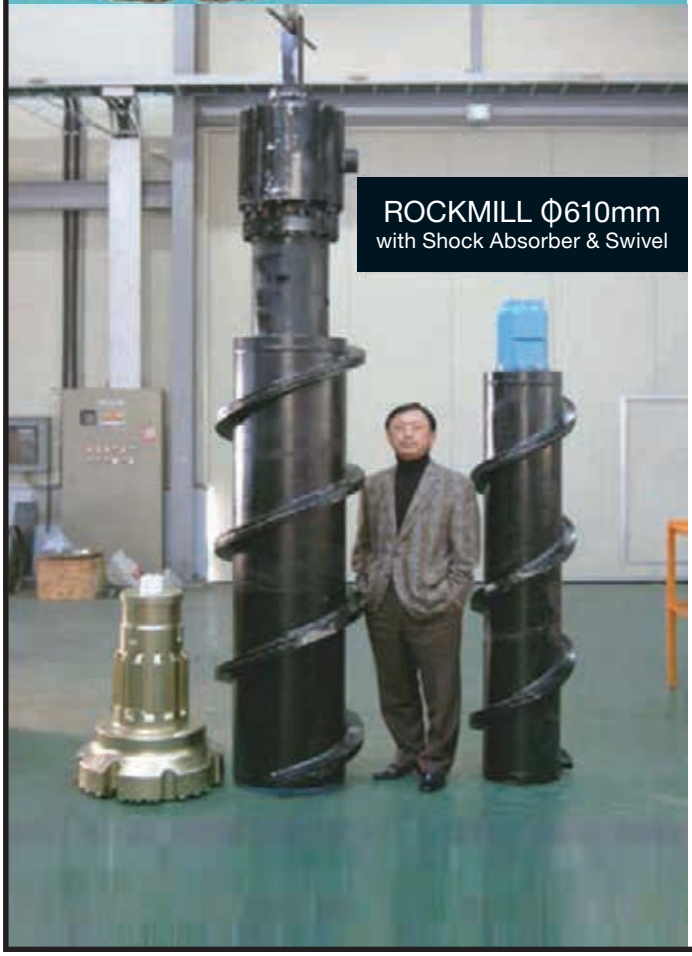
HAMMER and BIT

2" ~ 60"

IR, Mission, Atlas Copco, Halco, Numa types

DAHIL CORP., Joytech Div.
Seoul, Korea
Tel: 82-2-515-4878 Fax: 82-2-515-6444
E-mail: dahil@dahil.co.kr
Web: www.jthammer.com

Distributor Inquiries Welcome



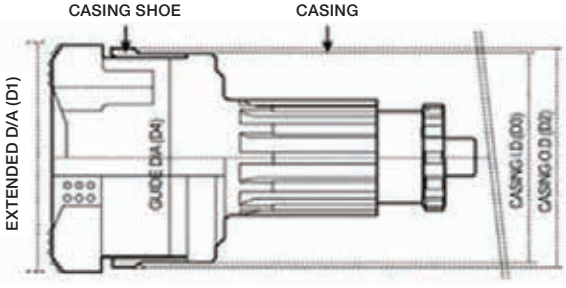
ROCKMILL ϕ610mm
with Shock Absorber & Swivel

JUCON

Under-Reaming System

for ϕ355mm to ϕ1,362mm Casings

with wings retracted → with wings expanded



Executive Director's Message

By Stevan A. Hall

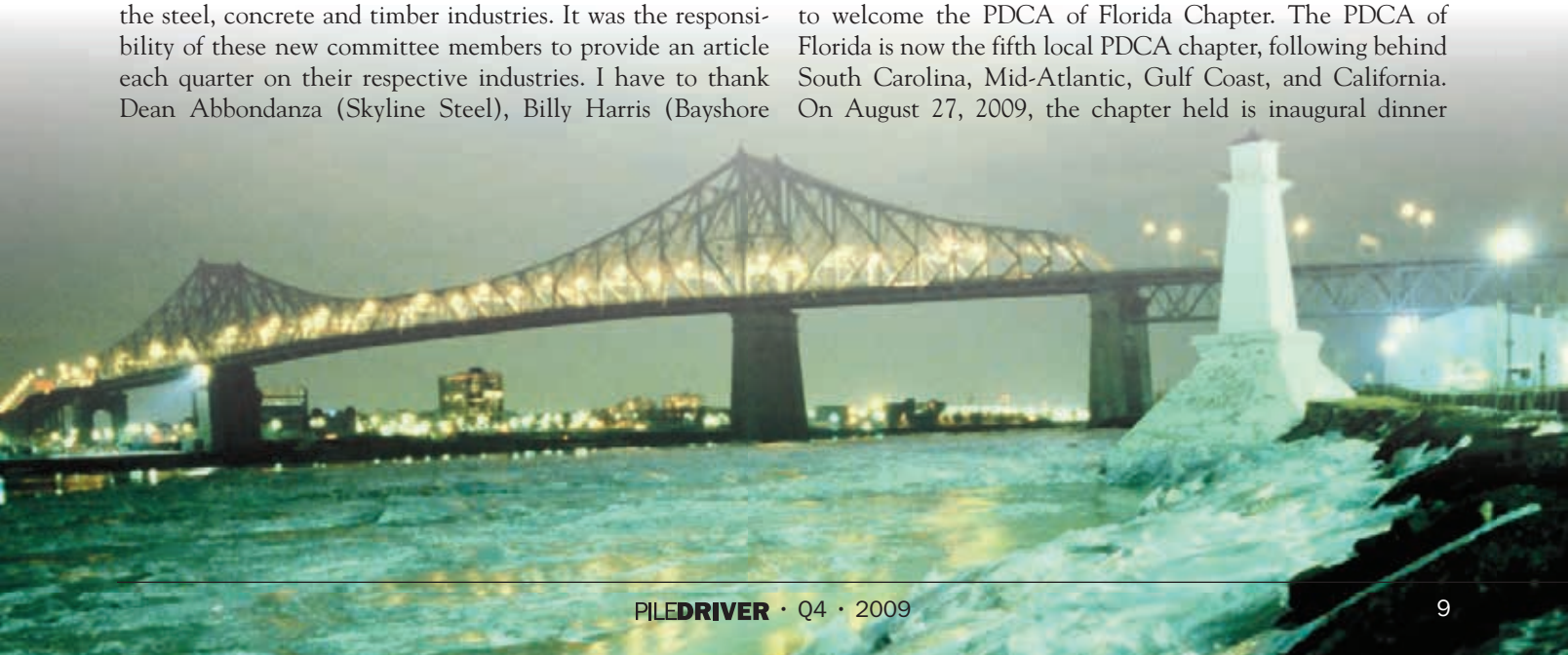
By the time you receive this edition of *PileDriver* magazine, it will be late December or early January and the year's end will be approaching or has already come upon us. It is at this time of year when we all start asking ourselves that old familiar question, "where has this year gone?" I don't know about you, but for me each year seems to go by just a little faster than the one before! Some would say as you increase in age, you decrease in time! In an effort to dismiss the fact that I am getting older, I would like to think this is simply some kind of age/time continuum that can be explained mathematically, but just overlooked by Einstein, who took off in another direction.

This issue of *PileDriver* magazine represents the fourth quarter and last edition of the magazine for 2009. This has been a stellar year for the *PileDriver* magazine from both an editorial content and advertising perspective, so to those who submitted articles and those who purchased ads, the PDCA is grateful.

In 2009, the PDCA Communications Committee, chaired by Pollyanna Cunningham (ICE) increased the size of the committee by including (among others) representatives from the steel, concrete and timber industries. It was the responsibility of these new committee members to provide an article each quarter on their respective industries. I have to thank Dean Abbondanza (Skyline Steel), Billy Harris (Bayshore Concrete Products), and Don Surrency, (Cox Industries Inc.) for representing their industries through the articles they submitted to *PileDriver*. The PDCA hopes you have enjoyed your 2009 subscription and found the articles interesting, informative and educational. The PDCA looks forward to 2010 and another successful year of *PileDriver*.

Another function of the Communications Committee is to monitor the website. In 2009, the committee recommended changing our web host and re-developing our site. The Board of Directors under the leadership of PDCA President John King (Pile Drivers Inc.) approved the expenditure and change. Although staff is just getting used to the new site and its functionality, ultimately it is going to a better resource for our members. The site will include expanded links and information, online event registration and a seamless process for membership renewal and PDCA chapter pages, which will allow chapters to announce upcoming events, meetings, post pictures in their own gallery, upload articles and give the chapters more exposure than ever before.

While we are on the subject, I did not get to mention this in my last message in *PileDriver* due to timing, but want to welcome the PDCA of Florida Chapter. The PDCA of Florida is now the fifth local PDCA chapter, following behind South Carolina, Mid-Atlantic, Gulf Coast, and California. On August 27, 2009, the chapter held is inaugural dinner



CONMACO®

THE EXCLUSIVE NORTH AMERICAN DISTRIBUTOR OF

BRUCE

HYDRAULIC IMPACT HAMMERS
FROM 26,000 TO 600,000 FT. LBS.

AVAILABLE NOW!
BRUCE SGH-3015

325,484 FT. LBS.

CALL TODAY FOR MORE INFORMATION!
1-800-713-4165

BELLE CHASSE, LA
800-259-7330

CHESAPEAKE, VA
800-713-4165

KANSAS CITY, MO
913-371-3930

CHICAGO, IL
708-597-7766

Depend on Our Quality – Benefit from Our Experience!

www.conmaco.com

meeting in Orlando, FL. The meeting was co-sponsored by the ASCE Central Florida Branch and had an impressive 105 people from across Florida attending the meeting – congratulations! More information on the Florida chapter can be obtained from chapter President Van Hogan (Ed Waters and Sons Contracting Inc.) at 904-823-8817.

I also want to welcome the newest chapter to the PDCA family – The PDCA of the Northeast. On Sept. 22, 2009, Linde-Griffith Construction Company hosted an organizational meeting to determine if there was any interest in forming a Northeast chapter. The answer was an overwhelming "Yes!" by the more than 40 PDCA members and guests who attended the meeting. At the conclusion of the meeting, the group elected officers. The new leadership of the chapter consists of President Kevin Shannon (Linde-Griffith), Vice President Chris Shannon (Linde-Griffith), Secretary Pat Lanni (Skyline Steel) and Treasurer Randy Kelly (Atlantic Wood Industries). The chapter's geographical area includes New Jersey, New York, Connecticut, Massachusetts, Rhode Island, Vermont, New Hampshire and Maine. The chapter is currently working on incorporating with the State, establishing their Bylaws, dues structure and soliciting volunteers for the Board of Directors. Anyone interested in participating on the Board or volunteering in another capacity should contact Chris Shannon, Linde-Griffith at 973-481-1106.

PDCA is currently talking to members in the Upper Midwest, who are also interested in starting a new chapter.

"All politics is local" is a quote often attributed to the late Thomas P. (Tip) O'Neill, Jr., but Tip didn't coin the phrase; it was passed down to him. Tip revealed the true attribution of the quote in his 1987 autobiography, *Man of the House*. Tip's father, Thomas O'Neill, Sr., shared this wisdom on the occasion of the only election loss in his son's lifetime--a run for the Cambridge City Council. "This was the only race I ever lost in my life, but in the process, I learned two extremely valuable lessons. During the campaign, my father had left me to my own devices, but when it was over, he pointed out that I had taken my own neighborhood for granted. He was right. I had received a tremendous vote in the other sections of the city, but I hadn't worked hard enough in my own backyard. 'Let me tell you something I learned years ago,' he said. 'All politics is local.'"

This is an overwhelming reason to establishing a local chapter. I had the pleasure to speak to those attending the organizational meeting in New Jersey when the pile drivers in that area were discussing their chapter. I told them that on bid day we are all competitors, but every other day of the week we have the opportunity to work together to build stronger relationships, represent our industry, and affect change at the local level. There is no better way to secure your future than to have a united voice that speaks loud and clear to those who have the ability to impact your business.

Coeur d'Alene Golf and Spa Resort. Sound familiar? It should because we have been talking about the PDCA's 14th Annual International Conference and Expo at Coeur d'Alene, Idaho for about seven months. On May 6, 7, and 8, 2010, the PDCA will be at one of the most spectacular resorts in the Northwestern U.S. – the Coeur d'Alene Golf and Spa Resort.

- PDCA is currently identifying our speakers for the program, but much of the other activities have been completed. They include the PDCA's Award Luncheon; 3rd Annual PDCA Golf Tournament (Coeur d'Alene – ranked #1 in "Beauty and Esthetics" and #2 "Best Resort Golf Course in the Nation" (GolfDigest); an Opening Reception with our exhibitors, including music by Robert Vaughn; the Companion's Program, including off-site shopping, Culinary Cooking with the Chef's at Beverly's, and our traditional Spa Treatments to pamper the ladies before the annual dinner; a dinner cruise on Lake Coeur d'Alene and our Annual Dinner / Dance with a Northwest theme – Early Frontier! Mark your calendars now for this upcoming PDCA event – You won't want to miss this one.

Finally, I want to personally thank all of the PDCA members who continue to support and participate in the PDCA. I want to thank the PDCA Board of Directors, whose leadership and wisdom kept us moving forward in a tough economy. I want to thank all the Committee Chairs and Committee Members who are the real backbone of this organization – your work is significantly important to the PDCA. And I want to thank all of you for giving me the tremendous honor of serving as your executive director. We accomplished a lot together and together in 2010 we can continue to do great things for our businesses, industry and association.

Happy Holidays and may 2010 bring you hope, peace and prosperity. ▼

EDGEN MURRAY

With nearly 200 acres of stock and high volume purchasing power with domestic and international vendors, Edgen Murray is your comprehensive procurement source for competitively priced, fully certified, mill-tested steel from large diameter heavy wall pipe to sheet and structural steel for:

MARINE PILING & CONSTRUCTION ▸ LEVEE SYSTEMS ▸ MAJOR CIVIL BUILDING STRUCTURES ▸ DEEP FOUNDATIONS ▸ WATER WORKS

FIND YOUR SPEC.com

866-520-2468

PIPE ▸ STRUCTURAL ▸ PLATE ▸ VALVES ▸ FITTINGS

2009 PDCA Board of Directors & Committee Chairmen

Officers

John King
President
Pile Drivers, Inc.
P: 843-763-7736
F: 843-763-7974
4530 Hwy. 162
Hollywood, SC 29449
kingpiledrive@aol.com

Don Dolly
Vice President
Foundation Constructors, Inc.
P: 800-841-8740
F: 925-625-5783
P.O. Box 97
Oakley, CA 94561
ddolly@foundationpile.com

Rusty Signor
Secretary
Signor Enterprises
P: 512-264-8300
F: 512-264-8301
8800 Madrone Ranch Trail
Austin, TX 78734
rustysignor@hotmail.com

John Linscott
Treasurer
H.B. Fleming
P: 207-799-8514
F: 207-799-8538
89 Pleasant Ave.
South Portland, ME 04106
john.linscott@hbfleming.com

Van Hogan
Immediate Past President
Ed Waters and Sons Contracting Company, Inc.
P: 904-823-8817
F: 904-823-9687
3375 Agricultural Center Drive
St. Augustine, FL 32092
vhogan@edwatersandsons.com

Stevan A. Hall
Executive Director
P: 866-311-PDCA (7322)
F: 904-215-2977
P.O. Box 66208
Orange Park, FL 32065
execdir@piledrivers.org

Directors

Irv Ragsdale
Clark Foundations, LLC
P: 301-272-8241
F: 301-272-1915
7500 Old Georgetown Road
Bethesda, MD 20814-6196
irv.ragsdale@clarkconstruction.com

Mike Elliott
Pile Equipment, Inc.
P: 904-284-1779
F: 904-284-2588
1058 Roland Ave.
Green Cove Springs, FL 32043
melliott@pile-eqp.net

Richard Gilbert
Skyline Steel
P: 800-433-6460
F: 678-584-9778
3250 Peachtree Industrial Blvd.
Suite 203
Duluth, GA 30096
rgilbert@skylinesteel.com

Pat Hannigan
GRL Engineers, Inc.
P: 847-670-7720
F: 847-670-7008
4256 N Arlington Heights Road, #100
Arlington Heights, IL 60004
pat@pile.com

John Parker
Parker Marine Contracting Corp.
P: 843-853-7615
F: 843-853-6263
68 Braswell St.
Charleston, SC 29405
johnp@parkermarine.net

Herbert "Buck" Darling
Herbert F. Darling, Inc.
P: 716-632-1125
F: 716-632-0705
131 California Drive
Williamsville, NY 14221
bdarling@hfdarling.com

Dave Chapman
Blakeslee Arpaia Chapman, Inc.
P: 203-483-2947
F: 203-488-3997
200 North Branford Road
Branford, CT 06405
dchapman@bac-inc.com

Mike Justason
Bermingham Foundation Solutions
P: 800-668-9432
F: 905-528-6187
600 Ferguson Ave.
Wellington St. Marine Terminal
Hamilton, ON, Canada L8L 4Z9
mjustason@berminghammer.com

Gene Merlino
MG Forge Construction Company, LLC
P: 973-831-5970
F: 973-831-5974
125 Pompton Plains Crossroads
Wayne, NJ 07470
genem@mgforge.com

Michael Kelly
Gulf South Piling Construction, Inc.
Gulf Coast Chapter Representative
P: 504-834-7791
F: 504-834-7792
P.O. Box 10073
Jefferson, LA 70181
gspmichael@bellsouth.net

Sonny DuPre
Cape Romain Contractors
South Carolina Chapter Representative
P: 843-884-5167
F: 843-884-0516
660 Cape Romain Road
Wando, SC 29492
sonny@caperomaincontractors.com

Michael Jahnigen
Sun Marine Maintenance
Mid-Atlantic Chapter Representative
P: 302-539-6756
F: 302-539-6076
Road 4 Box 217B
Frankford, DE 19945
mike@sunmarineinc.com

Charlie Gibson
Manson Construction Company
California Chapter Representative
P: 510-232-6319
F: 510-232-4528
200 Cutting Blvd.
Richmond, CA
94804-2128
cgibson@mansonconstruction.com

Finance Committee Chair:
John Linscott
P: 207-799-8514
F: 207-799-8538
89 Pleasant Ave.
S. Portland, ME 04106
John.linscott@hbfleming.com

Finance Committee Members:
Van Hogan, Wayne Waters, Randy Dietel, Harry Robbins, Stevan A. Hall
Tom Davis – Financial Advisory
Tom Hallquest – PDCA Accountant

Membership Development and Member Retention Committee Chair:
Don Dolly
P: 800-841-8740
F: 925-625-5783
P.O. Box 97
Oakley, CA 94561

Membership Development and Member Retention Committee Members:
Van Hogan, Don Dolly, John King, Mark Weisz, Richard Gilbert, Dave Chapman, Irv Ragsdale, Mike Justason, Michael Jahnigen, Sonny Dupre, Charlie Gibson, Michael Kelly, John Parker, Rusty Signor, Pat Hannigan, Mike Elliott, Buck Darling, Stevan A. Hall

Education Committee Chair:
Mohamad Hussein
P: 407-826-9539
F: 407-826-4747
8000 South Orange Ave, Suite 225
Orlando, Florida 32809

Education Committee Members:
Garland Likins, George Goble, Gerald Verbeek, Jim Frazier, John Linscott, Mark Weisz, Mike Justason, Pat Hannigan, Rusty Signor, Steven Kiser, Van Hogan

Market Development Committee Chair:
Mike Elliott
P: 904-284-1779
F: 904-284-2588
1058 Roland Ave.
Green Cove Springs, FL 32043

Market Development Committee Members:
Stan Baucum, Dave Harper, Dean Abbondanza, Dean Matthews, Max Williams, Phil Wright, Scot Whitaker, Steve Macon, Rob Jolly, Pollyanna Cunningham

Technical Committee Chair:
Dale Biggers
P: 504-821-2400
F: 504-821-0714
P.O. Drawer 53266
New Orleans, LA 70153

Technical Committee Members:
Billy Camp, Charlie Ellis, Dean Matthews, Garland Likins, George Goble, Gerald Verbeek, John Linscott, Randy Dietel, Scott Whitaker, Van Komurka, David Chapman.

Communications Committee Chair:
Pollyanna Cunningham
P: 800-438-9281
F: 704-821-8201
301 Warehouse Drive
Matthews, NC 28104

Communications Committee Members:
Garland Likins, Steve Whitty, Doug Scaggs, Van Hogan, Billy Harris, Dean Abbondanza, Don Surrency, Rob Jolly

Environmental Committee Chair:
Joe Savarese
P: 732-739-5570
F: 732-232-8085
P.O. Box 452
Keyport, NJ 07735

Environmental Committee Members:
Barry Roth, Camilo Alverz, Bud Abbott, Chuck Blakeman, Ed Hajduk, Jim Bay, Joe Savarese, Mark Miller, Warren Waite

Safety Committee Chair:
John Lanigan
P: 240-508-0281
22 Sage Court
Port Deposit, MD 21904
jlanigan@hotmail.com

The Pile Driving Contractors Association
"A Driven Pile is a Tested Pile"

MEMBERSHIP BENEFITS

General Membership Information

We are the premier association for pile-driving contractors

The PDCA was founded in 1995 to promote the 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 projects 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 120 contractor members, the PDCA offers many networking opportunities. Whether at our Annual Conference, DICEP conference, 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 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 Annual Conference, held in early Spring since 1997, is a nationally recognized conference that brings together leading contractors, technical experts and suppliers to the piling industry.
- The Design and Installation of Cost-Efficient Driven Piles Conference (DICEP), held each September since 2000, is a nationally recognized 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 Professors' Driven Pile Institute, held at Utah State University in Logan, Utah. Up to 25 professors from major engineering schools are invited to participate in an intensive, weeklong 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.

PDCA also offers the *Installation Specifications for Driven Pile-PDCA Specification 103-07* as a CD to all new members at no charge.

"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.

The PDCA also sells *Driven Pile Foundations, Volume I&II*, an FHWA manual on the design and construction of driven piles.

Connect Worldwide at www.piledrivers.org

The PDCA's newly redesigned website 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 interested 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 that 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. ▼

interpipe inc.

Interpipe Inc. is a steel pipe distributor of new and used structural steel pipe. We have two large stocking locations of Seamless, ERW, Spiralweld and DSAW pipe.

3” OD - 48” OD in a variety of wall thicknesses are stocked in both locations.

Piling Pipe for Micropiling and large diameter piling.

ONTARIO
3320 Miles Road, RR#3
Mount Hope, Ontario
L0R 1W0

Local: 905-679-6999
Toll-free: 877-468-7473
Fax: 905-679-6544

QUEBEC
805 1 ère Avenue
Ville Ste. Catherine, Quebec
J5C 1C5

Local: 450-638-3320
Toll-free: 888-514-0040
Fax: 450-638-3340

www.interpipe.com

PDCA

MEMBERSHIP APPLICATION

Step 1: Company Information

Company Name: _____

Contact Name: _____

Address: _____

Phone: _____ Fax: _____

City / State / Zip: _____

Company Home Page: _____ E-mail: _____

Step 2: Select Membership Type

Important! Read carefully! The PDCA Bylaws define member classifications and qualifications. Dues are established by the PDCA Board of Directors and shown in ( ) for each type.

- ○ **Contractor Member** – General or Specialty contractor who commonly installs driven piles for foundations and earth retention systems.
  - ○ *Contractor I Member Company* – Annual volume > $ 2 million **($850.00)**
  - ○ *Contractor II Member Company* – Annual volume < $ 2 million **($425.00)**
- ○ **Associate Member** – Firms engaged in the manufacture and/or supply of equipment, materials, or services to the pile driving industry.
  - ○ Associate I Member Company – Annual volume > $ 2 million **($850.00)**
  - ○ Associate II Member Company – Annual volume < $ 2 million **($425.00)**
  - ○ *Local Associate Member Company* **($100.00)**
    Small Associate Company desiring membership in a single local chapter, who only serves that local market, and whose interest is to support the local chapter. Membership must be approved by PDCA Executive Committee.
- ○ **Engineering Affiliate** – Any Engineering company, firm, corporation, or individual (Structural, Geotechnical, Civil, etc) involved in the design, consulting, testing or other engineering aspect associated with driven piles, deep foundations or earth retention systems.
  - ○ *Engineering Affiliate – 1-5 offices* **($100 per office)**
    Listing up to 5 Individuals per office at no additional charge
  - ○ *Engineering Affiliate – 6-11 offices* **($90.00 per office)**
    Listing up to 5 Individuals per office at no additional charge
  - ○ *Engineering Affiliate – 12+ offices* **(80.00 per office)**
    Listing up to 5 Individuals per office at no additional charge
- ○ **Individual Member** – **($50.00)**
  An individual employed full-time by a university or college and teaching Undergraduate or Graduate courses in engineering; or an individual employed full-time by the government.
- ○ **Retired Industry Member** – **($100.00)**
  Individual who has reached retirement age, left active employment, and wishes to remain a member.
- ○ **Student Member** – **($20.00)**
  Full time students studying towards a bachelor, master or doctorate degree in a regular university program.
- ○ **Affiliate Labor Organization Member** – **($100.00)**
  Concerned with pile driving for the purpose of gathering and sharing information.
- ○ **Organization Member** – Non-voting membership category. Must be approved by the PDCA Executive Committee.

