

# PILEDRIVER

THE OFFICIAL PUBLICATION OF THE PILE DRIVING CONTRACTORS ASSOCIATION



| Q1 2012 VOL. 9, No. 1

## Project Spotlight:

# Boston Logan Airport



## PDCA Member Profiles:

▼ Kahn Steel Co., Inc.

## Feature Articles:

▼ Driveability and Dynamic Capacity Estimation

▼ Port of Beirut Development, Lebanon



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A Manitowoc 999 using an elevated template and the ICE IP-1514 to drive a 180 foot long precast pile on the Boston-Logan International Airport Runway 33L.  
*Find out more about this project on page 67*

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# Are You Prepared? *Are We Prepared?*

By Herbert "Buck" Darling

**M**ore than any other group of people, I believe that PDCA members know the criticality of preparation. As a matter of fact, I believe that this group of companies and individuals are better prepared than most any other type of group you can think of. This is owing to the nature of our businesses and the things which are needed to be planned on a daily, monthly, annual, or longer basis. But...there are so many other aspects of life. Will we be ready for anything?

At some point in time before