Step 3: Member Information

(complete only the category for which you are applying)

A. Contractor Members – check all services that your company provides:

- ❒ Bridge Buildings
- ❒ Bulkheads
- ❒ Deep Dynamic Compaction
- ❒ Deep Excavation
- ❒ Docks and Wharves
- ❒ Earth Retention
- ❒ General Contracting
- ❒ Highway and Heavy Civil
- ❒ Marine
- ❒ Pile Driving
- ❒ Other

B. Associate and Engineering Affiliates Members – check all products and/or services that your company provides:

Accessories

- ❒ Cutter Heads and Drill Bits
- ❒ Dock and Marine Supplies
- ❒ Hammer Cushions
- ❒ Other
- ❒ Hoses and Fittings
- ❒ Lubricants and Grease
- ❒ Pile Cushions
- ❒ Pile Points and Splicers
- ❒ Rigging Supplies
- ❒ Safety Equipment

Materials

- ❒ Aluminum Sheet Piles
- ❒ Coatings and Chemicals
- ❒ Concrete Piles
- ❒ Timber Piles/Treated Lumber
- ❒ Composite Piles
- ❒ H-Piles
- ❒ Steel Pipe Piles
- ❒ Other
- ❒ Steel Sheet Piles
- ❒ Structural Steel
- ❒ Synthetic Material Piles

Equipment

- ❒ Air Compressors and Pumps
- ❒ Cranes
- ❒ Drill Equipment
- ❒ Drive Caps and Inserts
- ❒ Hammers
- ❒ Hydraulic Power Packs
- ❒ Leads and Spotters
- ❒ Marine Equipment
- ❒ Specialized Rigs and Equipment

Services

- ❒ Consulting
- ❒ Design
- ❒ Freight Brokerage
- ❒ Analysis
- ❒ Pile Driving Monitoring
- ❒ Geotechnical
- ❒ Marine Drayage
- ❒ Surveying
- ❒ Civil and Design
- ❒ Other
- ❒ Testing
- ❒ Trucking
- ❒ Vibration Monitoring
- ❒ Materials Testing

General

- ❒ Rental
- ❒ Sales

Step 4: Geographic Areas Where Services and Products Are Available

(All applicants check all that apply)

❒ All States	❒ AK	❒ AL	❒ AR	❒ AZ	❒ CA	❒ CO	❒ CT	❒ DC
❒ DE	❒ FL	❒ GA	❒ HI	❒ IA	❒ ID	❒ IL	❒ IN	❒ KS
❒ KY	❒ LA	❒ MA	❒ MD	❒ ME	❒ MI	❒ MN	❒ MO	❒ MS
❒ MT	❒ NC	❒ ND	❒ NE	❒ NH	❒ NJ	❒ NM	❒ NV	❒ NY
❒ OH	❒ OK	❒ OR	❒ PA	❒ RI	❒ SC	❒ SD	❒ TN	❒ TX
❒ UT	❒ VA	❒ VT	❒ WA	❒ WI	❒ WV	❒ WY	❒ Canada	❒ Mexico
❒ Europe	❒ Germany	❒ Other	_____					

Step 5: Method of Payment

I am providing payment in the amount of: _____

I am making payment in full by: ❒ Check ❒ Visa ❒ MasterCard ❒ American Express ❒ Discover

Card Number: _____ Expiration Date: _____

Name on Card: _____ CVV Code: _____

Statement Billing Address: _____

_____

Signature: _____

Please complete this application and mail to:
PDCA – 1857 Wells Road - Suite 214 Orange Park, Florida 32073 or Fax to: 904-215-2977

A Driving Force in the Foundation Equipment Industry

We are driven by your success.

This is project by Continental Construction at the Tom Lee Park in Memphis Tennessee. Ronnie Max and Ray Winters are using a Pileco D62 to drive the piles for this massive project.
Joey works in the parts department ensuring that you receive the parts needed to keep your equipment running.

Sales / Rental / Service / Parts / Technical Support

With over 40 years of experience, Pileco Inc. is the exclusive distributor of BAUER products on the western hemisphere. Pileco is a complete resource for the foundation construction and oil and gas industries.

- Bauer Drilling Rigs
- RTG Piling Tools
- Drilling Tool Manufacture
- Pileco Diesel / Vibratory Hammers
- Leads / Accesories / Foundation Equipment

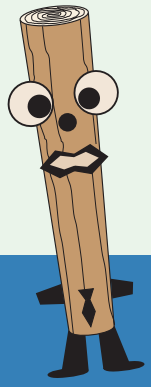
Custon Design Fabrication
Worldwide Service and Support

Tel: 800 4 PILECO (800-474-5326)
Email: pileco@pileco.com
Web: www.pileco.com

BAUER MANUFACTURING

PILECO

PDCA112009



Did You Know?

While relaxation for humans is generally viewed as beneficial, relaxation for driven piles can be quite problematic. While the vast majority of piles experience a capacity gain called "set-up" after installation, pile relaxation is a reduction in ultimate capacity after the initial installation. In some cases relaxation of 50 percent off end of drive capacity has been observed. Many contractors recognize relaxation from local experience - a pile may fail a static load test, or a pile may refuse early but then the blow count may decrease after a wait period and allow additional penetration of the pile. Also, engineers may observe the capacity reduction from dynamic pile testing, comparing results from end of drive to those from early blows of a subsequent restrike.

Relaxation occurs primarily at (or at least near) the pile tip. It occurs in three primary situations:

1. **Weathered Shale:** Relaxation is typically observed when H piles, open-end pipe piles, and even closed- end pipes are driven into weathered shales. Excess normal pressures created by the pile displacement can plastically flow away, or water can seep along the pile or other chemical effects may diminish the shale strength. An example of shale relaxation has been described by Morgano et al., 2004 .
2. **Dense Silt:** Relaxation has also been observed when driving displacement piles into dense saturated silts, or sands with high fine content where drainage is poor. In this case, negative pore pressures develop at the tip during driving, causing a temporary effective stress increase, and hence end-bearing increase at the pile toe. Relatively brief wait periods allow the pore pressures to increase back to normal, reducing effective stresses with a resulting loss of end-bearing resistance. Since the shaft may simultaneously experience set-up in such soils, sometimes these effects offset each other and the result is similar capacity at end of drive and restrike and perhaps a lower than expected ultimate capacity.
3. **Heave:** "Heave" of a perfectly installed pile may be caused by the subsequent driving of nearby displacement piles and the associated upwards soil flow. Thus heave primarily reduces the end-bearing of the previously driven pile. A similar effect on previously driven piles may be caused by fracturing of bedrock from subsequently driven piles.

In the case of shale or dense silts, redriving the pile will again increase the pile capacity to the driving condition, but only temporarily, and in time will again revert to the relaxed condition. Generally, the pile must either be driven initially to a higher ultimate capacity than required (overdriving) for sufficient long term capacity after relaxation, or, if that is not possible, the assigned ultimate capacity of the pile reduced. Alternatively, increasing the number of test piles may allow for a reduction of the factor of safety and thereby reduce the number of additional piles. For heave, reseating the pile usually restores the pile to full capacity.

When relaxation occurs, it is generally complete in a relatively short time; perhaps as short as a day or two but never in our experience more than a week. The ultimate capacity of the pile in its long term service condition can be determined after the appropriate wait following initial installation by either a static load test, or a restrike dynamic test. The dynamic tester must then be careful to analyze the record of an early restrike blow with the pile still in the relaxed condition to assess the extent of the relaxation.

Contributor: Garland Likins, Pile Dynamics, Inc. (August 2009)

---

[1]Morgano, C.M., White, B., August, 2004. Identifying Soil Relaxation from Dynamic Testing. Proceedings of the Seventh International Conference on the Application of Stresswave Theory to Piles 2004: Petaling Jaya, Selangor, Malaysia; pg 415-421.

Chapter Updates

PDCA of the Mid-Atlantic Chapter:

The PDCA of the Mid-Atlantic chapter hosted its quarterly dinner meeting on Thursday, Oct. 22, 2009, in Baltimore, MD. Silas Nichols, Office of Bridge Technology, Geotechnical, FHWA was the guest speaker. The chapter had branches of the local ASCE and GeoInstitute of ASCE participate as organizational sponsors.

PDCA of South Carolina:

The PDCA of South Carolina chapter met on Sept. 1, 2009. During that meeting the chapter and national PDCA presented Tom Wysockey with his Past President's pen. The chapter also held a dinner meeting at the Town and Country Inn, Charleston on Tuesday, Dec. 1, 2009. John White, American Pile Driving Equipment was the guest speaker.

The chapter just concluded a Crane Operators recertification course conducted by the Crane Institute of America on Sept. 26. The course was attended by 16 operators from 4 different companies. The chapter has offered this program since 2005.

PDCA of the Gulf Coast Chapter:

The PDCA of the Gulf Coast chapter held its quarterly dinner meeting on Thursday, November 5, 2009. The dinner meeting was held at Messina's Restaurant in Kenner, LA. The guest speaker represented "Task Force Hope". Task Force Hope focuses on establishing a Hurricane and Storm Damage Risk Reduction System (HSDRR) with a goal of completing a 100-year level protection by June 2011 for the Greater New Orleans area.

PDCA of Florida Chapter:

The PDCA of Florida Chapter held its second dinner meeting on Dec. 3, 2009, at the Crowne Plaza Westshore, Tampa, FL. The guest speaker was Ross McGillivray, Ardaman & Associates. Mr. McGillivray presentation was titled, "Driven Pile v. Drilled Shaft – Pros and Cons."

California PDCA Chapter:

The California PDCA held their annual luncheon on Friday, Dec. 4, 2009. The chapter continued to raise money for their Educational Trust that provides scholarships to college students.

PDCA of the Northeast Chapter:

The PDCA of the Northeast is continuing to develop the necessary processes to become a PDCA chapter, such as creating their Bylaws, Articles of Incorporation, filing with the State as a legal entity, establishing a bank account and continually updating members on their progress. The chapter is not far from hosting their inaugural dinner meeting. Additional information will be available soon. ▼

Pile driving operation in Sumter County (US-301) for the FDOT

Leware takes new technology for a spin

With nearly 40 years of expertise in the field, Leware Construction Company continues to find new ways of building bridges that benefit their clients, the industry and the community. Most recently, the Florida-based business was the first to use Self-Propelled Modular Transporters that increased safety and drastically decreased the project duration.

By: Aileen Goos Bérard

You could say that Leware Construction Company of Florida Inc. is building bridges between the old and new ways of, well, building bridges. The Florida-based business, subcontracted by Ranger Construction Industries, Inc. on a Florida Department of Transportation (FDOT) project, was the first to use Self-Propelled Modular Transporters (SPMTS) over an interstate in the U.S.

This innovation was applied to the Graves Avenue project in central Florida as part of an interstate expansion. Graves was a two-lane county road that crosses I-4 by way of a four-span bridge that had to be demolished and replaced with a two-span structure.

"It was a different and unique type of challenge," says Andy Clark, executive vice president of Leware Construction Company. "Between FDOT, Ranger, Mammoet and Leware, we had a great team of professionals working together, resulting in a very successful outcome."

That's with much thanks to the Mammoet's SPMTS system, which is a computer-controlled multi-axial trailer that can lift heavy structural components into position. The technology, which is relatively new to North America but widely used in Europe, provides numerous benefits. First and foremost is the impact to the traveling public as the overhead components of the bridge were constructed off-site and then set into position as a virtually completed item.

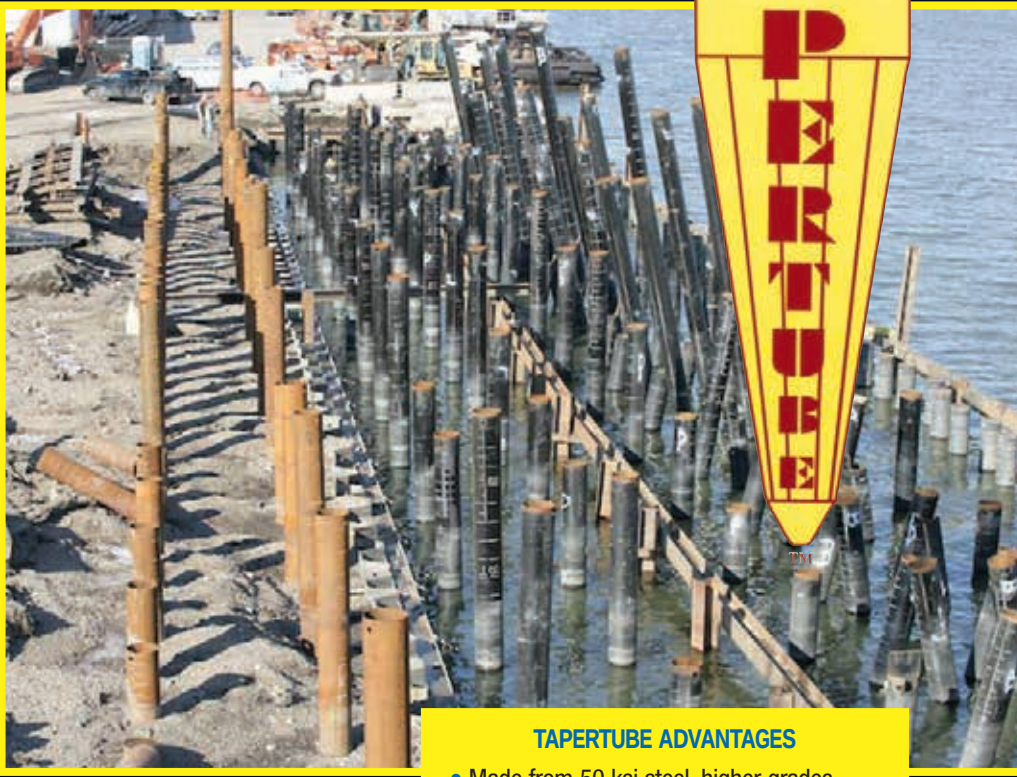
This method of construction also allowed greater and safer access by the work crews and equipment. Also, the concrete, materials and pre-stressed components were delivered without interfering with the Interstate traffic. The engineering layout had to be precise with the spans being constructed at one site, and then moved to the permanent location.

In this case, it meant the interstate only had to be closed for four days, rather than approximately 32 days had they not used SPMTS technology. That was an essential piece of managing the project because the bridge is close to a school and needed to be reopened in time for the first day of the new school year.

It drew a lot of attention and visits from the media, colleagues and professionals from across the states. They were interested partly in the removal of the old structure, but more so in the building and erecting of the new bridge.

The first step was removing the existing superstructure

THE SHAPE
OF THE FUTURE...



Port of Wilmington Job – Reconstruction of Berth #4 – Kuhn Construction

Tapertube™... Strength = Success!

Project-proven Tapertubes are a dramatic leap forward in on-the-job pile performance. Superior design and robust construction means this remarkable product delivers big advantages over conventional piles or other tapered piles.

For starters Tapertubes are tougher, actually made from 50 ksi steel where another producer claims to cold work to 50 ksi from a lower grade steel. And Tapertubes can be produced with walls that are significantly thicker: .500" for example, compared with the 3 gauge maximum (.239") of a competitive product.

This extra thickness eliminates additional steel reinforcements and coatings, and allows piles to be driven harder and faster. The result: more piles driven, higher production, lower costs.

Tapertube piles are available in an array of shapes and sizes to meet your soil and capacity requirements.

TAPERTUBE ADVANTAGES

- Made from 50 ksi steel, higher grades available upon request
- High capacities for shorter driven lengths
- Conventional equipment and installation methods
- Reduces concrete volume requirements
- Factory attached cast steel points
- Tapertube diameters are made to match standard pipe sizes or even non-standard pipe sizes
- Directly driven... no mandrel or butt reinforcement required
- Full-butt welded splices for direct bearing of pipe extension on Tapertube
- Drive-fit DFP S-1800 sleeves may be used instead of welding to extend piles
- Heavier thickness provides greater drivability, eliminates need for coating and reinforcement

DFP Foundation Products, LLC

PO Box 688 • Franklin Lakes, NJ 07417-0688
201-337-5748 • fax: 201-337-9022 • www.pileline.com

Staging for one of the new spans of superstructure on Graves Avenue over I-4

with the SPMTS, which gave them a good insight into how the rest of the project would play out. This initial stage of work wasn't too complicated - jacking up and lifting off the two spans (one at a time) and moving them to the staging area, roughly a quarter of a mile away.

Once removal was completed and the new substructure was underway, a temporary foundation system, replicating the new substructure, was constructed and the two spans of new superstructure were built at the staging site. There was no room for error as engineering layout was double and triple checked and construction tolerances were practically eliminated.

Always up to the challenge

Most of what keeps the Leware crews busy is obtaining work from FDOT through the competitive bid process. Additionally, Leware has been successful in acquiring design-build, public-private partnerships and negotiation work.

They are currently finishing up operations on 12 bridge widenings along I-75 between Naples and Fort Myers, Florida. This was part of a $430 million design-build-finance contract in which they were a major subcontractor. The project is expected to be completed ahead of schedule.

Leware is prequalified with FDOT in the areas of Minor, Intermediate and Major Bridges in addition to several other categories of highway construction and have established a solid relationship with the State. FDOT officials respect the opinions that Leware, with nearly 40 years of experience, brings to the table.

"We take pride in completing our work on or ahead of schedule," says Clark. "It takes time to establish a good reputation and we intend to maintain it."

Clark attributes their success to Leware's strengths: they're safety-minded, have the right attitude, and take pride in the work they do. With that strong reputation, they have often been called upon to complete emergency repair work involving bridge damage as a result of natural or human error.

An example of such work took place in March 1996 when a semi-truck hauling diesel fuel lost control, left the highway and overturned adjacent to a five-span, 330-foot long bridge on southbound I-75 in Sarasota County, Florida. The resultant spill ignited and caused severe structural damage to the entire bridge. The Leware team removed and rebuilt the entire structure in just over 18 days, which included four days of contamination clean-up by a specialty firm.

"We like challenges and the current economic situation is no exception," says Clark, who adds that like all industries, they too have felt the sting of a very sluggish economy. "We've dealt with setbacks before - we'll just find ways to tailor our operations without sacrificing quality."

One of those foundation-shaking setbacks came when founder James F. Leware Sr. passed away in 1986. Leware's eldest

Footing piles for post-tensioned abutment on the John Land Apopka Expressway in Maitland, Florida

sons, Jim and Scott, stepped up to the challenge and now operate the business.

Established in 1970 by Leware Sr., the Leware Construction Company is a turnkey bridge contractor that offers a full range of services, including field engineering, pile driving, reinforced concrete construction, erection and setting of structural and pre-stressed beams/girders, MSE walls, box culvert construction, demolition of bridge structures and marine operations.

Leware is very much a family oriented firm, where many of the employees are in it for the long haul. The staff wear many hats. They may be tackling specific issues in the field one day and discussing policy matters with the Department's upper management the next.

They're constantly keeping abreast of what's happening in the field, and share their experience and expertise by participating in industry task teams and committees at the management level. It's benefitted their clients, the industry, and when you think about the Graves Avenue project, it has obviously benefited the public.

"I believe Jim Sr. would be pleased with what we have continued to build on the foundation he provided us," concludes Clark. "We strive to deliver a quality product on time and within budget." ▼

Johnson Bros.

Many Minds. Many Hands. One Goal.

Johnson Bros. is a heavy civil contractor with 80 years experience specializing in Bridge, Highway, Infrastructure, Marine, Industrial and Emergency construction services for both public and private clients. Our capabilities include the expertise to deliver construction services on fast-track-schedule driven basis, Design-Build basis, fixed-price, or price-not-to-exceed basis.

Johnson Bros. constructs multi-phase projects utilizing the latest technology, best available equipment, experienced professional project management and field supervisory staff. Our team members include professional engineers who design construction systems required to construct complex structures in a safe and efficient manner. Every one of our projects is managed from the project site with a degreed engineer.

A time tested proven track record of providing timely and competitive construction services to owners and clients on a repeat basis is a testament of the organization's ability and commitment to satisfy the needs and expectations of the clients it serves. On each of its projects, Johnson Bros. listens to and understands the needs of the client, assembles the best team of people with the right attitude, skills and experience and then delivers a quality project in a safe, timely and responsible manner.

Launching the Deck

By being multi-disciplined, Johnson Bros. has a distinct advantage over many other contractors in the industry. In lieu of using multiple sub-contractors, Johnson Bros. has the ability to self-perform the major items of work on its projects which controls safety, reduces costs, expedites the schedule and ensures quality workmanship. Johnson Bros.' diverse areas of construction expertise include the following:

- Roadways (Urban and Highway)
- Low-Level & High Level Fixed Bridges (I-Girder, Steel, ASHTO Girder, Box Girder, Suspension, Arch, Truss and Post-Tensioned, and Segmental)
- Movable Bridges (Bascule, Swing-Span and Lift-Span)
- Earthwork / Site Development
- Dewatering
- Underground Utilities
- Marine Transportation
- Bulk Material Handling Facilities
- Hydro Facilities
- Power Plant Civil Works
- Pile Driving & Concrete Foundations
- Emergency Disaster Relief and Rehabilitation of Infrastructure (ready to mobilize FAST teams in just hours)

Johnson Bros. has extensive credentials and qualifications in roadway and bridge construction with many state DOT'S including the Louisiana and Florida Department of Transportation. Much of our DOT performed work includes Design-Build projects. In 2002, Johnson Bros. completed the first Design-Build road and bridge project administered by the FDOT in District One. The project was completed well ahead of schedule and received a regional award by the Association of General Contractors and a national award by the Design-Build Institute of America. In 2008, Johnson Bros. recently completed a Design-Build bridge deck replacement project for FDOT District Seven. Johnson Bros. earned the maximum bonus incentive for early completion and the project was nominated for "Florida's Best in Construction" in the Design-Build category. The firm has been selected by FDOT

to receive "Florida's Best in Construction" award in the Major Bridge category for two separate projects completed in 2005 and 2008. In 2007 Johnson Bros. received the coveted Bridge of the Year award by "Roads and Bridges Magazine" ranking #6 out of 10 with the Treasure Island Bascule Bridge Replacement in Treasure Island, Fl. In 2009 Johnson Bros placed two separate bridges in the top 10 "Bridges of the Year" by Roads and Bridges Magazine, #5 -Belleair Beach Causeway replacement in Pinellas County and #6-SR 46 Lake Jessup bridge replacement in Seminole County. In 2008, Johnson Bros was ranked #3 in volume for Design/Build Contractors by the Florida Transportation Magazine. In the last 9 FDOT projects, Johnson Bros has an average score of 97% in Field Performance Ratings.

In 2002, Johnson Bros. received FDOT's "Partnering Award" for an environmentally sensitive bridge project completed in District Five. Johnson Bros. is an active participant and committed to the Partnering approach on all its projects. The organization's values are based on Integrity, Teamwork, Building People, and Serving its Customers and Team Members by doing the right thing. The company truly believes that by living these values, listening to each other and making mutually acceptable decisions benefits its Customers and the Johnson Bros. Team with safe, cost efficient and quality projects. Enduring partnerships with Customers and Business Partners are forged as a result of this philosophy. We are not a claims oriented company and truly believe and are committed to relationship building as our storied history indicates with our many repeat customers.

The company is a "F.A.S.T." (Focus, Acumen, Strategy, Tactical) organization that emphasizes responsiveness and speed in serving customers while maintaining Team (Employees, Customers, JV Partners, Subcontractors, Vendors and Suppliers) focus and intimacy resulting in enhanced relationships, reliability and quality. Johnson Bros. continuously builds tactics and innovates around speed to expand its role as a first choice emergency contractor to both public and private customers. Johnson Bros. maintains a highly skilled team of managers, engineers, estimators, field supervisors, and safety personnel who direct a field work force of 300-400 construction trade personnel. The company's safety EMR is .55 for 2008 and averages .64 over the last nine years with no fatalities. The company supports a drug free workforce and zero accident tolerance programs.

Johnson Bros. maintains its corporate headquarters in Lithia, Florida and maintains area offices in Orlando, Port St. Lucie, and Venice serving the Central, Southeast and Southwest Florida regions and New Orleans. La Serving the Gulf Coast Region. Each of these area offices is headed by a corporate Vice President who has full authority to act on behalf of the corporation or its subsidiaries. Annually the company completes between $135,000,000 and $150,000,000 of construction and engineering related services and has the capacity to bond $100,000,000 on single projects and $300,000,000 million aggregate.

Johnson Bros strives to be the contractor of choice for all clients. ▼

Independent Pipe and Steel, Inc.

Nearly three decades ago, Bruce Haupt and Hal Blackburn met while working together for a pipe distribution company in Bakersfield, Calif. The two worked there for two years before they decided to set out on their own. The two new partners started out supplying oilfield tubulars to the oil industry around Bakersfield. The early '80s was a time when inventories were at an all time high, much like today. Some people might have said those were not the best of times to start a pipe distributing company. However, integrity, hard work and a commitment to customer satisfaction allowed their new company, Independent Pipe and Steel Inc. (IP&S), to prosper in a tough market environment.

In 1992, IP&S acquired a nine-acre yard, which brought about the companies evolution from being a pipe brokerage firm to a full-line pipe and steel service center. Two years later, the acquisition of Asbury Transportation brought with it 40 acres of rail-served storage capacity and a fleet of trucks and cranes, allowing IP&S to care for all of its customers' needs. Independent Pipe and Steel now had the capacity to take care of any pipe requirement, large or small.

Today, Independent Pipe and Steel Inc. is a reliable supplier of new and used tubular steel products to general contractors and fabricators throughout the western United States. As well,

IP&S is a supplier of pipe services to a nationwide network of brokers and dealers of steel pipe, who supply similar products to projects on the West Coast. IP&S is known for delivering complete products to the job site that are fabricated to the required specifications, on time. No job is too big or too small. Services offered include cutting, welding, coating, and delivery. They also supply custom rolled and welded pipe.

When a general contractor recently needed to procure 10,000 of 12 ¾ OD-inch x 1-inch pipe piling, for a bridge construction in Bakersfield, and it had to be "Made in America" they went to Independent. "We were able to receive the pipe by rail and offer the logistics to weld to length and deliver the long piles to the project, saving the customer from fabricating on the jobsite ."

Independent has supplied falsework to many highway projects. One in particular was a bridge transition in southern California. The general had never used tubular steel for falsework. Due to a longer lead time, IP&S was able to procure the 20-foot pipe in Indonesia at a significant cost savings for the client. The supports were then fabricated to length with base plates and delivered to the jobsite as a complete product.

In recent years, companies have become increasingly aware of how their industry affects the environment. Independent Pipe and Steel has been a leader in recycling used pipe for the past 25 years.

"We were green before going green became popular," said Haupt. "I find the used pipe market both challenging and rewarding. The challenge is in educating our customers that used or surplus pipe is an effective and economical solution to many of their project needs. The reward is the fact that we are able to take a product and instead of scrapping the item, recondition it, and make it usable for alternate applications, allowing us to pass along great savings to our customers. Not only is it good for the client, it's also good for the environment"

When the Seattle Mariners were building their new ballpark, IP&S was in the process of recycling 100,000 feet of 24-inch pipe, which was surplus from a major west coast pipeline project. The pipe had foam insulation with a metal wrap. They were able to remove and recycle the jacket, and dispose of the foam. Some of the pipe was then shipped by rail to Seattle to supply the foundation piling for the Mariners Ball Park.

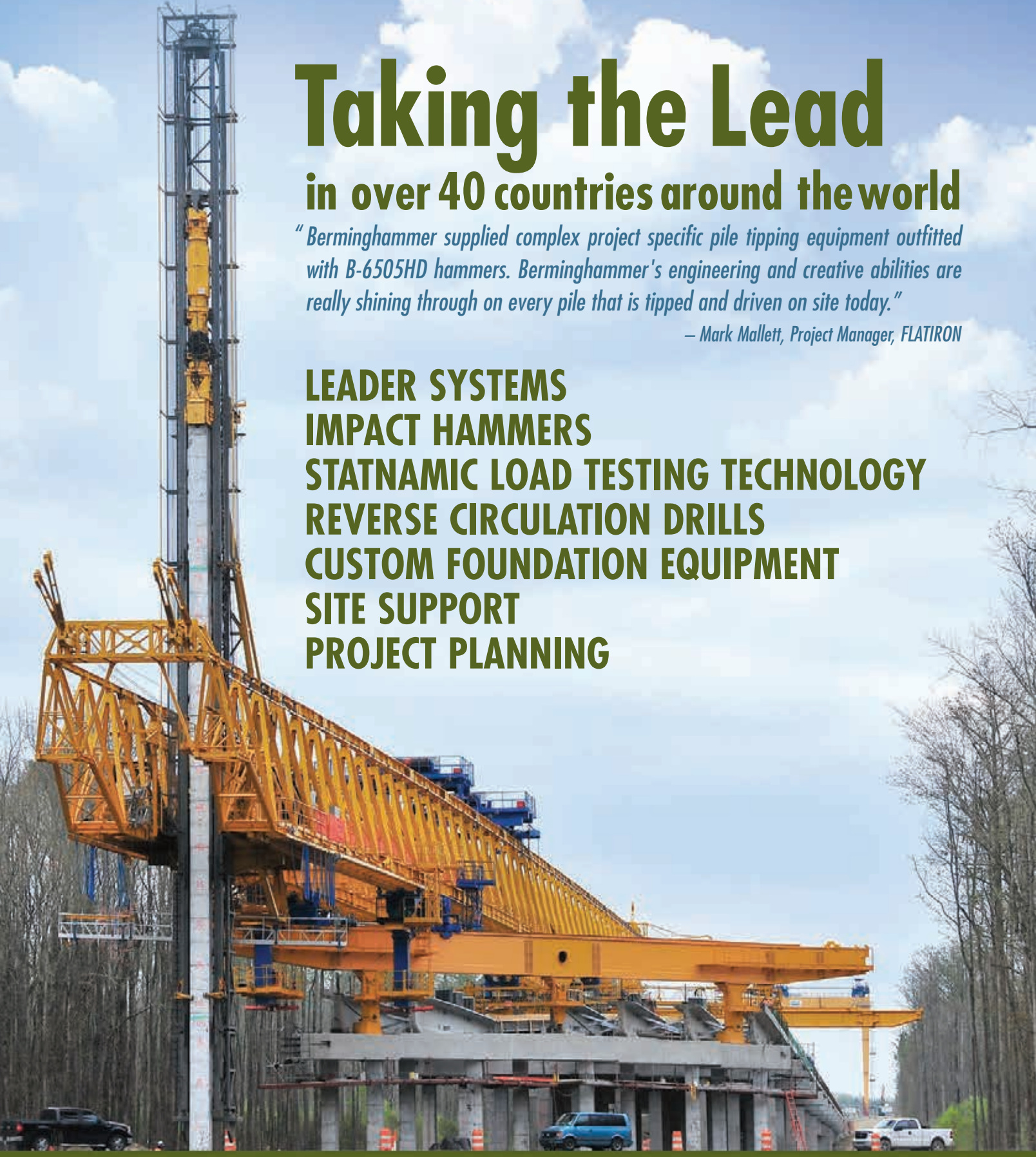
Independent has also taken pipe from the North Slope of Alaska, reconditioned it and supplied it to a client to be used as support bracing for a container crane. The crane was being shipped from Long Beach to Florida by barge. The pipe was used to secure the crane to the barge and to support it for transportation during hurricane season.

Their location in the heart of California oil country provides them with access to a large supply of used and surplus casing ,tubing and drill pipe. The smaller sizes have allowed them to supply slope retention and micropiling projects on the West Coast.

As for the future, they see a tough economic climate ahead that will bring new challenges as well as opportunities to the pile driving industry. " We will succeed as we have in the past through innovation and superior service."

Independent Pipe and Steel is a proud member of the National Association of Steel Pipe Distributors and the Pile Driver Contractors Association. In addition, the company is a member of the local

Chamber of Commerce and the owners have given their time and support, serving on various foundation boards in their community. ▼



Taking the Lead

in over 40 countries around the world

"Berminghammer supplied complex project specific pile tipping equipment outfitted with B-6505HD hammers. Berminghammer's engineering and creative abilities are really shining through on every pile that is tipped and driven on site today."

– Mark Mallett, Project Manager, FLATIRON

LEADER SYSTEMS
IMPACT HAMMERS
STATNAMIC LOAD TESTING TECHNOLOGY
REVERSE CIRCULATION DRILLS
CUSTOM FOUNDATION EQUIPMENT
SITE SUPPORT
PROJECT PLANNING

Wellington Street Marine Terminal
Hamilton, Ontario, Canada L8L 4Z9
Tel: 1.905.528.7924 | Fax: 1.905.528.6187
Toll Free: 1.800.668.9432 (in Canada and USA)

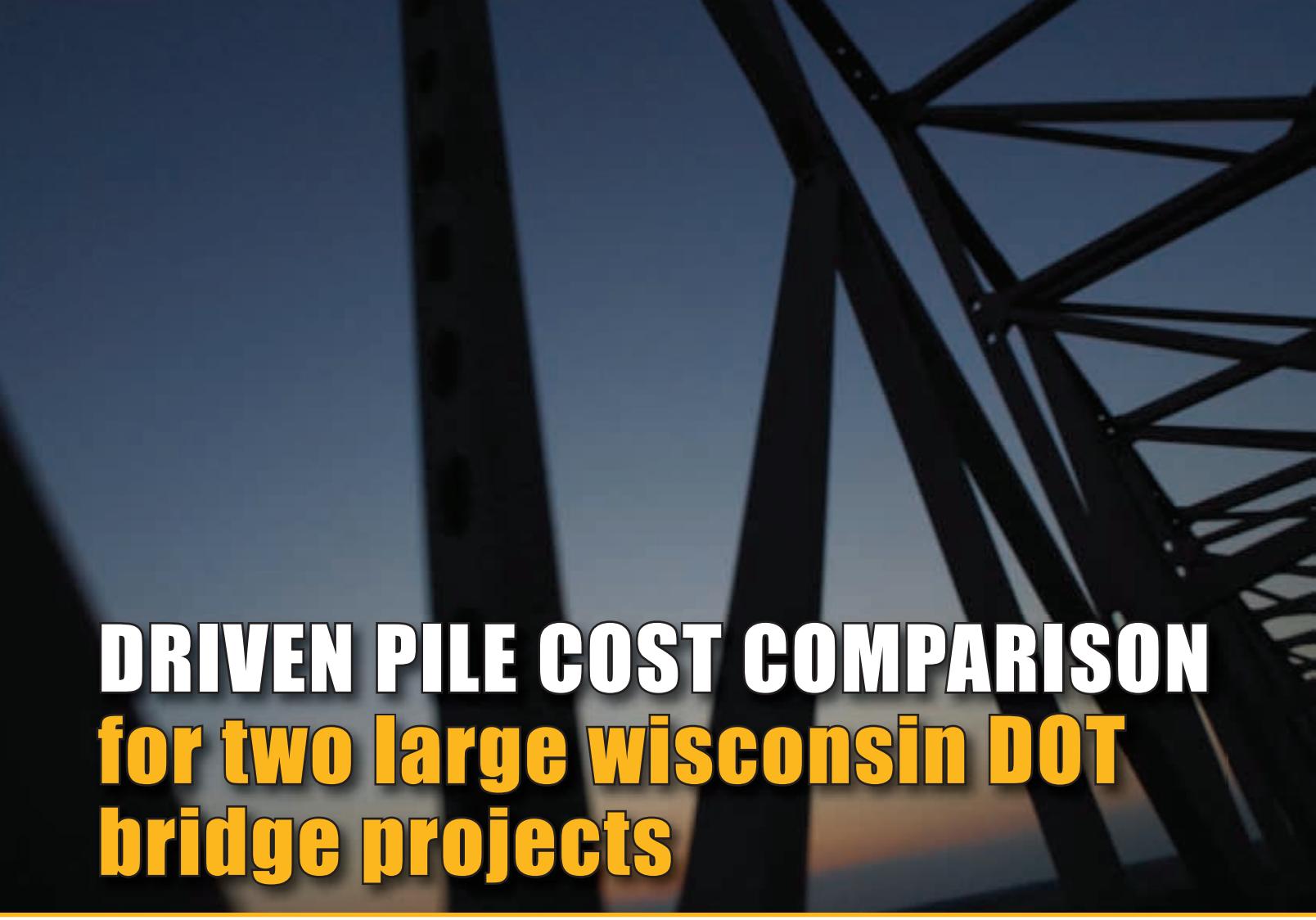
BERMINGHAM
FOUNDATION SOLUTIONS
SINCE 1897

Berminghammer
FOUNDATION EQUIPMENT

www.berminghammer.com | www.berminghamfoundationsolutions.com


Welcome to
NEW ORLEANS
DOWNTOWN
NUCOR-YAMATO
STEEL


HOW A LOT OF THE
OLD NEW ORLEANS
CAN BE USED TO BUILD THE NEW
NEW ORLEANS.
The photo to your left is where this story begins, but happily not where it ends.
Because we recycle steel. Our ball-and-socket sheet piles are made
from recycled steel. And it's all cast and hot-rolled right here in the United States.
So those submerged cars can be turned into new steel piles to make the levees stronger.
Giving new life to old steel. Not to mention New Orleans.
www.nucoryamato.com
It's Our Nature.®



DRIVEN PILE COST COMPARISON for two large wisconsin DOT bridge projects

By Van E. Komurka, P.E., Wagner Komurka Geotechnical Group, Inc, Cedarburg, Wisconsin, USA
Robert P. Arndorfer, P.E., Wisconsin Department of Transportation, Madison, Wisconsin, USA

INTRODUCTION

The Marquette Interchange project is an $810-million interchange replacement. The South Leg portion of the project spans Milwaukee's Menomonee Valley area, and contains project-wide deep organic deposits underlain by a layered profile of granular and cohesive soils. Driven closed-end steel pipe piles, representing a number of design departures from WisDOT's traditional approach, were installed to support numerous high bridges. Outside pile diameters ranged from 13.375 to 16 inches, and allowable axial compression loads ranged from 200 to 250 tons.

Located nearby, and also in the Menomonee Valley area, is the $18.6-million Canal Street Viaduct project. At this site, subsurface conditions were similar to those at the South Leg project, but with a thinner organic layer which was not present across the entire site. Using a more-traditional approach, WisDOT used driven steel HP14x73 H-piles, with an allowable load of 75 tons, to support two relatively low bridges.

Although there were some significant design/construction differences between the two projects, an economic comparison of the driven pile foundations was performed using the concept of support cost (defined subsequently).

PROJECT DESCRIPTIONS

Pertinent project details are presented in Table 1, and shown in Figure 1.

Marquette Interchange South Leg

General

The south leg portion of the Marquette Interchange project consisted of widening four existing multi-span, high-level bridge structures. The widening involved constructing new hammerhead piers and foundations adjacent to existing substructure footings. Span lengths range from 153 to 256 feet, and the majority of piers are approximately 100 feet tall. The South Leg included a total of 29 new substructure footings.

Subsurface Conditions

Generalized subsurface conditions for both projects are presented in Figure 1. For the South Leg, 8 to 11 feet of miscellaneous fill is underlain by soft to stiff organic deposits to 42 to 50 feet. Beneath the estuarine deposits is a varied and layered inorganic soil profile comprised of medium dense to very dense granular deposits, and stiff to hard silty clay. Relative densities and/or consistencies generally increase with depth. Bedrock is inconsistently encountered below 186 feet.

TABLE 1: Project Details

Project	Project Construction Cost	Span Lengths, feet	Pier Type	Pile Driving Time Frame	Embedded Pile Lengths, Feet
Marquette Interchange South Leg	$46 Million	153 to 256	Single-Shaft Hammer-Head	Apr. '05 to Nov. '05	62 to 168, Avg. = 127
Canal Street Viaduct	$18.6 Million	80 to 153	Multi-Shaft Hammer-Head	Oct. '05 to June '06	80 to 153, Avg. = 92

Project	Pile Testing		Set-Up Incorporated	Pile Material Stresses, ksi	
	Design Phase	During Construction		AASHTO Maximum Allowable, ksi	Used in Design, ksi
Marquette Interchange South Leg	Yes	Yes	Yes	0.25 f_y plus 0.40 f'_c	0.25 f_y plus 0.40 f'_c
Canal Street Viaduct	No	No	No	12.5	7

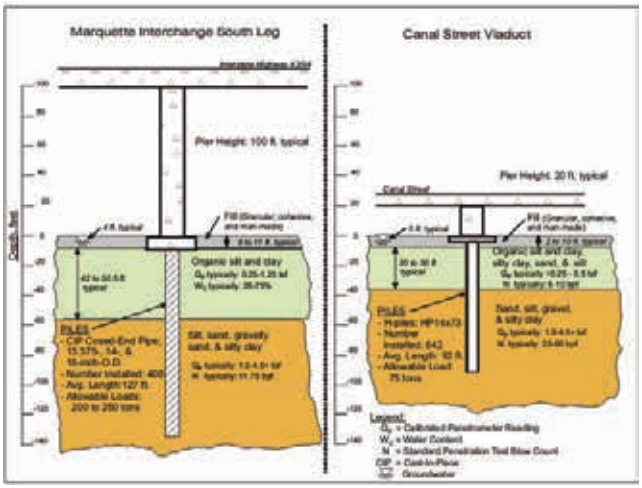


Figure 1. Projects' Comparison

Driven Pile Foundations

Design-Phase Test Program – To benefit the entire Marquette Interchange project, a significant design-phase pile test program was performed in the summer of 2003. This program's main purpose was to characterize capacity and soil/pile set-up . A total of 89 design-phase test piles of three different outside diameters ("O.D.s"), were installed at 43 indicator pile sites and six static load test sites. Five of the indicator pile sites, and two of the static load test sites, were germane to the South Leg project area. The design-phase test piles were not incorporated into the finished structures. The estimated South Leg portion of the design-phase test program cost was $245,000.

Because of the design-phase test program's scope and the complexity associated with its intended purposes (characterization of set-up magnitude, rate, and distribution, full-depth instrumentation of axial compression and lateral load test piles, evaluation of multiple pile diameters, validation of high allowable loads, etc.), its cost should not be considered representative for more-conventional projects, which would typically require lesser test programs.

Production-Phase Dynamic Test Piles – At each South Leg substructure footing, one or two dynamic test piles were installed and dynamically monitored, and restruck between 42 and 96 hours after installation, after which driving criteria were developed for the remaining production piles in the substructure footing.

Driving Criteria Development – At each South Leg substructure, a footing-specific design pile-shaft set-up profile (shaft set-up as a function of depth) was established. Based on this design pile-shaft set-up profile, depth-variable driving criteria were developed for each footing, which decreased the required penetration resistance with increasing embedment depth (i.e., increasing embedment depth results in more shaft set-up, requiring less end-of-drive capacity). Allowable loads were determined using a safety factor of 2.25. The approximate cost of contractor, dynamic testing, and engineering services for the production-phase dynamic testing and driving criteria development for the South Leg was $192,000.

Installations – South Leg allowable pile loads were optimized to structural support and footing geometry requirements, and selected on a footing-by-footing basis, after which the pile O.D. was selected which best-suited the allowable load. A total of 408 cast-in-place ("CIP") closed-end steel pipe piles were installed. O.D.s ranged from 13.375 to 16 inches; wall thicknesses were most-commonly ½ inch; and allowable axial compression loads ranged from 200 to 250 tons. Embedded lengths ranged from 62 to 168 feet, averaging 127 feet. Contract pricing for the 13.375-, 14-, and 16-inch-O.D. piles was $38.45, $42, and $48 per linear foot installed (driven and concrete-filled), respectively. The total cost of the pile installations, including linear footage and splices, was $2,200,212.

Canal Street Viaduct

General

The Canal Street Viaduct project is located approximately 1.3 miles west of the South Leg project, and is composed of two new multi-span bridge structures. Both bridges are founded

on hammerhead piers, incorporating multi-shaft (2 to 4 shaft/hammerhead combinations per pier) supports. Span lengths range from 80 to 153 feet, and maximum pier heights are approximately 20 feet. The Canal Street Viaduct includes a total of 24 substructure footings.

Subsurface Conditions

For the Canal Street Viaduct, two to 10 feet of miscellaneous fill is generally underlain by loose to medium dense granular deposits to 20 to 30 feet. Over portions of the site, very soft to soft organic and inorganic silty clay is present to these depths. Underlying soils consist of stiff to hard silty clay, and medium dense to very dense granular soils. Relative densities and/or consistencies generally increase with depth. Bedrock was not encountered up to 120 feet.

Driven Pile Foundations

Driving Criteria – The Canal Street Viaduct piles were installed to their required allowable load according to the WisDOT-modified version of the Engineering News dynamic formula. For this dynamic formula, WisDOT generally assumes a safety factor between three and five.

Installations – An allowable pile load of 75 tons was used for the entire Canal Street Viaduct project. A total of 842 HP14x73 steel H-piles were installed. Embedded lengths ranged from 80 to 153 feet. Contract pricing for the HP14x73 pile was $32 per installed foot. The total cost of the pile installations, including linear footage and splices, was $2,675,000.

SUPPORT COSTS

Support cost is the cost of a deep foundation element or system divided by its allowable load, which is expressed in units of dollars per allowable ton (i.e., the cost to support one ton of allowable load). For these projects, cost components of the two projects' deep foundation elements including piling, design pile testing, and construction control were compared.

Project costs are presented in Table 2. This table presents the total allowable tons of support installed, and the respective costs for the piles, and design testing/construction control components, as well as these components' sum. Accordingly, support costs for each component, and a total support cost, were determined for each project and compared. The support cost determinations summarized in Table 2 are presented in Figure 2, and discussed below.

Figure 2. Support Cost Summary

Pile Support Cost

A review of Figure 2 indicates that the South Leg's pile support cost was $16.81 per allowable ton lower than for the Canal Street Viaduct. The South Leg achieved a much lower pile support cost, despite having the poorer soil conditions (in particular, much deeper project-wide organic deposits). There are a number of potential factors contributing to this difference. Although assigning relative contributions among the factors is difficult because they tend to work in conjunction with one another, the factors are presented below in a subjective order of decreasing impact on cost:

Soil/Pile Set-Up

Unlike the Canal Street Viaduct, the South Leg incorporated soil/pile set-up into design and installation. Accounting for set-up may reduce pile lengths, reduce pile sections (use smaller-diameter or thinner-walled pipe piles), or reduce the size of driving equipment (use smaller hammers and/or cranes). Any one, or a combination, of these reductions could result in cost savings. For the South Leg pile test program, measured shaft set-up generally ranged from 200 to 500 percent (100 percent set-up indicates that the shaft resistance doubled; 200 percent indicates it tripled, etc.).

Allowable Pile Load – Magnitude

The South Leg used higher allowable pile loads than the Canal Street Viaduct. In general, higher allowable pile loads tend to result in lower pile support costs for several related reasons. First, if poor soils must be penetrated, a certain length of pile must be installed, or "invested," just to reach more-competent soils below. The higher the allowable load, the greater the return on each pile's "investment". Second, while installed pile cost increases linearly with depth, soil strength/pile resistance often increases at a greater rate (e.g., driving a pile 25 percent deeper often results in greater than a 25 percent capacity increase). Hence, pile support cost generally decreases with increasing depth and associated higher allowable load.

Pile Type – Geotechnical Capacity

H-piles are well-suited as predominately end-bearing piles, driven to a bearing layer. Closed-end pipe piles are well-suited as predominately shaft-resistance piles. The project stratigraphies appear to favor closed-end, friction pipe piles.

Driving Criteria

The South Leg used wave equation analysis, while the Canal Street Viaduct used a dynamic formula, to develop driving criteria. The wave equation may have provided less-conservative driving criteria.

TABLE 2: Cost Summary

Project	Piles				Design Testing and Construction Control		Totals	
	Total Allowable Tons of Support Installed	Total Footage Installed, linear feet	Total Cost, dollars	Support Cost, dollars per allowable ton	Total Cost, dollars	Support Cost, dollars per allowable ton	Cost, dollars	Support Cost, dollars per allowable ton
Marquette Interchange South Leg	86,100	51,989	2,200,212	25.55	437,000	5.08	2,637,212	30.63
Canal Street Viaduct	63,150	77,108	2,675,000	42.36	0.00	0.00	2,675,000	42.36

Pile Section – Design Stresses

Based on desired allowable load, the South Leg design selected from multiple candidate pile sections and concrete strengths, and used composite pile design, to maximize design stresses within code-permitted limits. The Canal Street Viaduct piles have a design stress of 7 ksi, compared with a maximum of 12.5 ksi permitted by the AASHTO code.

Pile Type – Structural Capacity

The South Leg concrete-filled pipe piles derive structural capacity from both the steel shell (expensive) and concrete fill (inexpensive). The Canal Street Viaduct H-piles piles derive structural capacity from only steel (expensive).

Allowable Pile Load – Selection

The South Leg used multiple allowable loads, with selection at each substructure footing based on matching allowable loads to structure support requirements. In this way, installing excess (wasted) capacity is minimized. The Canal Street Viaduct used one allowable load at all substructure footing locations.

Unit Prices

Since the two projects did not use the same pile type, direct unit price comparison is difficult. Differences in pile type, installed footage, construction dates, physical site constraints, contract documents, bidding strategies, etc., may account for indiscernible differences between the projects' unit prices.

Testing and Construction Control Support Cost

A review of Figure 2 indicates that the South Leg's testing and construction control support cost was $5.08 per allowable ton higher than for the Canal Street Viaduct. This is attributable to the South Leg performing a design-phase test program, and production-phase dynamic testing and engineering services to develop footing-specific driving criteria, while the Canal Street Viaduct performed no design- or production-phase testing.

Total Support Cost

A review of Table 2 indicates that the South Leg's total support cost was $11.73 per allowable ton lower than for the Canal Street Viaduct. Although the Canal Street Viaduct had lower testing and construction control support cost, the South Leg's much-lower pile support cost resulted in its lower total support cost. This total support cost difference, applied to the Canal Street Viaduct's total allowable tons supported, amounts to approximately $741,000.

CONCLUSIONS

There were some fundamental differences between these two projects. Some differences were related to pile design (design testing and construction control, set-up incorporation, allowable loads, pile type, design stresses, driving criteria, safety factor, etc.), others were not (subsurface conditions, applied loads, structure design, etc.). Although the South Leg project exhibited poorer soil conditions, and had a significant design testing and construction control program, its total support cost was lower than for the Canal Street Viaduct. The reason for this is its much-lower pile support cost, to which a number of potential factors contributed.

A review of the factors potentially contributing to lower pile support cost indicates that if design policies permit, the majority of factors can be incorporated in a relatively straightforward and inexpensive manner. If design policies require field testing to incorporate any of these factors, it may still be cost-effective to do so.

The least-straightforward and most-expensive factor is characterizing soil/pile set-up, determining how to apply it in design, and construction monitoring/confirmation during pile installation. Although assigning relative value to the contributing factors is difficult, and the factors tend to be interrelated, characterization and application of set-up appears to have had the greatest effect on reducing the South Leg pile support costs.

A major objective of the South Leg's design testing and construction control programs was to characterize set-up. However, if a project size warrants, such programs may yield other beneficial economic results. These benefits may include lower permissible safety factors, higher permissible resistance factors, higher allowable loads, improved driving criteria, higher allowable material stresses, more-economical selection among potential pile type/section candidates, reduced contingencies in bid prices, etc. ▼

Sun Group of Businesses

Bringing the Future of Pile Driving to You

SPE Authorised Junttan Dealer

Junttan Rig Sales & Service

DEEP EARTH TECHNOLOGY

Junttan Pile Rig Leasing

EMECA SPE USA

Innovative Pile Splices

SUN PILE FOUNDATIONS

Pile Driving Specialist

Sun Piledriving Equipment, LLC
35322 Bayard Road
Frankford, DE 19945
Tel. 302.539.7187
Fax. 302.539.4443
www.spe-usa.net

Deep Earth Technology, LLC
35322 Bayard Road
Frankford, DE 19945
Tel. 917.678.7299
Fax. 302.539.4443
www.deepearthtechnology.com

Emeca/SPE USA, LLC
35322 Bayard Road
Frankford, DE 19945
Tel. 302.875.0760
Fax. 302.875.0761
www.emeca-speusa.com

Sun Pile Foundations, LLC
35322 Bayard Road
Frankford, DE 19945
Tel. 302.539.6756
Fax. 302.539.6076
www.sunpilefoundations.com

The Bearing Capacity of Vibrated Cast-In-Place-Piles

By Hermann Zeilinger, Dipl.-Ing. TU, Partner, Harland Associates and Klaus Hudelmaier, Dipl.-Ing. FH, President BVV Ldt.

Investigation and Comparison of the bearing capacity of cast in place full displacement piles

1. driven with impact hammer, standard extraction
2. driven and extracted with vibratory hammer
3. driven with the vibro-jetting method, extracted with vibratory hammer

Objectives:

In the Kimmeridge Clay area, with its very specific soil conditions, one of the standard foundation methods uses full displacement piles. At the end, with a lost plate closed steel piles were driven with an impact hammer down through the soft soil layers into the hard clay, creating the required bearing capacity. The reinforcement cage will be inserted within the casing and concrete will be pumped from the bottom up to the surface. The extraction of the steel pipes with hydraulic powered jacking system is the more difficult part of the installation and usually determines the time interval for one cycle. Bigger diameter of the lost plate at the tip is one way to reduce the skin friction making the extraction easier. But with a larger diameter more concrete is needed and the soil looses stress reducing the final bearing capacity of the skin friction. Because of the long installation cycles, caused by the slow and difficult extraction of the casing, two other methods based on vibrated piles were investigated, searching a way making the installation faster. But before this procedure could be accepted: the key question concerning the bearing capacity of those vibrated cast in place pipes, has to be answered.

Goal of the assignment:

The goal of a one to one field test was: to install displacement piles of same size and length using the three above mentioned installation methods and investigating and comparing their bearing capacity.

For the static load testing reaction piles and a standard loading platform were installed for a maximal load of 3.000 KN. The load tests were executed with a manual served press system completed with a total of five measuring instruments. The dynamic testing is based on the CAPWAP – method, (Case Pile Wave Analysis Program). This program considers the speed as function of the acceleration, the elasticity and cross section area of the material as well as the dynamic and speed of the wave. Comparing the different loads the results are presenting: the contribution of the skin friction along the shaft, the tip bearing capacity as well as a load/settlement diagram under static load.

The Project:

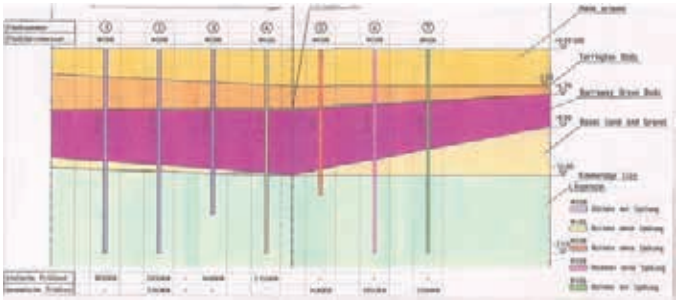
The site of Palm Paper Inc. in Kings Lynn, England was already under construction. The overlaying soft soil did require a pile foundation system to transmit the heavy load of the construction down into the firm clay. The planning did demand a total number of 7.011 cast in place full displacement piles of 406 and 610 mm diameter carrying the designed load considering a safety factor of 2. The advantage of the site was the fact that already a series of different test results were available for further investigation and comparison with this newly organized field tests.

Soil conditions:

The soil layers consisting of very young sediments created after the last ice period. These soft muddy layers are subject to severe settlement s under any load. Organic peat and clay of high plasticity were followed by very soft clay with some silty sand, in change with layers of fine sand, sandy silt and sandy silty clays, soft and of very low density. About 13 meters below surface the so called Kimmeridge Clay marks the stiff to firm bearing layer. For further investigations SPT test were executed exactly in the positions of the test piles to receive additional data for the determination of the bearing capacity.

The results of the DPH test did confirm the consistency of the soil layers and did indicate the beginning of the firm clay at 13 meters below. From this depth down to the end of the borings, the consistency of the Kimmeridge clay went from more stiff to very firm.

Soil Profile: Cross-Section with the Test Piles



Installation method: Pile 1,2,3,7: Vibro-Jetting; Pile 4,5: Vibration only; Pile 6: Impact Driving
Fig. 1: BVV, Special Deep Foundation Technique Distributor Ltd. Bleibtreustr. 9, Munich, Germany

The test piles and their installation:

Seven displacement piles were installed to determinate their bearing capacity. Because of multiple results of driven displacement piles, only one of the test piles was installed using a Hitachi carrier and a hydraulic hammer type CX 110/9. But the installation conditions were not regular and the result of the bearing capacity was an exception. For the other six piles two casings of 406 mm and 508 mm were installed using a Liebherr heavy carrier LRB 255 and a ring vibrator the size 32 VMR of the German company BVV, a specialist of the vibration and vibro-jetting technique in all soils.

Some piles were installed using the Vibro-Jetting combination. On the outside of the steel pipes tack welded lances transported a mix of air and water under pressure to the tip of the closed pipes, allowing deeper penetration into the firm clay. Pile number 1, 2, 3 and 4 were later tested with a standard load test and the pile number 2, 5, 6, and 7 were tested dynamically. All tests were done under permanent quality control of soil engineers.

Interpretation of the Test Results:

Vibro-Jetting has no influence on the final bearing capacity. The sole effect of this aid concerns only the driving. This method improves the driving capability and makes penetration easier into hard soil.

In general the results of the static tests are in average 15 percent below the dynamic test values. Comparing the bearing capacities of the vibrated and the driven piles, we have to take into account the local soil condition of each pile, the embedded length, which is activating the skin friction and its diameter.

The statement of this analysis is as follows:
Vibrated cast in place (full displacement) piles achieve the same or an even higher bearing capacity as comparable piles driven with an impact hammer and extracted statically.

Table of the Results of Dynamically and Statically Load Tests

Pile No.	Driving Method	Pile-Diameter mm/inch	Pile-Length m / ft	Jetting Aid	Test Results Statically KN	Test Results Dynamically KN
1	Vibration	508 / 20	21,0 / 69	yes	1.850	
2	Vibration	508 / 20	21,0 / 69	yes	2.050	2.340
3	Vibration	508 / 20	17,0 / 56	yes	1.400	
4	Vibration	406 / 16	21,0 / 69	no	2.150	
5	Vibration	508 / 20	15,0 / 49	no		1.480
6	Vib. & Impact	508 / 20	21,0 /69	no		2.850
7	Vibration	406 /16	21,0 / 69	yes		2.500

Re: Pile 6: was first vibrated down to -13 m, later extracted with a vibrator, because of the high friction.
Fig. 2: BVV, Special Deep Foundation Technique Distributor Ltd. Bleibtreustr. 9, Munich, Germany

Table of Results of earlier Dynamically and Statically Load Tests

Pile No.	Driving Method	Pile-Diameter mm/inch	Pile-Length m / ft	Jetting Aid	Test Results Statically KN	Test Results Dynamically KN
1041	Vibration	406 / 16	14,5 / 48	no		1.613
1750	Vibration	406 / 16	15,0 / 49	no		2.286
1775	Vibration	406 / 16	14,9 / 49	no		1.149
1113	Vibration	406 / 16	17,0 / 56	no		1.443
1660	Vibration	406 / 16	19,0 / 62	no		2.059
1662	Vibration	406 / 16	19,0 / 62	no		1.887
P 1	Impact	420 / 16,5	17,0 / 56	no		1.457
P 2	Impact	420 / 16,5	18,5 / 61	no	1.445	1.871
P 3	Impact	660 / 26	18,2 / 60	no	2.700	2.924
P 4	Impact	660 / 26	18,3 / 60	no	2.300	2.758

Re: Piles P1, P2 with 380 mm pipes and 420 mm plates; P3, P4 with 610 mm pipes and 660 mm plates
Fig. 3: BVV, Special Deep Foundation Technique Distributor Ltd. Bleibtreustr. 9, Munich, Germany

Comparing the piles number P1 and P2 with oversized bottom plates, with the vibrated piles number 1113, 1660 and 1662 we see similar values of their bearing capacity, but we also have to recognize the smaller cross section area of the vibrated piles needing about 7 percent less of concrete quantity.

The Standard Phases of the Installation:
Phase 1: The disposable base plate with sealer is connected watertight to the steel casing.
Phase 2: A high frequency ring vibrator (f over 30 Hz) is set up at the top of the casing.
Phase 3: The steel casing is vibrated to the designed level with down-crowd force.
Phase 4: The reinforcement cage is installed inside the casing.
Phase 5: The calculated quantity of concrete is poured continuously into the casing up to the top.
Phase 6: After the base plate is detached, the casing will be extracted with the ring vibrator.

The vibration compacts the concrete and results in a very close indentation to the soil, improving the skin friction and bearing capacity.

The usual needed time for set up and finishing the cycle for the installation of one vibrated cast in place pile does not exceed 20 to 30 minutes.

Conclusion:

Not one of these multiple and different load tests did result any negative outcome for vibrated piles. No factor of correction is required. The installation of the piling system at the Palm Paper site is the ultimate demonstration for the high performance of vibrated cast in place piles. All piles of 406 mm diameter, a total of 97.221 running meter, were installed with two units of Liebherr Carriers LRB 255, equipped with ring vibrators type 32VMR, resulting an average of 19 piles per unit and per day. Within the same six months 2.010 piles of 610 mm diameter and 38.896 running meter were installed conventional, using four Hitachi /Fundex units with hydraulic hammers of 9 t drop weight resulting a low number of five piles per unit and per day.

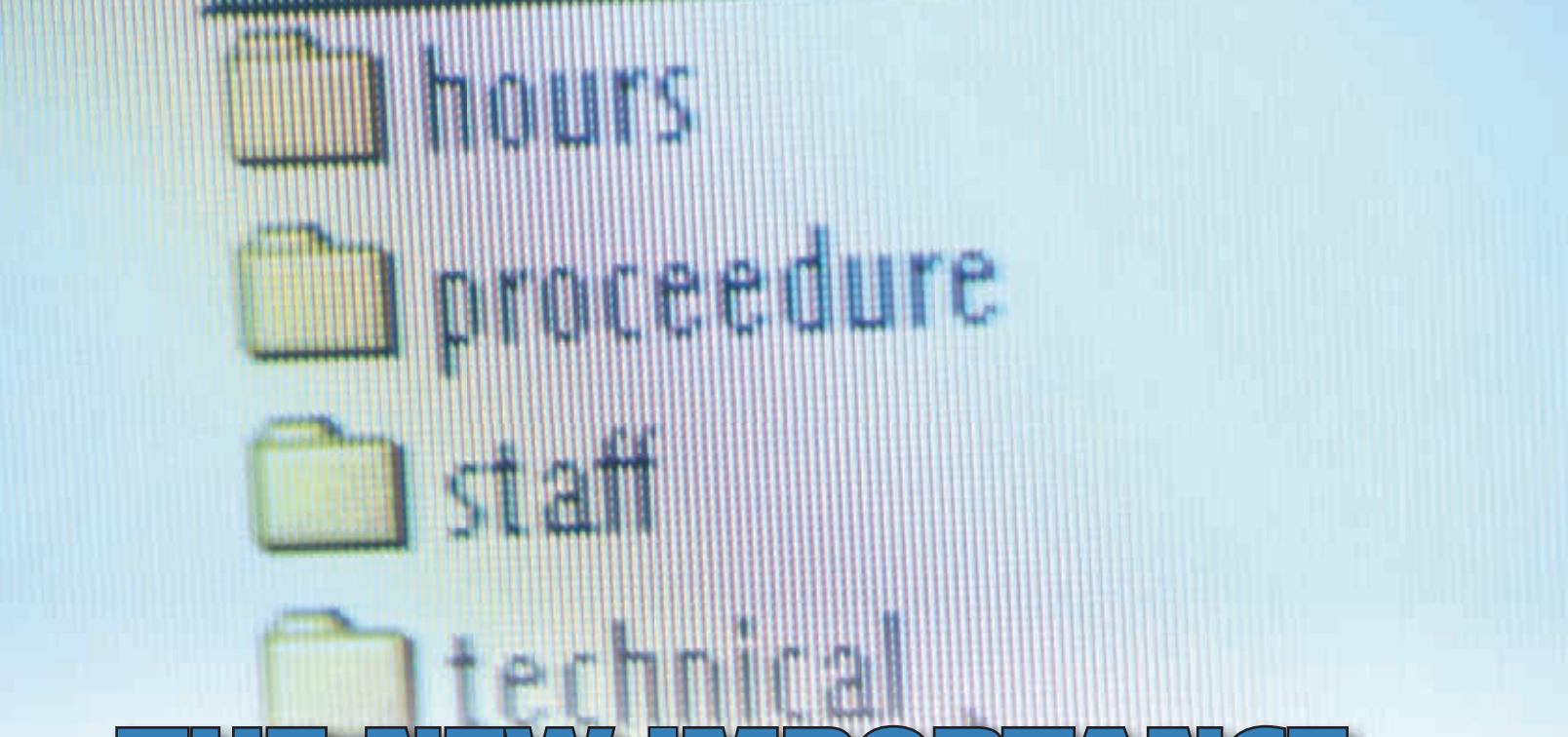
19 vibrated piles per day versus five piles installed conventional, theses numbers speak for themselves.

Design and soils engineers in the deep foundation industry may consider vibrated cast in place piles as an equal way of installation. With their approval the pile driver contractors are able offering higher daily performance, reducing the total cost of the foundation. Standard of any installation of cast in place piles should be an exquisite Quality Control program, based on high sophisticated machinery and equipment, permanent monitoring and recording of each pile installed and last not least: a well trained and motivated crew.

Fig. 4: Liebherr Carrier LRB 255 with Ring Vibrator 32 VMR; Photo BVV, Munich

References:

BVV, Munich: "Pile Load Tests, Kings Lynn, England", Internal Investigation Report, Mars 2009. ▼



THE NEW IMPORTANCE OF RECORDS RETENTION AND LEGAL COMPLIANCE

By Chanley T. Howell

In light of the vast volume of electronic, computer files and communications, and the Federal Rules of Civil Procedure pertaining to e-discovery, companies now realize the need for a comprehensive records retention policy. Current business standards dictate it is not only a best practice to have a policy, but it is also a part of meeting minimum standards of legal compliance and prudent business operations. Commentators and courts have routinely indicated that every company should develop its own written policies given the substantial risks of not having an effective policy, as well as the numerous benefits from a policy. Records retention is particularly important for companies in the construction industry, as construction litigation is particularly known for its high volume of paper and electronic records, and the substantial costs associated with complying with discovery obligations during litigation or investigations.

Keeping everything is not the answer.

Companies that say they keep everything don't. Employees will always discard paper records, electronic files and e-mails. Additionally, keeping everything will result in substantially increasing the volume of records that have to be located, reviewed and analyzed in the event of litigation or an investigation involving the company. Accordingly, it is imperative for organizations to adopt a policy governing destruction in order to avoid liability for selective destruction of records or spoliation.

Risks of Noncompliance.

Failure to retain records in compliance with applicable law and in connection with pending or threatened claims can result in regulatory and court sanctions, fines, unnecessary expense and other adverse consequences. Inadequate and ineffective records storage and retention practices can result in (a) the loss of valuable trade secrets, confidential information and other important business and proprietary information, and (b) the breach of privacy laws and regulations. The cost (time, money and resources) of complying with litigation discovery requests can be significantly reduced through implementation of cost-effective records retention and e-discovery policies and practices.

Benefits of Proactive Records Management.

The benefits of an effective records management program include easier and timely access to necessary records; complying with statutory and regulatory retention obligations; reducing storage costs; protection of confidential and proprietary information; and meeting e-discovery obligations. An effective records retention policy can mitigate the risks of not actively managing electronically stored information (ESI), such as, the inability to efficiently locate and use important business information; sanctions due to the failure to comply with statutory and regulatory retention and destruction laws; increased costs due to inefficiencies from inaccessible information; and the inability to comply with e-discovery require-

ments, court orders and other litigation-related requirements. Companies that invested the time and resources to prepare a comprehensive records retention policy have learned that they can comply with their discovery obligations efficiently. In contrast, companies that have not prepared in advance have found themselves unable to make required disclosures and to timely comply with discovery obligations without incurring tremendous costs. Most significantly, these companies who have not prepared for e-discovery have suffered evidentiary and monetary sanctions.

Developing a Retention Policy.

In developing a records retention policy, the company should first analyze the records environment to assess areas and levels of risk to the organization that may result from existing records retention policies and practices. Based on identified risk areas, the company can then evaluate existing written and/or de facto policies, processes, and technologies to identify weaknesses, categorize risks, and recommend improvements. With the results of the risk and needs assessment in hand, the organization can then modify the existing policy or develop a new, practical, and cost-effective records management and retention policy that addresses and resolves any potential issues revealed during the risk and needs assessments.

Electronic Discovery Obligations.

To avoid court sanctions, costly e-discovery compliance, and missing court deadlines, companies should prepare in advance to properly respond to e-discovery requests and mandatory disclosures. The company should provide training to its personnel with respect to the policy to assist compliance with paper and e-discovery obligations. A critical aspect of litigation preparedness is knowing what electronic records the company maintains and where they are stored. The company should develop legally compliant data maps that categorizes the company's electronic records, identifies where the records are stored as well as the appropriate records custodians who can provide electronic records as needed.

The Records Retention Policy should address obligations under the Federal Rules of Civil Procedures relating to electronically stored information. The Federal Rules of Civil Procedure were amended effective December 2006, adding numerous rules and regulations relating to electronic records, or as referred to in the Rules, ESI. Among other things, the Rules require early treatment of e-discovery issues, as well as full and accurate disclosure of the existence of relevant ESI. If not properly planned, managed and coordinated, locating and producing ESI can become very time- consuming and expensive. Failure to comply with the discovery rules can result in court imposed sanctions, fines and adverse rulings. Accordingly, it is critical for companies to develop accurate documentation describing its ESI practices and policies on the "front end," rather than dealing with these issues on an ad hoc, case-by-case basis after litigation has commenced.

Developing the Retention Schedule.

An essential component of every records retention policy is the Retention Schedule that identifies all different types and categories of records, and the required retention periods. The retention periods may be based on a statute, regulation or other law that mandates the record be retained for at least a specified period of time, or in the absence thereof, operational requirements dictating that records should be available for at least a certain length of time. Failure to utilize an accurate Retention Schedule can lead to premature destruction of records, resulting in legal fines and sanctions, and loss of

information needed for the ongoing operations of the business. The company's records retention policy should have a Retention Schedule that accurately and concisely identifies all different categories and types of paper and electronic records retained by the company, and legally compliant retention periods for each category or type of record.

The E-mail Problem.

E-mail proliferation is a problem faced by every company. Confronted with growing storage costs and system performance issues, companies are limiting the amount of e-mail that employees can keep. Tape backups typically do not keep a complete record of all e-mails. While limiting e-mail volume is legally appropriate, and in many cases advisable, the company must also ensure employees (or an automated system) do not delete e-mails that are required for on-going business operations or legal compliance. Companies should implement polices and practices for ensuring required e-mails are not prematurely destroyed, for example, by migrating or archiving required e-mail records to a document management system, or secure networked data servers.

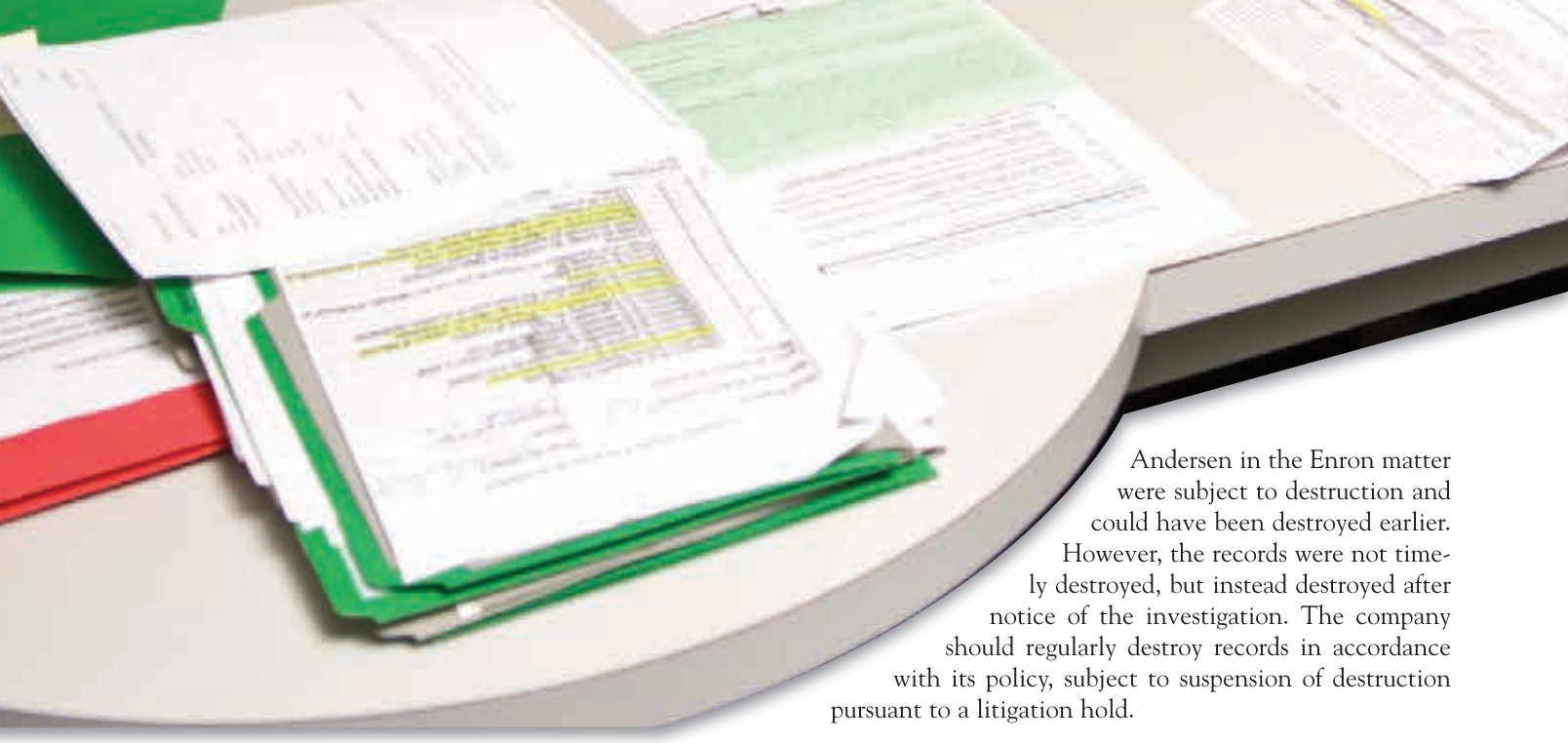
Improper destruction of records, or spoliation, can result in fines, sanctions, adverse legal rulings and other undesirable consequences. Even inadvertent destruction of records can lead to adverse results, particularly where the company's records retention policy does not adequately deal with "litigation holds." The obligation to preserve records can arise before a lawsuit is initiated or a demand letter received. The records retention policy should properly address the retention of relevant records, including timely notice to employees, compilation and production of records, and suspension of normal records destruction with respect to relevant records.

The Importance of Centralized Storage.

Electronic records can be stored in a variety of locations – network servers, local hard drives, home computers, laptops, handheld devices, CD-ROMs, flash storage devices, web-based e-mail applications, online backup sites, etc. Multiple locations add to the difficulty and cost of locating and producing records, and increase the likelihood that records will be lost, not produced when they should be, and/or improperly disclosed to third parties not entitled to access the records. When a company is required to locate and produce electronic records in litigation (as a party or a third-party witness), it must search all locations for potentially relevant records, and produce those records. Companies should require storage or records in locations and in manners that facilitate prompt and cost-effective location and production, and consider limiting the locations where electronic records may be stored by employees.

Dealing with Independent Contractors & Vendors.

Many companies use independent contractors and outsource functions and operations of the business, resulting in third parties having primary responsibility for storing, retaining and disposing of company records. Outsourced functions include areas such as information technology, accounting, human resources or other business processes. In such instances, the company should require the outsourcer to comply with the company's records management policies through appropriate



Andersen in the Enron matter were subject to destruction and could have been destroyed earlier. However, the records were not timely destroyed, but instead destroyed after notice of the investigation. The company should regularly destroy records in accordance with its policy, subject to suspension of destruction pursuant to a litigation hold.

contract language, monitoring, reporting by the outsourcer and periodic auditing of the outsourcer.

Destruction.

The flip side of retention is destruction. In order to obtain the benefits of having a policy and avoiding liability for improper destruction of records, it is necessary to destroy records in accordance with the policy. The records destroyed by Arthur

Conclusion.

Records retention is a critical part of any business' legal compliance activities. Failure to adopt and enforce an effective records retention policy can result in court ordered fines and sanctions, as well as increased cost of complying with subpoenas and other discovery obligations in litigation and investigations. An effective program can also result in substantial cost savings for the company, as well as more efficient retrieval of records needed for day-to-day business operations. Accordingly, a well thought out and drafted records retention policy is an important piece of business strategy and legal compliance for all organizations. ▼

Mr. Howell is a partner with the Jacksonville office of Foley & Lardner, and a member of the firm's Information Technology & Outsourcing Practice group.

Build on a solid foundation with quality piling.

RoyOMartin Colfax TREATING

RoyOMartin-Colfax Treating specializes in poles and piling. Our products are available in a variety of treatment options: creosote, pentachlorophenol, chromated copper arsenate (CCA) and creosote coal tar solutions. Different retention levels and a variety of sizes are available on demand. **Producing quality and value with the three Cs of piling and poles: competent, consistent, competitive.**

The best piling requires the best treatment.

Since 1923
RoyOMartin
PO Box 1110 | Alexandria, LA 71309

Joel Arnold	866.220.9426
Pat Abney	318.446.1906
Angie Cerami	866.739.8284

RoyOMartin offers a full line of premium-quality wood products. For a complete listing and specifications, visit our website at: **royomartin.com.**

Made in the USA

Colfax Treating is a proud member of the following:
North American Wood Pole Council
Southern Pressure Treaters' Association
Pile Driving Contractors Association

JD FIELDS

& Company, Inc.

A North American Leader in

TUBULAR PRODUCTS

STEEL LINE PIPE - CASING - OFFSHORE DRIVE PIPE

LINE PIPE API / ASTM / CSA SPECS
1/4" through 60", Grade B through X-80
Various external corrosion coatings
Casing 4 1/2" through 60" – API and Premium threads

Well versed in Canadian specifications and rules of export.

Canadian Contact 24/7: Todd Fagan • 972-869-3794 • tfagan@jdfields.com

Experience real service – real fast.

P.O. Box 134401 • Houston, TX 77219-4401

55 Waugh Drive, Suite 1250
Houston, Texas 77007 • Phone: 281-558-7199

JD FIELDS
& Company, Inc.

the supply of Steel Products

CONSTRUCTION PRODUCTS

H-PILE - SHEET PILE - PIPE PILE - WIDE FLANGE - RAIL

NEW and USED
SALES and RENTALS
PURCHASERS OF USED PILING

JD Fields & Company, Inc.
Headquarters - Houston, Texas Since 1985
www.jdfields.com

• Houston • Dallas • New Orleans • Tulsa • East Coast
• Los Angeles • Denver • Midland • Midwest

Houston, Texas
Phone: 281-558-7199
Fax: 281-870-9918

East Coast
Phone: 803-462-9738
Fax: 803-462-9739

Brea, California
Phone: 714-257-2005
Fax: 714-257-2015

Denver, Colorado
Phone: 303-331-6190
Fax: 303-331-6191

New Orleans, Louisiana
Phone: 985-234-4567
Fax: 985-234-4572

Tulsa, Oklahoma
Phone: 918-459-4638
Fax: 918-459-4636

Dallas, Texas
Phone: 972-869-3794
Fax: 972-869-3861

Midwest
Phone: 314-854-1380
Fax: 314-854-1382

Experience the progress.

Liebherr LRH 100

- Long reach piledriving rig
- Batter piling 1:3 to all sides
- Easy control with two joy-sticks
- Litronic PDE data recorder for proof of each driven pile

Liebherr Nenzing Crane Co.
7075 Bennington Street
Houston, TX 77028-5812
Phone: (713) 636-4050, Fax: (713) 636-4051
info.lnc@liebherr.com
www.liebherr.com

LIEBHERR
The Group

Driven Treated Timber Piles Lead the Way to Revitalize Beach Tourism

By: Michael Carter – Giken America Corporation

As one of the fastest-growing family and vacation destinations in the nation, the Myrtle Beach area of South Carolina currently attracts an average of 14 million visitors annually along with thousands of new residents to the destination each year. Known affectionately as "The Grand Strand," Myrtle Beach has grown more than 35 percent over the past decade and continues to evolve and expand, giving way to the entirely new Myrtle Beach area, full of accommodations, attractions and events. Although the overall growth of the area has been impressive, the heart of the Grand Strand has struggled since the closing of the Pavilion Amusement Park. This is why the new Downtown Myrtle Beach Boardwalk is one of the most exciting changes on the horizon,

Following approximately ten years of planning, the Myrtle Beach Oceanfront Boardwalk and Promenade project is underway. A groundbreaking ceremony on Sept. 8, 2009 kicked off the project, which is scheduled to be completed in spring 2010. Conceived as a downtown revitalization project to enhance the Myrtle Beach visitor experience, the $6 million of construction materials for the boardwalk will extend more than a mile through the sand along the oceanfront area from the 14th Avenue Pier to the Second Avenue Pier. The combination of boardwalk and promenade is expected to attract joggers, bikers and pedestrians to the center of Myrtle Beach's coastline, according to the MBsun.com.

The Myrtle Beach Chamber of Commerce recently organized a two-day celebration to "spread the word" about the new boardwalk, which has plans for the world's largest dance floor. The event featured beach music performances, fireworks and a classic car show to heighten the sense of nostalgia.

The contract for the boardwalk was awarded to M.B. Kahn's Coastal Division of Conway, SC (mbkahn.com). Founded in 1927, the company is recognized as one of the nation's leading contractors, design/builders and construction management firms.

According to Michael Mecionis of Cox Industries Inc. (www.coxwood.com), the project contains over 750,000 board feet of treated decking, framing and square timbers constructed atop more than 850 timber pilings ranging from 15 to 30 feet with 8 inch tips. Piles are already being delivered and are being driven by CL Benton and Sons of Myrtle Beach (www.clbenton.com).

Mr. Deonne Long, P.E. with Chao & Associates of Columbia, SC, (www.chaoinc.com) related that Chao is partnering with DDC Engineers Inc. of Myrtle Beach on the project. Long helped with the framing design of the wood boardwalk and concrete structures and stated one of the biggest challenges with the project was the existing concrete promenade that had to be removed and replaced with wood. MB Kahn's project manager Vince Mannella said the demolition work of the old concrete promenade is underway and piles are beginning to be driven.

Beyond the obvious aesthetics of natural wood, pressure treated timber piles have become a mainstay of foundation designers because of their structural integrity. The Timber Piling Council reports that extensive load tests have been per-

North Section

Central Section (above)

South Section (above)

Piling Driven for MB Boardwalk

Ground Breaking September 8th, 2009

formed; design loads as high as 75 tons have been specified and ultimate loads as high as 235 tons have been carried by timber piles. Combine the longevity and strength of timber pile, with the natural beauty of real wood decking and the Myrtle Beach Boardwalk is sure to be a handsome addition to the South Carolina Grand Strand for many years to come.

The boardwalk will feature three different sections varying in width and following a serpentine pattern with the dune line. The first section, the North Walkway, will extend from the 14th Avenue North Pier to Plyler Park at the foot of Mr. Joe White Avenue. It features a raised wooden deck, with dune landscaping and vegetation, to create a serene, peaceful and natural environment and beach experience. The walkway in this section is eight feet wide with connecting pathways to beach access points.

The second section, the high-intensity portion of the boardwalk, extends from Plyler Park to Eighth Avenue North. This section adjoins beachfront stores and shops and invokes a carnival and nostalgia atmosphere with its sights, sounds and energy. This section ranges from 26 to 50 feet in width.

The third and final section, the South Promenade, continues from Eighth Avenue North to First Avenue North, just south of the Second Avenue Pier. The South Promenade will be a lineal park promenade with benches and natural landscaping. This section offers relaxing views of the beach and passive recreational opportunities. Main walkways are 12 feet wide, while secondary paths are eight feet wide

When complete in June 2010, the Boardwalk and Promenade will provide visitors and residents with a contrasting pedestrian alternative to Ocean Boulevard. The location, dimensions and material used for the Boardwalk and Promenade will create an enjoyable place to stroll, chat, shop and jog. This project is not only a testament to the versatility and durability of timber piling but an example of the natural beauty of wood and the way it compliments some of the most picturesque and natural destinations of the world.

There is a website with a webcam to follow construction progress - http://www.cityofmyrtlebeach.com/cameras.html ▼

Steel piles take the LEED® in a GREEN market

Althoughconstruction may not be progressing at the pace of computer technology; recent advancements have brought significant change to the market. Designers are incorporating high tech software into their engineering practices to better serve their clients. Contractors are utilizing more sophisticated equipment for lower operating cost, improved safety, and higher efficiency. Even Manufacturers are streamlining production and delivery of materials to "do more with less".

Advancements like these spark change in the industry. They create new market applications, and promote progress.

In 2005, a unique permanent sheet pile application came to the domestic building market, challenging traditional below grade foundation design and construction. This innovative geostructural system proposed the use of steel sheet piles for permanent underground parking and basement structures.

It eliminates temporary shoring for support of excavation, delivering material and schedule savings, with flexible construction options. The concept integrates foundation design and construction into the entire building scope. This requires a direct line of communication between architect, building engineer, geotech, general contractor, foundation contractor, and manufacturer. This total project integration has opened the eyes of owners and their agents, showing how a sheet pile innovation can reveal LEED® opportunities in an uncommon area like the foundation. In today's construction climate, designing and building sustainable structures are key project goals. Owners, tenants, local and federal agencies demand designers, contractors and even manufacturers work collectively toward this goal. LEED® is the vehicle they take down the road to environmental responsibility.

What is LEED®?

LEED is an acronym for *Leadership in Energy and Environmental Design*. It is a third party certification program verifying a project is designed and built using strategies that improve building performance across all metrics: energy savings, water efficiency, CO_2 reduction, environmental quality, resource accountability and sensitivity to environmental impacts. Created more than fifteen years ago, the U.S. Green Building Council (USGBC) provides a framework for identifying and implementing measurable design, construction, operation and maintenance solutions throughout the entire building lifecycle. In the beginning, green buildings had higher construction premiums. This cost has come down significantly to where the financial benefits far outweigh the added costs. It has been estimated that financial benefits of green design are between $50 and $70 per square foot compared to non LEED® buildings, yielding more than ten times the premium cost associated with building green. The benefits are in lower energy, waste and water, emissions, operational and maintenance costs with increased productivity and health results.

Steel Piles: LEED'S® buried Treasure

In 2007, a high profile mixed use project named Evo started to take shape in the heart of downtown Los Angeles. The familiar team was comprised of GBD Architects, KPFF Engineers, Geodesign Consultants and Howard S. Wright General Contractors.

All members had previously worked with Skyline Steel on prior mixed use projects that they were the first of their kind on the west coast. They incorporated permanent steel sheet piles into the subterranean foundation. As material supplier and pioneer of this technology, Skyline worked intimately with the design team to ensure this groundbreaking solution was a success. But Evo's owner and agent had even greater aspirations beyond the foundation. This project would aspire to be a certified LEED® building.

As environmental stewards, design and construction professionals are responsible for total project sustainability. Skyline's direct involvement with the project team helped to identify and incorporate LEED® credits for steel sheet pile foundations. Overall, LEED® has six potential categories in their scorecard format. With a score of thirty seven, Evo achieved its certification goal, obtaining a silver rating, falling just two points shy of the Gold level. The steel sheet pile design and construction application was applied to three of the six metrics;

Sustainable Sites

The Sustainable Sites category relates to a building's site, and managing that site during construction. They are important considerations for a project's sustainability. Permanent steel sheet piles eliminate left-in-place temporary shoring, reducing insitu cast in place materials, and environmental impact of the site.

Materials & Resources

During construction and operations, buildings generate waste, using materials and resources. This credit category encourages the selection of sustainable materials. It promotes the reduction of waste as well as reuse and recycling. It takes into account the reduction of waste at a product's source. For example, hot rolled steel piles are produced from recycled content. In addition, any material discarded after installation is one hundred percent recyclable.

Innovation in Design

The Innovation in Design credit category provides bonus points for projects that use innovative technologies and strategies to improve a building's performance well beyond what is required by other LEED® credits. It rewards for a holistic, integrated approach to the design and construction phase. The permanent steel sheet pile foundation wall application offers features and benefits that embody the spirit of this category.

Upon completion of the project, the sustainability advisor stated; *"Evo project successfully reached its certification goal through the contributions and collaborative spirit from the entire project team. This enabled such a high level of achievement. Thank you for your creative efforts in making EVO a more sustainable place to live."*

The Green Thumbed Piledriver

Steel sheet pile foundations have not only proven savings in construction economics, they have gained recognition for environmental sustainability. H piles, pipe piles, and threaded bar reinforcement may not yet have a revolutionary application breakthrough, but they are made of the same recycled content.

Evo: Los Angeles, CA
LEED Silver mixed use development with three levels of below grade parking garage

The John Ross Towers:
Portland, OR
Mixed use development with three level below grade parking garage

All steel piles have greater environmental benefits compared to alternate insitu foundation materials. Piledrivers and pile producers need to work with owners, designers, and specifiers to explore the value of a steel pile foundation. The green benefits of steel piles can help reduce operating costs over the life of the structure. Compared to other pile materials, this could be the differentiator in determining the best foundation solution for the project. To learn more about the environmental advantages of driven steel piles, contact the PDCA.

Data sources: *USGBC, Brightworks LEED, GBD Architects, Environmental Business Council of New England & Skyline Steel LLC.*

Dean Abbondanza
Business Development Manager
Skyline Steel LLC
dabbondanza@skylinesteel.com
412 437-1103

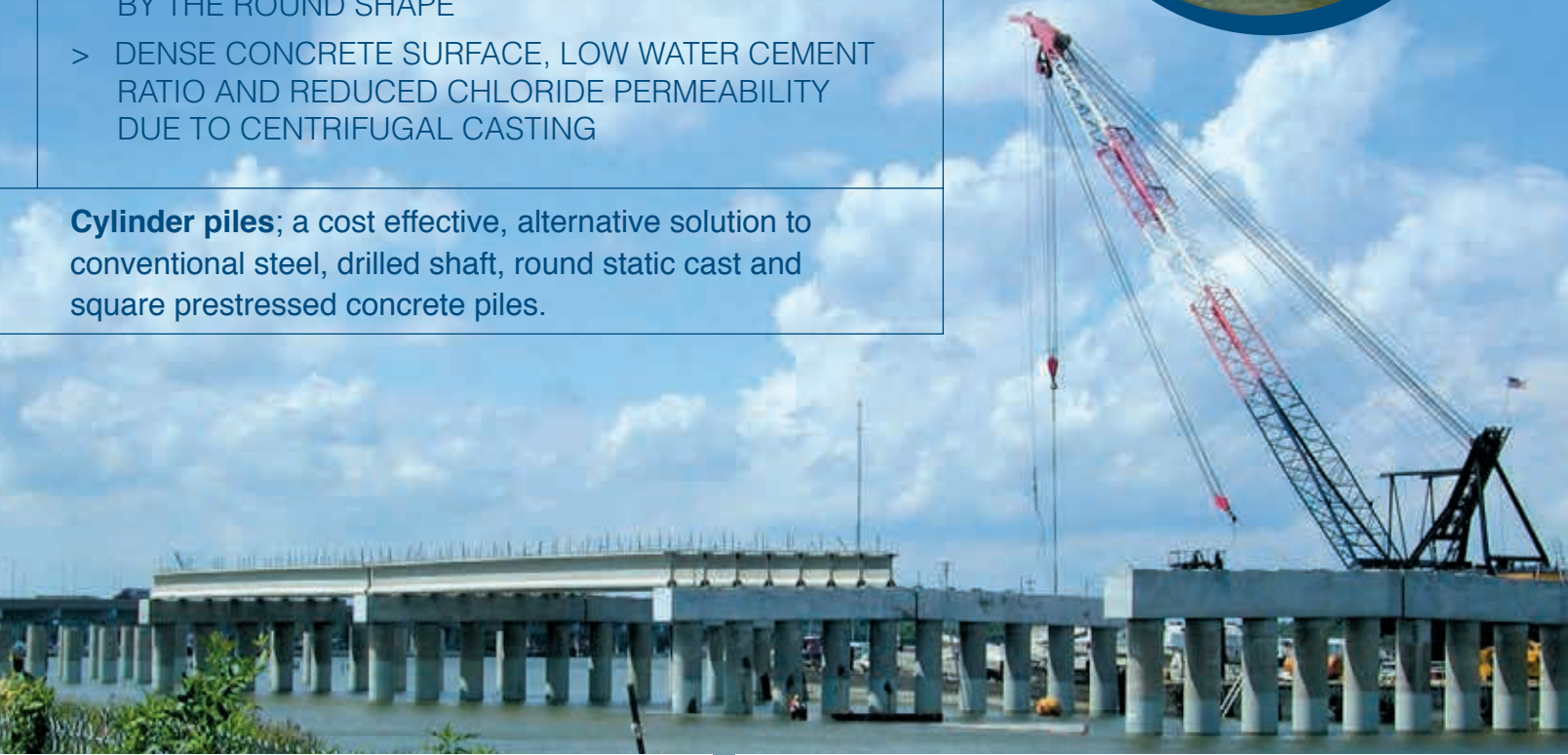
CENTRIFUGALLY SPUN PRECAST CONCRETE CYLINDER PILES

STRUCTURAL SOLUTIONS FOR THE MARINE ENVIRONMENT

ADVANTAGES:

- > LARGE BENDING MOMENTS
- > LONG UNSUPPORTED LENGTHS
- > LARGE COMBINED AXIAL LOADS AND BENDING MOMENTS
- > HOLLOW CROSS SECTION ALLOWS FOR EASY PILE TO CAP CONNECTIONS
- > STREAM AND WIND DRAG ARE REDUCED BY THE ROUND SHAPE
- > DENSE CONCRETE SURFACE, LOW WATER CEMENT RATIO AND REDUCED CHLORIDE PERMEABILITY DUE TO CENTRIFUGAL CASTING

Cylinder piles; a cost effective, alternative solution to conventional steel, drilled shaft, round static cast and square prestressed concrete piles.



For your East Coast and Caribbean projects contact:

BAYSHORE CONCRETE PRODUCTS CORPORATION

Contact: Gary Shrieves
Phone: 757-331-2300
Fax: 757-331-2501
e-mail: Gary.Shrieves@skanska.com

For your Gulf Coast and Mississippi River projects contact:

GULF COAST PRE-STRESS, INC. GCP PASS CHRISTIAN, MISS.

Contact: Max Williams
Phone: 228-452-9486
Fax: 228-452-9495
e-mail: mwilliams@gcprestress.com
Website: www.gcprestress.com

The Inner Harbor Navigation Canal Barrier

By: Patricia Barnes, Bayshore Concrete Products

The project is massive; the timeline aggressive: The U.S. Army Corps of Engineers is building a state-of-the-art 1.5 mile long storm surge barrier with three navigable gates across the Gulf Intracoastal Waterway and the Mississippi River Gulf Outlet. This is the largest design-build project in Corps history and will be the largest project of its kind in the world. This barrier is designed to protect lives, land and property from the type of flooding that devastated the New Orleans area during Hurricane Katrina. Officially named the Inner Harbor Navigation Canal Surge Barrier, the project is scheduled to be complete by June 2011.

After months of scientific and engineering analysis comprised of more than 150 nationally known experts the best design approach was finalized and the project awarded to Shaw Environmental and Infrastructure in December of 2008. Work began quickly in 2009 with crews working around the clock this summer to maintain the tight schedule.

Shaw Environmental contracted Bayshore Concrete Products of Cape Charles, Va., and Gulf Coast Pre-Stress Inc. of Pass Christian, Miss., to provide the 66-inch diameter cylinder piles required to construct the surge barrier. Bayshore Concrete and Gulf Coast Pre-Stress are the only two pre-cast, pre-stressed producers to make centrifugally spun cylinder piles in the United States using the CEN-VI-RO method. Spun piles were the technology of choice because an extremely dense concrete, much denser than obtainable by ordinary casting methods, results from the spinning process employed in the manufacturing of these piles. The cylinder piles require no field assembly as they are fully assembled at the Bayshore Concrete and the Gulf Coast Pre-Stress plants Of particular significance is the great structural strengths which permits combined axial loads and bending moments of considerable magnitude. Pre-stressed concrete piles have many inherent qualities that insure a long life with no maintenance costs - they are highly resistant to corrosion and to damage by water action. These spun concrete piles are categorized as a green product and these cylinder piles have a life expectancy of at least 100 years.

The storm surge barrier is comprised of 1,267 cylinder piles. Each pile is 144 feet long, 66 inches in diameter with a six-inch wall thickness and 32 post tensioned tendons. Each pile is made up of nine 16-foor sections that are stressed and then grouted.

The cylinder pile sections are manufactured on a CEN-

VI-RO spinning machine. This process involves placing zero slump concrete in layers in a steel form barrel while spinning the form barrel at a low revolution speed. Revolution speed is high enough that concrete being charged into the form moves to the sides of the form by centrifugual force but slow enough to allow the safe placement of concrete in the form. After filling the form with the required volume of concrete, the revolution speed is increased to allow compaction of the concrete.

Strict quality control standards were followed with four test cylinders made for every 10 pile sections produced. Two cylinders are immediately transported to the lab to cure in accordance to AASHTO T-23 standards. These two cylinders are broken at age 28 day. The two remaining cylinders are match cured with the pile sections. One is broken at the end of the steam curing cycle and one cylinder is broken at the age of 7 days to verify that the section has achieved tensioning strength.

Upon completion of the spinning cycle each pile section is steam cured in a kiln at a minimum of three hours at temperatures from 130° minimum and 180° maximum. They are stored for the final curing period and reach a 28-day strength of not less than 7,000 psi.

The full length cylinder piles are then assembled from the pile sections. Pile sections are placed on "lay down" racks where they are inspected. The post tensioning tendon core holes are aligned and two ½" diameter, 270 ksi low relaxation strands are installed in each core hole. Ends of the pile sections are "buttered" with polyester resin. Sections are butted together and become a single unit by stressing with hydraulic jacks. The strands are stressed to a predetermined 202,500 ksi.

Once the stressing is finished and after the joint compound has set, the tendon holes are grouted with a mixture of cement and water. The grout is

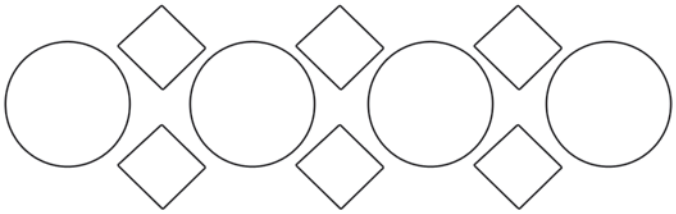
pumped from the top of the pile to toe. When the grout exits at the toe a grout clamp is attached and grout will be pumped under a pressure of 100 psi until the grout becomes the consistency of putty. The grout is allowed to set until the grout cubes reach 4000 psi, which is typically overnight, to insure adequate bond between the strand and the wall of the pile, and then the post tensioned anchorages are removed.

Each pile weighs over 180,000 thousand pounds. Piles were loaded onto the barges using specially designed Kevlar slings to balance the weight of the piles. The cylinder piles were all barged to the site, traveling approximately 1,520 nautical miles from Cape Charles, VA over a period of 12-14 days and 10 hours from Pass Christian Mississippi. The cylinder piles from Bayshore Concrete were very efficiently towed by Dann Ocean Towing using tandem barges and done in a minimal amount of trips with each tow carrying up to 3,825 tons of cylinder piles.

While the canals had to be dredged to allow for the barges carrying cranes and piles to get to the site, the environmental impact was carefully considered. As the canals were dredged of all the mud and silt it was pumped directly in the marsh areas surrounding the area that had suffered a great reduction of land during Hurricane Katrina

Piles are being driven by TMW, a joint venture of Traylor Bros, Inc, Massman Construction Company and Weeks Marine.

In addition to the cylinder piles, 2,534 closure piles are being driven. These 18" square closure piles are being placed "diamond shape" between the cylinders piles as show in the diagram below:



This configuration is used the length of the storm surge barrier piles to further strengthen the structure and provide more protection.

The 1,267 cylinder piles included:

Over 114,000 Tons of Concrete

Over 18,000,000 Feet of Spiral Wire

Over 12,000,000 Linear Feet of Strand

Bayshore concrete was established in 1961 to produce the precast concrete components for the 17 mile Chesapeake Bay Bridge-Tunnel. Bayshore Concrete is located on 90 acres on the Chesapeake in Cape Charles, VA. Over the years Bayshore Concrete has expanded its product line to include precast and prestressed concrete for marine facilities, mass transportation, parking structures, offshore structures, piers, and heavy construction in addition to the manufacturing girders, segments and piles for bridges. Bayshore Concrete also has a plant in Chesapeake, VA. This 25 acre site is situated on the Elizabeth River and mainly produces square piles and double tees. Bayshore Concrete is committed to providing sustainable components and protecting the environment for future generations. All Bayshore products are made with materials purchased within the United States utilizing recycled materials whenever feasible.

Gulf Coast Pre-Stress (GCP) was founded in 1967 and is located on a 110 acre site in the Harrison County Development Complex off Market Street at the Industrial Seaway in Pass Christian, MS. The casting yard has 25 multi-product casting beds over 400 feet long, and a large concrete slab area for match casting deck slabs, precast pile caps, sheet pile and other miscellaneous precast concrete items. To supply all these beds, GCP maintains a twin turbine mixer and a twin shaft mixer which are fully automated, computer –controlled batch plants capable of delivering up to 1200 cubic yards of concrete per day. For faster production, components are steam cured to achieve concrete strengths earlier. GCP has access to 2,000 feet of bulkhead and a drive on loading dock accessible by any one of our 150 ton straddle cranes. GCP borders the Industrial Seaway, giving us direct access to the Gulf Intracoastal Waterway eight miles south of our plant. ▼

MID-AMERICA FOUNDATION SUPPLY, INC

Direct distributor for Nucor-Yamato Steel!

"MAFCO" - Your one stop shopping for Piling Products, Barges & Pile Driving Equipment.

HOT ROLLED PZ-27, PZ-22, PZ-35, PZ-40 STEEL SHEET PILE

PS27.5 & PS31 FLAT SHEET PILING

COLD ROLLED SHEET PILING

H-PILE AND WIDE FLANGE

PIPE PILIING

PILE POINTS, SPLICERS & POINTS

POSEIDON BARGES & WOOD LAMINATED MATS

ONE CALL FOR QUOTES ON PILING, PILING ACCESSORIES, AND POSEIDON BARGES

- "MAFCO" is a distributor for Hot Rolled Sheet Pile & H-Pile, Pipe Piling & Cold-Rolled Sheet Pile made in the USA.
- Ship direct from the Mill or ship from inventory.

Stock Locations: Fort Wayne, IN & Blytheville, AR

MAFCO
MID-AMERICA FOUNDATION SUPPLY INC
Domestic Steel Sheet Piling, H Bearing Pile, Pipe Pile & Accessories

Serving the Piling Industry since 1986

Call Toll Free: 888-893-7453 WWW.MAFCOPILING.COM

PilePro®

The world leader in sheet piling connections

email or call us to request a new 2010 catalog

Connectors for sheet piling and steel pipe walls
Technologically advanced

Verbindungsprofile für Spundwände
Technologisch überlegen

Perfiles de unión para tablestacas
Tecnológicamente avanzado

Profilés de raccordement pour rideaux de palplanches
La supériorité technologique

Profili per connessioni in palancolati
Tecnologicamente all'avanguardia

Соединительные профильные элементы
для шпунтовых стенок
Интеллигентная технология

- AZ / Larssen U
- Ball & Socket (PZ/PZC)
- Hoesch
- Flat Sheet
- Cold Formed
- Pipe-Sheet-Pile™

Quick delivery available for ALL your sheet piling corners or tee connections, within 3 to 4 days nationwide.

pilepro.com

100 Congress Avenue Suite 2100
Austin, Texas 78701
Tel: 866.666.7453
Fax: 866.626.7453
info@pilepro.com

PilePro®

The world leader in sheet piling connections

AZ / Larssen U

Ball & Socket PZ/PZC

Hoesch

Flat Sheet

Cold Formed

Pipe-Sheet-Pile™

LBFoster
Piling

Five Strategically Located Facilities

Northwest Pipe Co. manufactures spiral weld steel pipe piling at five ISO Certified production facilities located nationwide to provide prompt material delivery to the most remote construction sites. Three of the Northwest mills are also API certified.

Northwest Pipe will soon open two new steel pipe mills with approximate yearly capacity of 150,000 tons each.

Pipe piling is readily available from these strategically located mills in sizes ranging from 18" to 156" OD and 0.188" to 1.00" wall thicknesses. Shipping is available by truck, rail and barge.

Quality piling from L.B. Foster and Northwest Pipe is ideal for:

- Bridges
- Terminals
- Caissons
- Piers
- Marinas
- Offshore platforms

800.848.6249
lbfosterpiling.com

Northwest Pipe Company

SPIRAL WELD STEEL PIPE PILING

Manufactured by Northwest Pipe. Delivered by L.B. Foster.

L.B. Foster Piling and Northwest Pipe Co. work together as strategic partners to provide quality spiral weld steel pipe piling for the most demanding projects. This experienced team can accommodate the widest variety of job specifications and deliver from production facilities located throughout the United States.

The Harvey Canal Project: Saving Time, Saving Money and Saving Lives

For years, more than 200,000 homes and businesses in Louisiana's Jefferson Parish have been at risk. Their only flood protection from a major canal on the Gulf Intracoastal Water Way has been a short earthen levee or bulkheads the property owners built themselves.

"It's caused us nightmares," says Giuseppe Miserendino, executive director of the West Jefferson Levee District. "After this hurricane season, we won't have to worry about it."

That's because crews are finishing a $250 million steel and concrete floodwall along the Harvey Canal that'll rise 19 feet above land – more than twice as tall as the earthen levee and far more solid. The floodwall will stretch more than 3 miles, and besides potentially saving lives, it's also been an award-winning lesson in saving time and money.

Building a T-wall

Designs for the Harvey Canal project called for a T-wall (built like an inverted T). A total of about 30,000 yards of concrete will be set atop 7,800 steel H-piles, some of which are as long as 140 feet. To install piles that long, contractors would normally get the pile delivered in two pieces, install the bottom half, then splice on the top. For this project, though, that would have been too expensive and taken too much time.

The crews at Cajun Deep Foundations, a subsidiary of specialty contractor Cajun Industries, developed a second option. They asked Nucor-Yamato Steel to roll the piles at full length. All told, more than 1 million linear feet of HP14 x 89 piles will be used. About 900 piles still needed to be spliced, but with a project that required a total of 7,800 piles, Cajun's idea saved nearly $8 million in splicing costs alone, says Chris Thompson, a Cajun project manager. And that doesn't include the savings from getting the work done so much quicker.

"That amount," Thompson says, "far exceeds the $8 million saved from splicing."

The solution helped the Army Corps of Engineers sus-

tain the project in much the same way the floodwall will help sustain the nearby homes and businesses.

"We had been having some budget concerns," says Todd Jacquet, a team leader with the Corps who is overseeing the project, "until Cajun told us we wouldn't have to pay for splicing."

But installing piles that stretch nearly half a football field presented another set of challenges.

Needing two cranes

The piles and driving equipment weighed more than 50,000 pounds. That meant Cajun needed cranes that could lift 230 tons. And they also needed to figure out how the cranes, which by themselves weighed more than 250 tons, could operate on an unstable working surface.

Cajun engineered a double-tiered system of timber crane mats to evenly distribute the heavy loads and ensure safety. Then the crew found a solution for installing the long H-piles. Normally, workers need only one crane to install H-pile. The crane lifts the pile from the ground into the pile-driving guides, sets the pile to the proper location and the pile is driven. With abnormally long H-piles, however, lifting them with one crane would have caused damage due to excessive bending stresses.

So Cajun instead used a second crane to lift the pile into the driving guides, calculating two strategic pick up points to minimize bending stresses. An installation crane sets the pile-driving guides to the proper location and sets the guides to the proper angle. Afterward, the second crane lifts the H-pile and places it in the driving guides, and the installation crane completes the installation. Not a single H-pile has been damaged.

Besides figuring out how to install the H-piles, Cajun faced another challenge: installing the extra-long sheet piles.

A custom-built installation template

Cajun needed sheet piling to extend beneath the surface and keep water from infiltrating. And to form a continuous wall, they needed to be interlocked and installed in pairs. The length of the pile would make it difficult to keep them plumb, level and within specified tolerances. Adding to the challenge, strong winds made the sheet pile act like giant steel sails.

Cajun used PilePro connectors to save time and money, avoiding the need to bolt or weld sheet pile corners together. Crews also designed and built a customized installation template. It had sheet pile guides at both the ground level for the bottom tier and 15-feet above ground for the top tier. Installing the sheet pile through the guides provided lateral support, keeping the pile plumb and steady. The template also included a way crews could access the top tier, directing sheet during installation.

In the end, all sheet piles were installed within the Corps' specified tolerances. And, thankfully, the soil characteristics for the remaining 2.3 miles of the wall are not as tricky. Nucor-Yamato Steel is supplying the PZ-27 sheet pile – each of which is nearly 60 feet long – and Cajun is installing them without needing to use its new template.

Throughout the project, Cajun crews have had to work in a confined space, with only 80 feet of room on one side and a busy road only 50 feet from the center of the wall. Crews had to carefully plan the location of each piece of equipment and stop traffic every 15 minutes so cars wouldn't drive under the heavy loads.

It's possible that some of the steel used to make the floodwall came from cars submerged during Hurricane Katrina and later recycled. The floodwall will help ensure that during the next storm, things stay dry.

The project should be finished before the 2010 hurricane season. ▼

Miles and Miles of H-piles Support New Upgrades at Sammis Power Plant

Project Background

Brayman Construction Corporation, headquartered in Saxonburg, Pa., was one of six qualified and approved contractors invited to bid on the W.H. Sammis Power Plant project managed by Bechtel Power. Located in Stratton, Ohio, the Sammis Power Plant site includes 187 acres and sits along the Ohio River between Steubenville and East Liverpool. The Sammis Power Plant is FirstEnergy's largest coal-fired plant in Ohio and produces enough electricity to serve 1.3 million homes.

Project Overview

In the fall of 2006, the Foundation Division's Marine and Piling Group was awarded a $24.16 million piling contract from Bechtel Power to provide foundation support for the installation of new pollution controls. The project was undertaken to comply with the federally-mandated Clean Air Act (CAA) New Source Review Program (NSR), which was enacted to reduce emissions of sulfur dioxide and nitrogen oxide in coal-fired plants. The design of the upgrades had not been finalized during the bidding process thereby requiring the bid and terms of the contract as "Hard Bid/ Design-Build/Piling Project Contract." The project included foundations for various new structures in and around the existing operating facility including a new stack foundation. Ultimately, the project would require the installation of over 4,500 each, driven H-pile and over 250 each, micropiles.

Project Description

Due to the steady rise of steel prices and lack of readily-available material in quantities to meet the schedule, Brayman, Bechtel and FirstEnergy decided to purchase the majority of the H-pile material in 2006 to eliminate the potential cost increases from the surging price of steel. The pile lengths (75 to 85 feet) were determined from the preliminary pile designs and available soil borings and prior to performing any pre-production pile load test program. Brayman provided Bechtel design engineers with four separate H-pile design capacities for their use in devel-

oping the structural foundations for the project (see Pile Types listed below). The original project pile documents consisted of 5,172 piles with foundation support systems to be installed on seven major systems and structures of the plant facility at 36 locations. The plans included a 900-foot chimney, which alone required over 10 miles of driven H-pile, along with a Flue Gas Desulphurization (FGD) area, booster fan areas, a limestone delivery area, a duct area and other miscellaneous buildings locations.

The project team mobilized in October 2006 and began pre-production test pile operations with piles ranging in length from 75 feet to 85 feet. The first test piles, originally planned to be seated in the dense sand and gravel layer above the bedrock, drove deeper than originally planned, requiring additional pile lengths at many of the foundation locations. It was determined that in order to achieve the required design loads, the piles would have to extend to bedrock. Based upon strategically-placed pile load tests, it was also determined that the majority of the project would require approximately five to eight more feet of pile length to achieve the necessary loading. As a result, approximately 75 percent of the H-Piles required splicing. Fortunately, the overall number of piles was reduced from 5170 to just over 4500 and no additional material was required to facilitate the splicing operations.

The H-pile material was received via barge and stored at an off-site location approximately 20 miles from the facility and delivered daily to the site or the splicing yard. A large splice table was used to perform the standard butt weld with diamond plates. Very little in-place splicing was required on this project. After completion of the splicing operations, the H-pile material was delivered to each pile driving rig on a daily basis. Due to site logistics, splicing operations had to be completed in lay-down areas approximately one mile from the work site.

In December 2006, production driving commenced at the Chimney area utilizing two crews working five days per week. A standard D30 diesel hammer was used to drive the majority of the piles. At this specific location, the H-piles were approximately 85 feet long and Brayman installed most of the H-piles in the Chimney area without splicing. In other areas, Brayman drove test piles in advance to determine the pile lengths and to determine whether splicing would be necessary. A Pile Driving Analyzer (PDA) was used for all test piles and for the swapping out of hammers during the project. In all, there were 26 PDA's and six static pile load tests performed on the site.

By September 2007, at the request of the owner, the schedule for the overall project was accelerated and Brayman added a third and fourth pile driving crew to the project. The additional rigs consisted of two 150-ton cranes equipped with 120-feet of leads and another D30 and a D46 hammer. Multiple pile sizes were simultaneously spliced in order to supply the four piling rigs working at various areas of the site. Therefore, this required tight project controls pertaining to the logistics associated with the splicing and delivery of H-piles to the multiple work locations around the site.

Layout and survey for all H-piles and micropiles were Brayman's responsibility. With numerous pile locations spread across the site, a Global Positioning System (GPS) was used to locate each pile location, nearly eliminating the use of conventional survey techniques. The use of GPS proved beneficial in the development of the final as-built drawings. The use of GPS also eliminated the need for a rod man in the crew and the need for a second surveyor to support peak production work.

Pile Types

- HP 12 x 63 (75 to 80 feet long, 100 ton DL Compression, 30 ton DL Tension))
- HP 14 x 73 (75 to 85 feet long, 100 ton DL Compression, 75 ton DL Tension)
- HP 14 x 89 (80 to 90 feet long, 150 ton DL Compression, 50 ton DL Tension)
- HP 14 x 117 (95 feet long, 220 ton DL Compression)

Project Challenges

Throughout the H-pile operations the Sammis Power Plant facility remained fully operational, resulting in confined work areas with limited or restricted access throughout the entire site. The layout and overall congestion of the plant did not allow for any on-site storage for piling materials and equipment. Daily, at each area, pile driving crews received material deliveries to accomplish one to two days of pile driving operations. Constant schedule adjustments and sequencing of operations were necessary to coordinate the safe and effective installation of H-piling and the movement of equipment.

Safety Procedures

Safety is a vital component of every project undertaken by Brayman Construction. On this project, Brayman not only performed as a subcontractor to Bechtel Power, a large construction manager, but performed work in and around a fully operational power plant for FirstEnergy. The Brayman team adhered to the guidelines of the Brayman Corporate Safety Manual as well as to the rigid standards set forth by both Bechtel Power and FirstEnergy. A full-time site safety coordinator remained on-site for the duration of the project to assure compliance with all the necessary safety regulations.

Project Completion

After 16 months, the project was successfully completed in March 2008. Brayman consistently utilized two pile driving rigs over the course of the project and up to four piling rigs during peak production. Overall, the H-pile production work exceeded the anticipated production rates. As a result of the advanced H-pile material order, FirstEnergy saved over $3 million on the purchase of over 15,420 tons of steel H-pile. To put it in perspective, the overwhelming amount of steel H-piles incorporated into this project equates to approximately 75 miles, when placed end-to-end. ▼

POSEIDON
Barge Corp.

POSEIDON SECTIONAL BARGES for RENT or for PURCHASE!

- Stock locations in Indiana, Arkansas, California Florida, Massachusetts & Hawaii
- Dealer Location in Seattle WA
- Truckable for quick easy setup at your job site
- Pin together as many as you need!
- Use in water as shallow as three feet!
- Coated with two-part epoxy paint on the exterior and bio float rust inhibitor on the interior
- Zink anodes applied to reduce corrosion in salt

20,000 psf Point Load;
FOUR times our competition

STANDARD STOCK SIZES

40’ x 10’ x 5’ Sections	40’ X 10’ X 7’ Sections
20’ x 10’ x 5’ Sections	20’ x 10’ x 7’ Sections
10’ x 10’ x 5’ Rakes	10’ x 10’ x 7’ Rakes
10’ x 20’ x 5’ Ramps	Deck Cleats
40’, 30’ or 20’ Spuds	Winch Units
Spud Wells	Barge Pushers
	Wood Mats

info@poseidonbarge.com
PH: 260-422-8767 / 866-992-2743

POSEIDON
Barge Corp.

POSEIDON BARGE CORPORATION

3101 New Haven Ave, Fort Wayne, IN 46803
PH: 260-422-8767 or 866-992-2743
WEB: www.poseidonbarge.com
Floating Construction Equipment since 1995

Kremer carries "bulk" of work

Kremer and Son aren't afraid to tackle big marine projects in New Jersey. The family-owned and operated contractors recently took on a $1.2 million bulkhead replacement project that spanned 17 different locations.

By: Aileen Goos Bérard

You can learn a lot about the way a man runs a business by the way he hunts and fishes. Erich Kremer is no exception -- he has a competitive edge, but never lets his ego get in the way of getting the job done well. And contrary to how the tale usually ends, he rarely lets the fish -- or the contracts -- get away.

Whether he is reeling in marlins off the coast of his home state of New Jersey or landing deals, Kremer, field supervisor of R. Kremer and Son Marine Contractors LLC, applies that same competitive spirit to build the company's reputation that bears the family name.

"We'll tackle some of the bigger, harder jobs," he said, with an equal mix of modesty and confidence. "Compared to our competitors, I think we do better work, and heavier work."

He has landed a lot of "decently big" jobs in recent years, including some lucrative government bids like the bulkhead replacement project in Toms River, New Jersey.

"It's as exciting as pile driving can get,"
Erich Kremer, Kremer & Son Marine Contractors

They won the bid for Phase One of a three phase project that was funded with stimulus package money to help revitalize a sluggish American economy. It was valued at $1.2 million and involved 17 different locations. Although the company is one of the preferred bidders for townships in New Jersey, Kremer says it was a simple, cut-and-dry competitive bid that helped them land this assignment.

It was an important project that didn't pose any unique challenges -- just your everyday bulkhead replacement work, said Kremer. The project scope included bulkhead replacement tasks, like drainage, piping, asphalt, curb, guardrails, and all new bulk-heading. They used all Sure Guard products: vinyl bulkhead, lightweight 10 to 25-foot vinyl sheet pile.

"It was a nice job for us," said Kremer. "We made good money on it. We hope to be competitive enough to bid on the next two phases and work with the Toms River Engineering staff again."

When they're not helping jumps-start the nation's financial system working on stimulus projects, they do quite well accepting other jobs.

One of the more intense projects they have had a hand in is the Curtin Marina on the Delaware River. The Kremer and Son crew are about half done the project, which requires heavy excavating, dredging and digging into the side of the seawall. It also means ensuring there is piping in place to drain everything properly, as well as creating a new water filter system.

When all is said and done, they will have driven 250 piles using a D8 Delmag Diesel Hammer and MHC Model 23 Vibratory Hammer, and 35-foot fibre glass sheets.

"It's as exciting as pile driving can get," said Kremer, who has personally been on site every day to ensure that the project, which is estimated at $275,000, comes in on time and meets the client's needs.

But achieving those two project goals, at times, has been easier said than done. It has come with its own set of unique challenges, admits Kremer. Given the nature of their work, contractors are competing with nine or ten foot tides that change every week.

They have had to be strategic in their planning efforts to take advantage of low tide, which means the crew could spend one week working during the day and the next day working through the night.

R. Kremer and Son built by hand

With a load of government projects under their tool belt, they are responsible for 30 different locations in and around New Jersey, which Kremer estimates to be around 1,700 feet of new bulk heading.

That doesn't take into consideration the three different marinas they are contracted to build this year. "When it comes to marinas, we do everything," says Kremer who, along with his wide and brother-in-law, has turned a small pop-operation into one of the most competitive and reputable marina construction companies in New Jersey.

Operating solely in the Garden State has kept them consistently busy since Erich's father, Richard Kremer, started the company over 25 years ago. The senior Kremer

"It's interesting to see how far we've come. We have grown so much, we have invested millions of dollars in equipment,"

Erich Kremer, Kremer & Son Marine Contractors

built on the experience he cultivated working for a lot of bigger contractors, but soon got tired making money for other people and decided to take a shot at working for himself.

"He started doing seawalls and bulkheads by hand, literally," he said. "All he had was a pick-up truck, a hammer and a box of nails."

It didn't take long before son, Erich, was visiting his dad at job sites when he was about 10 or 11 years old, and carrying equipment and materials. "I thought it was really cool what he did. The first job site I went was a 50 foot seawall."

He found himself on the company pay roll officially by the time he was 16 or 17. While his fellow classmates were off for the summer driving along the coast, Kremer was driving piles and learning his way around a business he would one day come to lead.

It is a family-owned and operated business. Erich, his wife, Michele, and his brother-in-law, Shaun oversee daily operations, managing a crew of about 25 staff and four managers -- each of whom have a unique set of skills that leads to the team's collective success.

"It's interesting to see how far we've come. We have grown so much, we have invested millions of dollars in equipment," said Kremer who has a strong interest in keeping up with industry standards.

But for now, they'll focus on landing more "big ones" like the government gigs, the three pending marinas to be completed this year and more immediately the Curtin Marina, which will see Kremer travel the Jersey Turnpike every day to ensure its completion. "We don't let up until it's done right." ▼

Seeing the waters part Cunningham says "...a miracle performed for the building of MCE..."

Scope of the Marine Coastal Expressway

The dual five-lane, five km long Marina Coastal Expressway (MCE) will be the tenth expressway in Singapore, a key element of the strategic island-wide road network to support the long-term growth of Singapore. The underground east-west transport link runs between the Kallang-Paya Lebar Expressway (KPE), the East Coast Parkway (ECP) and the Ayer Rajah Expressway (AYE), with direct connections to the Marina South and Straits View areas.

With several upcoming developments such as the Marina Barrage, the Marina Bay Sands Integrated Resort, the Sail @ Marina Bay and the Marina Bay Financial Centre in the vicinity, the MCE will cater to the projected increase in traffic volume generated by the high-density developments in the Marina Bay area and serves as an essential transport link from the Marina Bay to the rest of the island.

Details of Project

The MCE's total route length includes a 3.6 km long road tunnel, two ventilation buildings and 13.1 hectares of land reclamation. It will run through segments of reclaimed land as well as a 420m section that runs below the seabed of Marina Bay. It also includes three interchanges with KPE/ECP, Marina Boulevard and Central Boulevard, and the AYE.

Land Reclamation

A total of 13.1 ha of land reclamation will be carried out at Marina East (4 ha) and at Marina Wharf (9.1 ha) to facilitate the building of the MCE. Parts of the MCE will run along reclaimed land.

Conversion of Part of the ECP to a Major Arterial Road

As part of the overall land use plan in the Marina Bay area, the MCE will replace part of the ECP at Marina Centre, Bayfront and Central subzones, and allow for this part of the ECP and its adjoining slip roads at Bayfront and Central sub-zones to be realigned, facilitating the seamless development of the Central Business District (CBD). The ECP at Marina South area will be realigned and converted to a major arterial road to serve the Marina Bay area.

Progress Update

In January 2009, LTA awarded the last of six major civil contracts for the construction of the MCE. In addition, LTA has also awarded four contracts for the provision of various Electrical & Mechanical (E&M) and Cladding systems required for the road tunnel.

With the award of the ten contracts, LTA has since awarded contracts with a total value of $4.1 billion for the construction of the MCE. Works for the MCE have commenced on 28 April 2009 following the ground breaking ceremony at Marina South.

Currently, contractors are mainly driving casings & sheet piles for the temporary retaining wall. Vibratory hammers, including the ICE® 110C, 44B, 1412, and 125C and the ICE® 16-ton Pilemer are the preferred on the job due to the soil conditions. Also, once the tunnel is completed, these temporary casings & sheet piles will be extracted using the ICE® vibratory hammers.

The contractors are currently driving:

- AZ-18-700 steel sheet pile in doubles
- 1.4m & 1.5m diameter caissons up to 60m long

They are driving a king pile wall design with caissons and double sheets. To increase production they are using a custom made ICE® clamp system that allows both sheets to be clamped & driven simultaneously between the two caissons.

Due to the engineering specifications of the development team and heavy compacted clay on this site, the preferred hammers and majority of hammers working on site belong to ICE®, who has supplied 18 vibratory driver/extractors for this project with specialized clamping solutions. In addition, based on the ICE® vibratory driver/extractor performance, there are five Singapore made versions of the ICE® 44B vibratory hammer working on this job as well.

Completion Date

The MCE is expected to be completed by the end 2013. The construction of the MCE is part of the government's commitment to improve the Singapore's land transportation network over the next 10 to 15 years.

For more details on this job, please contact International Construction Equipment @ 888-ICE-USA1 or visit our website at www.iceusa.com. ▼

Safety: The Universal Language? Literacy and Language Challenges in the Workplace

By Mark A. Lies II and Elizabeth Leifel Ash

As the American "melting pot" becomes increasingly diversified, employers face inevitable issues related to language in the workplace. Employers can no longer assume that qualified workers speak or write English. Employers who hire workers that do not speak English are obligated to ensure that all employees, regardless of their linguistic background, receive and comprehend safety-related training. For employers whose supervisors only speak English, the requirements set by the Occupational Safety and Health Administration (OSHA) can present unique challenges. This article outlines OSHA's policies with respect to training non-English-speaking employees, and offers recommendations for employers in assuring that all employees are adequately trained to work safely.

OSHA'S TRAINING REQUIREMENTS

Numerous OSHA standards, from lockout/tagout to forklift operation and bloodborne pathogens to hazard communication, require employers to train or instruct employees in some way. OSHA generally treats its training requirements as performance-based, meaning that OSHA defers to each individual employer to fashion the most effective manner to accomplish the goal of the standard. For that reason, none of OSHA's training standards require employers to use particular documents, teaching methods or language to train employees. Instead, OSHA requires employers to present information in a manner that employees are capable of understanding. For example, if an employee is not literate, the employer does not satisfy OSHA training requirements merely by telling the employee to read training materials or review safety programs. Likewise, if an employee does not speak, read or understand English, training must be provided in a language the employee understands.

OSHA has tasked each of its inspectors with the duty to determine whether the training provided by an employer satisfies the intent of the Standard—whether employees receiving the training have actually understood the content. Obviously, this is a highly subjective exercise. One way that an OSHA inspector will make this evaluation is to interview employees. These interviews may or may not take place in the presence of a management representative. Many OSHA inspectors are bilingual, speaking both in English and Spanish, and those who are not may request another employee to act as an interpreter to translate during an employee interview. Translation issues can present potential bias problems during employee interviews, whether the interpreter is another employee, a management representative or an OSHA official. For this reason, employers must ensure that employees understand their right to have a management representative present during the interview. Employers may also consider requesting that a neutral third-party act as interpreter during the employee interview, particularly if the interview is critical and accuracy is an important consideration.

Another way OSHA inspectors will evaluate the employer's compliance with safety training standards is by determining how the employer communicates other workplace rules and policies to employees, particularly job instructions and other non-safety policies or procedures. If these other job instructions are given in Spanish, for example, OSHA will likely view English-only safety training as insufficient. Ultimately the OSHA inspector will determine, based on a review of all of the gathered facts, whether a reasonable person would conclude that the employer has not conveyed training to employees in a manner they are capable of understanding. In one case involving deficient safety training, a supervisor described the company's training program as follows: "Basically, in the yard with the men making sure they got their vests, their shoring, their boards before they leave for the job. They are directed to not get in holes over four feet deep, when it's unsafe to use the proper shoring." Sec. of Labor v. J. Mess Plumbing Co., Inc., 21 O.S.H. Cas. (BNA) 1100 (A.L.J. Oct. 18, 2004). In this case, most of the company's employees had immigrated from Bosnia and Albania and could not speak English. Where an employee could not speak English, another co-worker would translate the materials for him. In addition, the employer did not maintain any documentary evidence of a training program. An administrative law judge upheld OSHA's citation under a construction industry training standard, finding that the employer hired workers that were not fluent in English, and then failed to ensure that they understood the minimal training they received.

Recent case law precedent from the Occupational Safety and Health Review Commission validated OSHA's ability to issue citations under its training standards on a per-employee basis. This means that OSHA can issue a separate citation and penalty for each and every employee who did not understand his or her required safety training. In Sec. of Labor v. E. Smalis Painting Co., slip op., O.S.H.R.C. Docket No. 94-1979 (Apr. 10, 2009), OSHA issued a total of 71 willful citations to Smalis for failure to train 71 employees as required in OSHA's "Lead in Construction" Standard, 29 C.F.R. § 1926.62(l)(1)(ii). The review commission upheld 27 of those willful citations, one for each of the 27 employees who had been exposed to lead at or above the action level and who had not received the training, and imposed a penalty of over $1,000,000 in total.

The review commission's decision was based on its finding that training requirements under OSHA's asbestos standard impose a duty that runs to each employee. While the Smalis decision is based on the employer's failure to train altogether, the review commission's reasoning may well be applied to situations involving the adequacy of an employer's training program as it relates to non-English-speaking employees.

ENGLISH-ONLY EMPLOYMENT POLICIES FOR SAFETY-SENSITIVE AREAS

Employers may be tempted to avoid OSHA's onerous and subjective training policies by employing only English-speaking workers. Employers must proceed with extreme caution in fashioning these types of policies so as not to run afoul of federal and state anti-discrimination laws. Employers who fashion English-only policies, prohibiting employees from speaking languages other than English at all times in the workplace, are presumed to be discriminating on the basis of an employee's national origin. The federal regulations implementing Title VII of the Civil Rights Act call such policies "a burdensome term and condition of an employment," and provide that prohibiting non-English languages in the workplace at all times "disadvantages an individual's employment opportunities on the basis of national origin" and creates "an atmosphere of inferiority, isolation and intimidation based on national origin." 29 C.F.R. § 1606.7(a).

These same regulations do recognize, however, that when applied only at certain times an English-only policy in the workplace may be appropriate and non-discriminatory. To avoid liability for discrimination, the employer must establish that the rule is justified by a "business necessity." 29 C.F.R. § 1606.7(b). In its compliance manual, the Equal Employment Opportunity Commission (EEOC) has recognized that the need for the safe operation of an employer's business is considered a business necessity, that can justify an English-only rule that is tailored to specific circumstances. The EEOC also recognizes that the need for supervisors who only speak English to communicate with employees is also a business necessity, that can justify an appropriately narrow English-only policy.

The EEOC cites the following scenario as an appropriate use of an English-only rule to address safety concerns:

XYZ Petroleum Corp. operates an oil refinery and has a rule requiring all employees to speak only English during an emergency. The rule also requires that employees speak in English while performing job duties in laboratories and processing areas where there is the danger of fire or explosion. The rule does not apply to casual conversations between employees in the laboratory or processing areas when they are not performing a job duty. The English-only rule does not violate Title VII because it is narrowly tailored to safety requirements. EEOC Compliance Manual, Section 13: National Origin Discrimination (Dec. 2, 2002).

According to this example, an employer would not run afoul of federal non-discrimination laws by requiring employees to speak only

in English while performing specific job functions, during emergency situations, or while working in particular areas of a facility that implicate workplace safety issues.

Employers must also take care in making hiring decisions based on a candidate's ability to speak English. A narrowly-tailored and appropriately used English-only policy is relevant to hiring decisions. If, for example, an employer has an English-only policy like the one used in the above example, it would need to consider that policy in hiring employees to work in the laboratories and processing areas. Candidates who do not speak English would not be able to adhere to the policy and would therefore not be qualified for hire into a position that includes work in those areas. Similarly, even in the absence of an English-only policy, an employer does not violate federal anti-discrimination laws by rejecting a non-English-speaking candidate whose inability to speak or understand English would materially affect his or her ability to perform job duties. If, for example, a candidate's job duties would require forklift operation, and the candidate could not read or understand warning signs, operating manuals, or safety placards required for the safe operation of a forklift, then the employer would have a good faith, non-discriminatory reason for rejecting that candidate.

CONCLUSION AND RECOMMENDATIONS

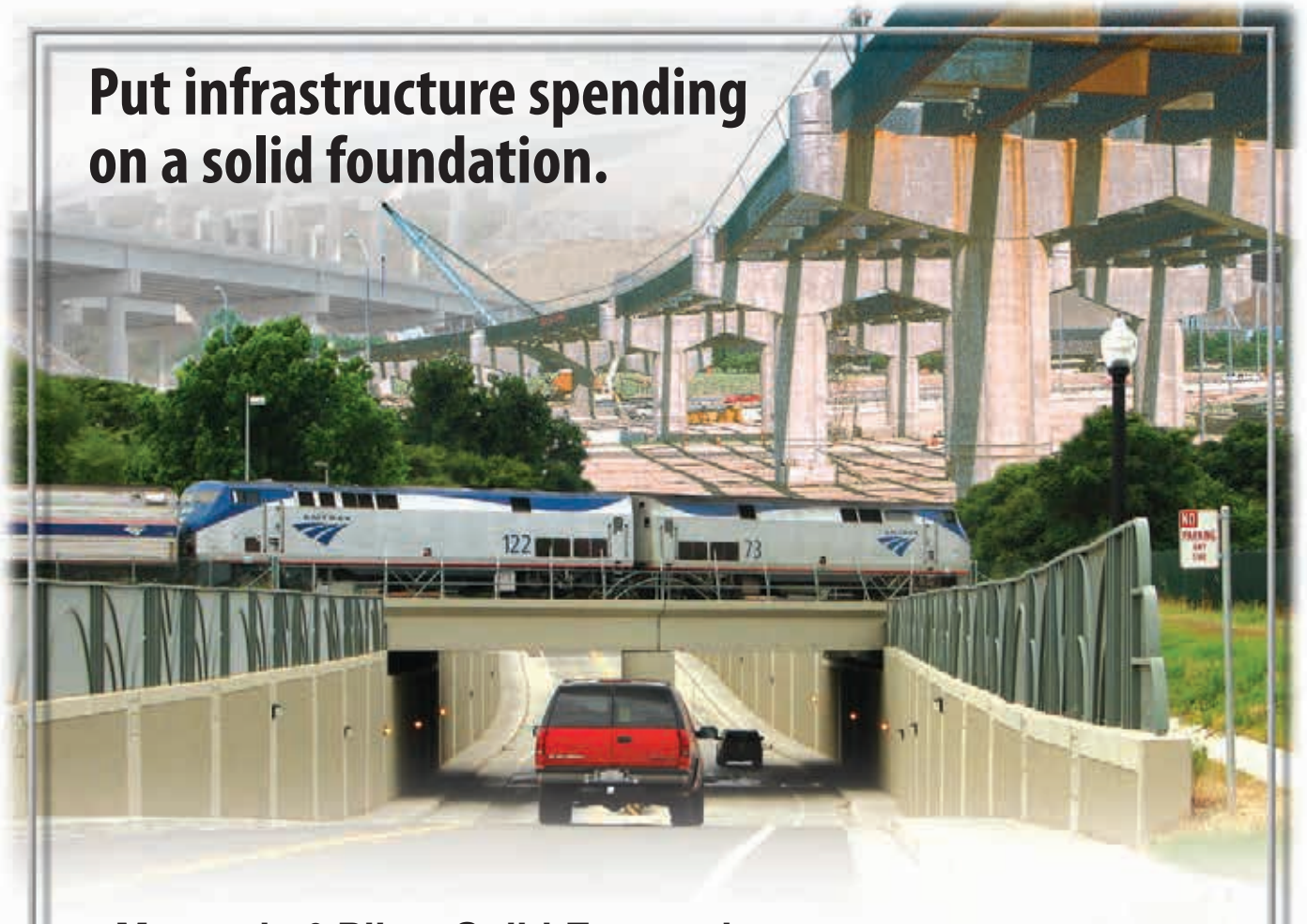
It is recommended that all employers who employ workers with limited or no ability to speak or understand English, carefully evaluate their safety training programs to ensure those employees have received and understood required safety training, including the following:

- Review the means by which work instructions are communicated to employees. If work instructions are communicated in languages other than English, consider providing safety training in those languages as well.
- Incorporate practical tests into required safety training, allowing employees to demonstrate their understanding (or lack thereof) of core concepts.
- Maintain meticulous documentation of employee training, including any practical tests included in training. Include a signed statement from each employee that he/she has received and understood specific safety training provided.
- In the event of an OSHA inspection, advise all employees of their right to have a management representative present during any interviews. Designate a qualified and reliable person (whether management or non-management) to act as the "go to" interpreter to facilitate interviews with non-English-speaking employees.
- Evaluate employee duties on a job-by-job basis to determine whether critical job- or safety-related functions require fluency in English.

Mark A. Lies, II is a labor and employment law attorney and partner with Seyfarth Shaw LLP in Chicago, Illinois. He specializes in occupational safety and health law and related employment law and personal injury litigation. Lies has worked with CSDA members in their businesses. He can be reached at 312-460-5877 or at mlies@seyfarth.com.

Elizabeth Leifel Ash is an associate with Seyfarth Shaw, whose practice focuses on regulatory compliance and litigation, including occupational safety and health and environmental matters.

Put infrastructure spending on a solid foundation.



Monotube® Piles. Solid Economics

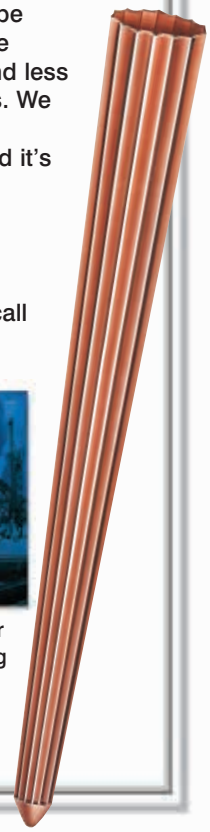
In the infrastructure space across America, it's estimated that more than 8,600 projects are shovel-ready and simply awaiting funding to get underway. Coincidentally, polls show we Americans are strongly in favor of major investment in our aging infrastructure. However, concurrent with this favorable opinion is a strong demand for accountability and measurable efficiencies in how our tax dollars are going to be spent. We as corporate citizens, whether manufacturer, designer, engineer or contractor, have a serious interest in this.

Monotube tapered steel foundation piles have consistently delivered capital-saving measurability for more than 80 years.

Using conventional equipment, a Monotube requires a shorter driven length to achieve design load capacity, fewer man-hours and less energy to install than competing products. We have numerable test site data proving Monotube pile's superior performance and it's yours free for the asking.

America is about to embark on a historic expenditure of taxpayer dollars. We at Monotube Pile Corporation know we can help you keep costs in check. Give us a call today because, as always, we're ready to deliver solid economics.

Request our Free Catalog



MONOTUBE PILE CORPORATION

P.O. Box 7339 • Canton, OH 44705-0339 / Ph. 330.454.6111 • Fax 330.454.1572
Executive Office: 5002 Second Avenue • Brooklyn, NY 11232
Email: monotube@neo.rr.com / www.monotube.com.

PDCA 14th Annual Conference and Expo 2010

Coeur d'Alene Golf and Spa Resort

Coeur d'Alene, Idaho

www.cdaresort.com

The Pile Driving Contractors Association has selected the Coeur d'Alene Golf and Spa Resort –Playground of the Northwest – as the site for the 14th Annual Conference and Expo 2010. Coeur d'Alene Golf and Spa Resort, with its idyllic landscape, year-round activities, and spectacular setting at the shore of one of America's most beautiful lakes, will provide a unique setting for a conference event you will NOT want to miss.

Coeur d'Alene Resort has mastered the art of relaxation, with luxurious accommodations, rejuvenating spa treatments, and sumptuous cuisine, this four-star resort continues to be the destination of choice for discerning travelers worldwide and from May 6-8, 2010, it will be the destination of choice for all PDCA members.

WHAT TO EXPECT – A PROGRAM OVERVIEW

Educational Programs: The PDCA Education Committee is working to complete the list of distinguished presenters, who will provide information on construction case histories, new technologies, business-related presentations, and a panel discussion. Each presentation is relevant and topical to today's driven pile industry.

All PDCA Committees will hold meetings to establish their 2010-2011 agendas. All PDCA members and guests are welcome to attend these meetings.

PDCA Awards Program: The PDCA Awards Luncheon will feature presentations to members for the Project of the Year, Committee Chair of the Year, Presidential Award for Distinguished Service, golf tournament winners, and an introduction of the 2010-2011 Board of Directors.

Exhibitor Showroom: The PDCA will host an exhibitor's showroom with over 50 industry exhibitors in 8'x10' pipe and draped booths - visit with industry leaders to see what's new, innovative and just down right cool!

Social Functions and Networking: Join us for the 3rd Annual PDCA Golf Tournament at the 2009 Readers' Choice GolfWorld magazine's 7th ranked resort golf course in America (#1 course condition; #3 Service) – the Coeur d'Alene Golf Course. This is a spectacular course that you will want to play again and again.

Take the two-hour Lake Coeur d'Alene Cruise for an evening buffet dinner and open bar reception – an evening to remember. Attend the opening reception in the exhibit hall with heavy hors d'oeuvres, open bar and featuring Robert Vaughn, jazz guitarist, providing the evening's music.

The Annual Dinner will be fantastic – on the beach, with bonfires, featuring a full three-entrée buffet, open bar, music and dancing. This year's Annual Dinner Dress Theme is "Early Frontier" – trapper, explorer, trader, wagon master – you are only limited by your own imagination – dress up for prizes.

Companion's Program: PDCA has arranged another great program for companions. This conference's program will feature an open day to shop and visit the town of Coeur d'Alene with art, antiques, culture and a planned meet and greet luncheon.

Cooking with the Chef's – Plan, prepare, cook and eat four course meal at Beverly's – a signature five-star restaurant at the resort. You will be working with the Chef's of Beverly's, who will help you from beginning to eating.

What would a PDCA Companion's Program be without spa treatments the day of the Annual Dinner? Yes, the PDCA has arranged to have all our Companions pampered once again with manicures pedicures and gift baskets.

Sponsors: PDCA will be offering a variety of sponsorships for the conference. This year, the Market Development Committee has come up with some interesting twists designed to maximize your company's exposure throughout the conference. More information on sponsorships will be made available early in 2010. ▼




PDCA ANNOUNCES 2010 "PROJECT OF THE YEAR" AWARD

The PDCA is proud to announce the 2010 "Project of the Year" award competition.

The PDCA is dedicated to acknowledging the hard work, ingenuity and commitment that goes into each project where driven piles are used in a deep foundation or earth retention system or utilized to solve foundation problems. This esteemed PDCA tradition recognizes excellence in driven pile projects completed by PDCA members in good standing.

Through the "Project of the Year" award, the PDCA has the distinguished honor of continuing this long-standing and consistent commitment to recognize those PDCA members who demonstrate excellence in the process of providing solutions, services and products to the needs of the deep foundation and earth retention environment.

Project entries must feature projects completed in 2009. Project entries will be awarded in two entry categories and three dollar volume categories. The two entry categories are distinguished by either land-based or marine-based projects. The dollar volume categories: less than $500,000.00, $500,000.00 - $2 million, and greater than $2 million. Price ranges are based solely on the dollar volume of the piling contract associated with the project.

In 2010, the Project of the Year award's committee revised the criteria for submittals, making it easier to submit your project and with less paper work. Submittals for the 2010 Project of the Year Award will be asked to simply write a narrative of the project with an emphasis on technical difficulty and risk; and how other aspects of the job were identified, managed and concluded to the benefit of the job, owner, contractor, or supplier.

The PDCA is asking each of its members to consider submitting a project worthy of this prestigious PDCA award. Entry Forms can be found on the PDCA website, www.piledrivers.org. The 2010 Project of the Year Award entry deadline is:

Friday, February 26 , 2010

Winning entries will be announced during the 2010 PDCA 14th Annual Conference and Expo, Coeur d'Alene Golf and Spa Resort, Coeur d'Alene, Idaho, during the PDCA Business Luncheon on Saturday, May 8, 2010. PDCA will NOT reveal the winning entries prior to the luncheon.

PDCA
PILE DRIVING CONTRACTORS ASSOCIATION

PDCA
PILE DRIVING CONTRACTORS ASSOCIATION

2010 PROJECT OF THE YEAR Awards

Putting Excellence to the Test!

Send your entry to the PDCA in time to be received by **February 26, 2010**. No extensions will be granted. Winning entries will be announced at the PDCA 2010 Annual Conference and Expo Awards Luncheon, Coeur d'Alene, Idaho on May 8, 2010. PDCA will **NOT** reveal the winning entries prior to the luncheon!

Sophistication of the presentation is not part of the judging, but completeness in addressing each of the criteria outlined in this form will strengthen your chances.

General Requirements

The competition is open to all PDCA member projects completed from January 2009 through December 2009. Entries must be submitted by or with the permission of the principals or officers of the firm.

Awards will be presented to projects based solely on the **dollar volume of the piling** contract associated with the project. Entry categories include **Land-Based** and **Marine-Based** projects. Each category is divided into the following contract dollar volumes: Less than $500,000, $500,000 - $2 million, and greater than $2 million.

Every Entry Must Include

1. Completed Entry Form. Please use original form or download and print one from the PDCA web site, www.piledrivers.org.
2. Fee of $50.00 per entry must accompany entry form.
3. A Project Narrative with an **emphasis** on **technical difficulty and risk** describing the project and WHY the project should receive a Project of the Year award. The Project Narrative should also include HOW the entry meets each of the following criteria:

- Meeting the challenge of a difficult job
- Innovation in construction techniques, equipment and/or materials
- Unique application of piles or design considerations
- Construction problems and solutions
- Cost saving measures such as value engineering, innovative project management or design changes from other deep foundation or earth retention systems to driven piles
- Management or mitigation of environmental considerations

4. All entry submittals must be neatly organized. Consider submitting in a three-ring binder, but this is not a requirement.
5. Submittals should also include an electronic copy of your full entry on a CD and submitted with your project entry form.
6. Entries can include color photos. Photos should highlight the construction process and finished product, including special techniques and/or unique conditions.
7. Entries may also include letters of recommendation or accommodation, media coverage, or other supplemental material.

PROJECT OF THE YEAR Awards
ENTRY FORM

Project Submitted: ❑ Land ❑ Marine

Project Value: ❑ Less than $500,000 ❑ $500,000 - $2 Million ❑ Greater than $2,000,000

Company Name: _____

PDCA Chapter Member: ❑ S.C. ❑ Mid-Atlantic ❑ Gulf Coast ❑ CA. ❑ FL. ❑ Northeast

Chief Executive Officer: _____

Entry Submitted by: _____

Company Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____ Fax: _____

Email: _____

Project Title: _____

Project Owner: _____

Contract Amount (Pile Driving Contract Only): $_____

Project Start Date: _____ Completion Date: _____

Payment Information: ❑ Check (Enclosed) ❑ Visa ❑ MC ❑ AMEX

Card Number: _____ Exp. Date: _____ CVV: _____

Billing Statement Address: _____

City: _____ State: _____ Zip: _____

Cardholder's Name: _____

Signature: _____

Submit this form, narrative and payment information to:
PDCA, Project of the Year Award, PO Box 66208, Orange Park, FL 32065.
Entries must reach the PDCA no later than *February 26, 2010.*

A DRIVEN PILE . . . IS A TESTED PILE!

Monitoring Pile Driving Vibrations – Problem Avoidance

By David Harrison

In today's legal environment, protecting pile driving projects from fraudulent or errant claims resulting from vibrations produced from pile driving construction activities is important. This can be achieved with good science and data collection prior to and during pile driving activities.

Ground vibration is essentially wasted energy - not all of the energy from the pile driving hammer goes into driving the pile in the ground. Some wasted energy is released as ground vibrations, air concussion and noise. The primary concern with ground vibration is its potential to damage surrounding properties. It is important to distinguish between structural damage and damage that is of a cosmetic nature.

Seismographs should be used to monitor ground vibrations and impulse noise levels. These instruments continuously monitor the two horizontal and one vertical component of motion and record the maximum. The maximum resultant vector of velocity in these three directions is called the Peak Particle Velocity (PPV) and is the main output parameter reported by the seismograph. PPV is typically measured in inches per second.

Overpressure is the acoustic parameter measured by the seismograph and is measured in decibels indicated by the symbol dB(L).

Another measurement tool is human perception People can feel vibrations well below those levels necessary to cause damage, and as such, human perception should not be used as an indicator of the damage potential of vibrations.

AREAS OF CONCERN

Areas of concern for vibrations from pile driving operations include building damage, soil settlement, buried utilities, human perception, toppling of loose objects and sensitive equipment and computers.

Damage Potential to Buildings

Vibration standards are in units of particle velocity with frequency dependency. These standards are designed to protect drywall and plaster from cosmetic cracking; structural damage would require two to five times higher vibrations than the generally applied standards.

Vibration Standards-Transient (Impact Hammer)

Below is a list of acceptable vibration limits for transient vibration levels for pile driving and other construction activities developed by the US Bureau of Mines (RI 8507):

- Limits PPV to 19.05 mm/sec (0.75 in/sec) for low frequency vibrations (<12 Hertz)
- PPV of 25.5 mm/sec (1.0 in/sec) for frequencies of 20 Hz & PPV of 50.8 mm/sec (2.0 in/sec) for higher frequency vibrations.

Vibration Standards-Steady State (Vibratory Hammer)

Below is a summary of information on vibration limits for steady state vibration levels for pile driving and other construction activities (Dowding, C.H., 1996):

- Vibrations from steady state sources are typically limited to a PPV of 12.7 mm/sec (0.5 in/sec) or less.
- Greater potential for resonance due to number of cycles/duration
- Fatigue cracking a concern due to the number of cycles
- Low frequency vibrations typically occur during ramping up and down at start up and stop (vibratory hammer)
- Objects "walking" across shelves are more of a concern with steady state vibrations, even well below safe structure standards

Soil Settlement

There are two possible foundation related effects from vibrations; direct vibration effects on a house and effects on the foundation soils, which can then affect the house (Siskind, 2000).

Saturated cohesionless soils, like poorly graded beach sand, are known to be susceptible to a vibration effect called liquefaction (beach sand is the best known example of this). Required are susceptible soils (saturated and cohesionless), long duration vibration (tens to hundreds of cycles), and high vibration amplitudes (Siskind, 2000). The concern is not vibration velocity, but acceleration and the conditions that sometimes occur in earthquakes, yet seldom in blasting or dynamic compaction.

The lowest known examples of vibration induced liquefaction were 80 cycles of vibration at 0.165 g (equivalent to 63.5 mm/sec (2.5 ips) at 4 Hz) and observed liquefaction at a PPV of 50.8 mm/sec (2.0 ips) (Siskind, 2000). Because liquefaction concerns are earthquake driven, frequencies required to induce liquefaction are very low and therefore strain levels are very high (displacements and strains are inversely proportional to frequency). Therefore, it is reasonable to assume that the accelerations associated with the observed liquefaction examples apply only to low frequencies, likely below 4 Hz (Siskind, 2000).

Dowding (1985) describes the blast densification of loose sand. He reiterates that very high velocities are required to induce liquefaction or settlement. He presents an example where a five-kg bundle of high explosives was detonated in loose to medium-dense sands and measurable settlement occurred out to a distance of 17.98 meter. The estimated PPV at 17.98 meter from the blast was between 25.4 and 76.2 meter per second (mm/sec). These sands were extremely loose and had standard penetration resistance below count numbers (N) of less than 10.

Oriard (2002) reports that the minimum threshold for ground shear strain to induce liquefaction is about 0.02 percent for a very wide variety of soil conditions independent of the duration of the shaking. In the case of construction activity, this would mean that the dynamic compaction source would have to be located in the immediate area, within the

deposit itself. Strain is equal to particle velocity divided by shear wave velocity.

Buried Utilities

- Restrained in-ground resonance unlikely
- Less susceptible to vibration effects than above ground structures
- PPV limits published for pressurized gas transmission pipelines and for fiber optics-101.6 to 127 mm/sec.

Engineered Commercial Structures

- PPV standards two or three times safe levels for residences
- Can be up to 76.2 to 127 mm/sec.
- Displacement of 0.020 mm can be applied

Toppling of Loose Objects

Movement of pictures, items on shelves, dishes rattling, and toppling of tall knick-knacks occurs at PPV levels below cracking thresholds. Oriard (1999) indicates that based on

Table 1 – Vibration Effects on Loose Objects (Oriard, 1999)

Vibration Effects on Loose Objects	
TOPPLING OBJECTS	PARTICLE VELOCITY (IPS)
Rare	Under 0.1
Occasional	0.1 to 1
Common	1 to 4
Extensive	Above 4
Note: Sensitivity depends on the mass and shape of the object. In general, objects will topple more readily at lower frequencies and longer durations.	

personal experience, for lower frequencies and greater durations, many objects are more responsive and for higher frequencies and short durations, many objects are less responsive. Table 1 illustrates a generalized sensitivity range, where 0.1 ips is 2.54 mm/sec, 1 ips is 25.4 mm/sec and 4 ips is 101.6 mm/sec.

Sensitive Equipment and Computers

- Standards are typically in accelerations expressed in (g)
- Common acceleration standard is 0.25 g. At a frequency of 20 Hz, the equivalent PPV is about 19.04 mm/sec (0.75 in/sec).
- These standards are typically designed for earthquake standards or steady state vibrations during operation
- Equipment and computers are far less susceptible to short term transient vibration effects from construction than from the steady state operating standards usually published

MINIMIZING LIABILITY

Monitoring

There are various types of instruments or seismographs available to measure ground vibrations and impact noise levels. To obtain reliable vibration measurements, the seismograph's geophone must be well connected to the ground or the recording location – this is called coupling. For earth locations, the geophone should be buried at least 152 mm, spiked and covered with a sandbag. In an urban environment, the geophones should be bolted or otherwise adhered to the ground. Areas to avoid include unstable ground or hollow areas. With advances in technology, remote monitoring stations can be set up that allow real time posting of vibration data to a secure website that can be accessible by the contractor and state regulatory authority as needed. Action vibration levels can be set on the equipment to transmit data over a pre-determined level and text message and emails can be sent when those levels were recorded.

Pre-Piling Surveys:

Pre-piling building condition surveys provide a baseline of the property's appearance prior to the start of piling. The surveys should be conducted by competent and experienced individuals and companies.

The survey perimeters vary. Usually a range of 30.48 to 182.9 meter from the piling is standard.

Typical survey formats consist of diagram sheets, color photos and supplemental videos of existing conditions. The use of high quality digital photographs and scanned (pdf) files incorporated into electronic copies of the surveys puts the data into a usable format for today's construction project software.

Education of Public and Communications

A great deal of prospective problems, complaints and claims of damage from pile driving vibrations can be reduced with good communication at the onset of the project. Simply explaining to the surrounding property owners what they may expect to feel from pile driving activities can go a long way in the overall reduction in complaints. .

Recordkeeping

Good record keeping is essential for liability protection. The following information has to be documented at a minimum: what piles (type and length) are driven, when and where, seismograph serial number and location, distance and direction from seismograph to each pile, and make, model and energy of the hammer.

CONCLUSION

There is no perfect solution for dealing with the problems of pile driving near properties. However, there are some things that can be done to reduce the problems, such as:

- Maintenance of good public and community relations
- Performance of appropriate and detailed pre-construction surveys – establish base line condition of neighboring properties
- Undertaking of seismic monitoring, including the use of remote web based systems

Following the above recommendations and having a good understanding of vibrations and techniques for measuring them are necessary to mitigating problems related to pile driving vibrations.

Submitted by: David Harrison, Vice President and Principal, Seismic Surveys, Inc, 4375 Gibsonia Road, Suite 4, Gibsonia, Pennsylvania; dharrison@seismicsurveys.net
Article summarized from 'Contemporary Topics in Deep Foundations', 2009 International Foundation Congress and Equipment Expo, Edited by Magued Iskander, Ph.D., P.E., Debra F. Laefer, Ph.D., Mohamad H. Hussein, P.E. ▼

With advances in technology, remote monitoring stations can be set up that allow real time posting of vibration data to a secure website that can be accessible by the contractor and state regulatory authority as needed.

2009 New PDCA Members

The following is a list of all members who have joined the PDCA in 2009. The association would like to welcome everyone on the list!

Associate Members

Alpha Pipe Co.
Jim Roeder
Tel: 800-860-0599
Fax: 636-861-2442
2111 Bentley Plaza # 201
St. Louis, MO 63026
USA
www.alphapipeco.com
sales@alphapipeco.com

Atlas Tube Inc.
Chris Ragan
Tel: 800-733-5683
Fax: 773-646-6128
1855 East 122nd Street
Chicago, IL 60633
USA
www.atlastube.com
cragan@atlastube.com

BTC Transport Systems, Inc.
William Kirchgessner
Tel: 201-786-3354
Fax: 201-447-0658
27 Joshua Drive
Ramsey, NJ 07446
USA
www.btctrans.com
wkirch@optonline.net

Christianson Pipe Inc.
Dale Dye
Tel: 403-652-4336
Fax: 403-652-4913
Box 5451
High River, AB T1V 1M6
Canada
www.christiansonpipe.com
dale_dye@christiansonpipe.com

CMI Sheet Piling
Carlos Calderon
Tel: 770-933-8166
Fax: 770-933-8363
4501 Circle 75 Parkway,
Suite E-5370
Atlanta, GA 30339
USA
www.cmisheetpiling.com
ccalderon@cmilc.com

Colfax Treating Company, LLC
Hollis Ervin
Tel: 318-561-6012
Fax: 318-445-9144
PO Box 1110
Alexandria, LA 71309
USA
www.royomartin.com
hollis.ervin@royomartin.com

CONTECH Construction Products, Inc.
Bill Conklin
Tel: 513-645-7310
Fax: 513-645-7993
9025 Centre Point Drive,
Suite 400
West Chester, OH 45069
USA
www.contech-cpi.com
conklinb@contech-cpi.com

Edgen Murray Corporation
Jeff Bikshorn
Tel: 800-325-7909
Fax: 314-524-3110
488 Paul Avenue
St. Louis, MO
63135 USA
www.edgenmurray.com
jeff.bikshorn@edgenmurray.com

Favor Steel and Fabricating, Inc.
Andy Berryhill
Tel: 205-426-3288
Fax: 205-426-3278
1110 Industrial Blvd.
Bessemer, AL 35022
USA
www.favorsteel.com
andy@favorsteel.com

Foundation Testing and Consulting, LLC
Casey Jones, P.E.
Tel: 913-626-8499
Fax: 913-439-1703
9100 Larsen Drive
Overland Park, KS 66214
USA
www.ftandc.com
cj@ftandc.com

Heldenfels Enterprises, Inc.
Gil Heldenfels
Tel: 512-396-2376
Fax: 512-353-3770
5700 IH 35 South
San Marcos, TX 78666
USA
www.heldenfels.com
gil.heldenfels@heldenfels.com

Hennessy International, Inc.
Linda Castillo
Tel: 805-693-8880
Fax: 805-693-8870
PO Box 1983
Buellton, CA 93427
USA
info@hennessyinternational.com

Independent Pipe & Steel Inc.
Bruce Haupt
Tel: 661-325-0398
Fax: 661-325-0269
5303 Rosedale Hwy
Bakersfield, CA 93308
USA
www.indps.com
bhaupt@indps.com

PACO Ventures, LLC.
Jeremy Johnson
Tel: 206-762-3550
7400 2nd. Ave. S
Seattle, WA 98124
USA
jjohnson@pacoequip.com

Pile Splices, Inc.
Glenn Lockie
Tel: 415-331-7260
Fax: 415-331-7261
264 Cazneau Avenue
Sausalito, CA 94965
USA
www.pilesplices.com
lockie@pilesplices.com

Pittsburgh Pipe
Don Carosello
Tel: 800-325-2653
Fax: 314-383-2322
170 Humboldt Avenue
St. Louis, MO 63147
USA
www.pittsburghpipe.com
sales@pittsburghpipe.com

Platinum Grover Int. Inc.
Ben Docktor
Fax: 403-237-8271
#750, 333 11th Avenue S.W.
Calgary, AB T2R 1L9
Canada
www.platinumgrover.com
benb.docktor@platinumgrover.com

Resonance Technology International, Inc.
Matthew Janes
Tel: 604-395-6845
Fax: 604-395-6846
51 Leeder Avenue
Coquitlam, BC V3K 3V5
Canada
www.resonancetechnology.ca
mjanes@resonancetechnology.ca

Thomasson Company
Brent Gray
Tel: 601-656-6000
Fax: 601-656-6317
PO Box 490
Philadelphia, MS 39350
USA
www.thomassoncompany.com
rox@thomassoncompany.com

Tolunay-Wong Engineers Inc.
Phillips Grice
Tel: 409-840-4214
Fax: 409-840-4259
2455 W. Cardinal Drive, Suite A
Beaumont, TX 77705
USA
www.tweinc.com
pgrice@tweinc.com

Contractor Members

ASAP Installations
Simon den Tuiuder
Tel: 813-385-7257
Fax: 813-948-8934
4304 Waterford Landing Drive
Lutz, FL 33558
sdentuiuder@tampabay.rr.com

Bauer Foundation Corp.
Al Neumann
Tel: 727-531-2577
Fax: 727-530-1571
13203 Byrd Legg Drive
Odessa, FL 33556
USA
www.bauerfoundations.com
aneumann@bauerfoundations.com

BK Marine Construction, Inc.
Chris Bryant
Tel: 800-932-0122
Fax: 954-427-5168
3500 SW 14th Street
Deerfield Beach, FL 33442
USA
www.bkmarineconstruction.com
cbryant@bkmarinefl.com

Copp's Pile Driving
Dean Hall
Tel: 403-347-6222
Fax: 403-347-6401
231, 28042 Hwy # 11
(Burnt Lake Business Park)
Reddeer, Alberta
www.bigeagleservices.com
dhall@bigeagle.ca

George Harms Construction Co.
Tom Hardell
Tel: 908-618-6305
Fax: 732-938-2782
PO Box 817
Farmingdale, NJ 07727
USA
www.ghcci.com
thardell@ ghcci.com

Halverson Construction Co., Inc.
Vern Halverson
Tel: 217-753-0027
Fax: 217-753-1904
620 N. 19th Street
Springfield, IL 62702
USA
www.halversonconstruction.com
vhalver@aol.com

Herlihy Midcontinent Company
Art Haggerty
Tel: 630-378-1000 x 103
Fax: 630-378-1002
1306 Marquette Drive
Romeoville, IL 60439
USA
www.hmcco.net
art@hmcco.net

J.T. Cleary
James T. Cleary
Tel: 201-930-1001
Fax: 201-930-1022
23 S. Kinderkamack Road
Montvale, NJ 07645
USA
www.clerymarine.com
jimcleary@jtcleary.com

Johnson Bros. Corp.
Derek Fogt
Tel: 407-466-6593
Fax: 407-248-2540
7500 Municipal Drive
Orlando, FL 32819
www.johnson-bros.com
dfogt@johnson-bros.com

Misener Marine Construction, Inc.
Robert Mussellwhite
Tel: 813-839-8441
Fax: 813-831-7498
5600 W. Commerce Street
Tampa, FL 33616
USA
www.orionmarinegroup.com
bmussellwhite@misenermarine.com

Morris Shea Bridge Co., Inc.
Richard Shea III
Tel: 205-956-9518
Fax: 205-956-9579
609 South 20th Street
Irondale, AL 35210
USA
www.morrisshea.com
rshea@morrisshea.com

Orion Construction, L.P.
Mark Coyle
Tel: 713-852-6500
Fax: 713-852-6580
12550 Fuqua Street
Houston, TX 77034
USA
www.orionmarinegroup.com
mcoyle@orionconstruction.net

Precast Piling Technology, Inc.
Dave Harper
Tel: 813-984-7453
Fax: 813-899-1105
PO Box 16612
Tampa, FL
33687
www.precastpiling.com
dave@precastpiling.com

T-OZ Construction, Inc.
Tom Osborne
Tel: 253-884-1114
Fax: 253-884-1179
16409 Hoff Road
Lakebay, WA 98349
www.tozcon.com
tom@tozcon.com

Taylor Brothers Marine Construction, Inc.
Julius Taylor
Tel: 252-728-2525
Fax: 252-728-3761
135 Oak Road
Beaufort, NC 28516
USA
www.taylorbrothersmarine.com
jmtayloriii@gmail.com

TECNAC S. A
Luis Illingworth
Tel: 593-4 2453245
Fax: 593-4 2450054
PO Box 09-01-4954
Guayaquil
Equador
www.tecnac.com
tecnac@tecnac.com

Technical Members

AECOM
Faris Ichalil
Tel: 204-477-5381
Fax: 204-284-2040
99 Commerce Drive
Winnipeg, MB R3P 0Y7
Canada
faris.khalil@aecom.com

A Gate Construction
Larry Zoerb
Tel: 609-624-9090
1030 Route 83
Ocean View, NJ 08223
USA
lzoerb@agateconstruction.net

Birdsall Services Group – LGA Engineering Inc.
Timothy John Rioux
Tel: 732-961-2162
Fax: 732-961-2163
13 Dayton Avenue
Lakewood, NJ 08701
USA
trioux@birdsall.com

BSM Consulting Engineers, Inc.
Bill Marczewski
Tel: 503-325-8065
Fax: 503-325-8061
PO Box 52
Astoria, OR 97103
USA
bill@bsmengineering.com

BTC
William Kirchgessner
Tel: 201-786-3354
Fax: 201-447-0658
27 Joshua Drive
Ramsay, NJ 07446
USA
wkirch@optonline.net

Coleman-Snow Consultants
Anthony Porreca
Tel: 843-514-2248
Fax: 843-266-3583
259 Cabrill Drive
Charleston, SC 29414
USA
tporreca@coleman-snow.com

Collins Company
John Collins
Tel: 360-387-9298
Fax: 360-387-2186
19 Utsalady Road
Camano Island, WA 98282
USA
collins@whidbey.net

G2 Consulting Group, LLC
Christopher J. Nicol, P.E.
Tel: 810-224-4330
Fax: 810-229-1720
9436 Maltby Road
Brighton, MI 48116
USA
cnichol@g2consultinggroup.com

Gary Kowalczyk
Tel: 907-229-8662
3902 Turnagain Blvd. #2
Anchorage, AK
99517
USA
akgkowalczyk@aol.com

Geosciences Testing and Research, Inc.
Leo Hart
Tel: 978-251-9395
Fax: 978-251-9396
55 Middlesex St., Suite 225
N. Chelsmford, MA 01863
USA
leo@gtrinc.net

Geosyntec Consultants
Robert Bachus
Tel: 678-202-9556
Fax: 678-202-9501
1255 Roberts Blvd. NW
Suite 200
Kwennasaw, GA 30144
rbachus@geosyntec.com

Hardesty & Hanover Engineering
Mina A. Mikaeel
Tel: 609-496-3718
Fax: 609-538-8238
197 Nebraska Ave. # 4
Hamilton, NJ 08619
USA
mmikaeel@hardesty-hanover.com

HAS Engineers and Scientists
Tel: 843-297-6222
Fax: 843-769-7608
1476 Orange Grove Road
Apt. C84
Charleston, SC 29407
USA
grizzlysc@hotmail.com

Jacques Whitford LTD
Anthony Urquhart
Tel: 902-468-7777
Fax: 902-468-9009
3 Spectacle Lake Drive
Dartmouth, NS B3B 1W8
Canada
urquhart@jacqueswhitford.com

Kleinfelder
Thomas Wells
Tel: 336-668-0093
Fax: 336-668-3868
313 Gallimore Dairy Road
Greensboro, NC 27409
twells@kleinfelder.com

MACTEC
Johnathan Honeycutt
Tel: 704-200-0708
Fax: 707-357-8639
2801 Yorkmont Road, Suite 100
Charlotte, NC 28208
jnhoneycutt@mactec.com

PDA Engineering
Lee Jacobs
Tel: 801-865-8709
Fax: 801-908-7681
PO Box 25065
Salt Lake City, UT 84125
USA
leejacobs@pdaengineering.com

Pile Advisory
Cyril Okoye
Tel: 609-452-1333
Fax: 609-452-0470
264 Fisher Place
Princeton, NJ 08540
USA
cyril@pileadvisory.com

PIM Engineering Laboratory, Inc.
Jose L. Izizarry-Rosa
Tel: 787-848-2075
Fax: 787-848-1562
3009 San Cristobal Ave.
Coto Laurel, PR 00780-2808
jlipim@jlipim.com

Pretech, Inc.
Alain Desmeules
Tel: 514-861-0030
Fax: 514-861-9727
4800, Rue St - Ambroise,
Suite 103
Montreal, QB H4C 3N8
Canada
alaindesmeules@pretech.ca

RS&H Engineering
Mark Hirsch
Fax: 407-893-5870
The Gateway Center 1000 Legion
Plance Suite 870
Orlando, FL 32801
USA
mark.hirsch@rsandh.com

Shannon & Wilson
Kathryn Peter
Tel: 206-695-6858
Fax: 206-695-6777
400 N. 34th Street, Suite 100
Seattle, WA 98122
USA
kap@shanwil.com

SK Geotechnical Corp.
Cory Rice
Tel: 406-652-3930
2611 Gabel Road
Billings, MT 59108
USA
crice@skgeotechnical.com

SM LTD Corp.
John Lee
Tel: 82222657804
Chungmuro 2ga Seoul Korea
Seoul, Asia 100861
Asia
leeyuhwan@nate.com

STE Inc.
Michael Wright
Tel: 937-964-1900
Fax: 937-964-8457
9363 Detrick Jordan Pike
New Carlisle, OH 45344
USA
mikewright@ste4u.com

Soil Mechanics Drilling Corp
Vincent Nantista
Tel: 516-221-2333
Fax: 516-221-0254
3770 Merrick Rd
Seaford, NY 11783
USA
soilmechanicsdraft@earthlink.com

Tetra Tech EC Inc.
Yaser Taheri
Tel: 215-702-4199
Fax: 215-702-4045
820 Town Center Drive
Suite 100
Langhorne, PA 19047
USA
yaser.taheri@tteci.com

TRC Engineers, Inc.
Craig H. Olson
Tel: 856-273-1224
Fax: 856-273-9244
16000 Commerce Parkway,
Suite B
Mount Laurel, NJ 08054
colson@trcsolutions.com

Vachris Engineering, P.C.
Anthony DePasquale
Tel: 516-747-5096
Fax: 516-747-1933
370 Old Country Road
Garden City, NY 11530
USA
adepasquale@vachris.com

PDCA
PILE DRIVING CONTRACTORS ASSOCIATION

Index to **Advertisers**


HAMMER&STEEL
Steel Sheet Piling
Hammers & Vibrators
Multi Purpose Mobilram Rigs (as shown)
Large Diameter Drilling Rigs
Low Head Room Drilling Rigs
Micropile & Anchor Rigs
Grout Mixing & Pumping Equipment
Electronic Monitoring Systems
Sales, Rentals, Consulting & On-Site Service
7 Offices | Equipment Yards
www.hammersteel.com
Tel: 314-895-4600

DRIVING INNOVATION

For installing 44′ diameter concrete piles to 4″ pipe - APE's got the tools.

The world's largest foundation equipment company.

National Reach

Local Response

CORPORATE OFFICE
Kent, Washington
(800) 248-8498
(253) 872-0141
Kelly Goranson - kellyg@apevibro.com
Larry Mulanax - larrym@apevibro.com
Dave Yingling - davey@apevibro.com

WEST COAST
Stockton, California
(888) 245-4401
(209) 942-2166
Steve Cress - stevec@apevibro.com

GULF REGION
Conroe, Texas
(800) 596-2877
(936) 271-1044
Joe Wright - joew@apevibro.com

SOUTHEAST
Winter Haven, Florida
(800) 570-3844
(863) 324-0378
Wally Brumsey - wallyb@apevibro.com
Jim Bushyeager - jimb@apevibro.com
Jim Casavant - jimc@apevibro.com

MID-ATLANTIC
Virginia Beach, Virginia
(866) 399-7500
(757) 518-9740
Jimmy Deemer - jimmyd@apevibro.com

NORTHEAST
Sayreville, New Jersey
(888) 217-7524
(732) 432-6604
Paul Kuzik - paulk@apevibro.com
Bill Ziadie - billz@apevibro.com

YOU WILL FIND NO ONE MORE QUALIFIED...

American Piledriving Equipment Inc. has a unique way of doing business in the deep foundations construction industry. We create, manufacture, load, and ship our own products. APE doesn't rely on distributors - we rent and sell directly to the contractor. We get our equipment to the job site and we set it up. We get our people in the field where they can help and learn.

AMERICAN PILEDRIVING EQUIPMENT, INC. A.P.E.

GO APE

www.APEvibro.com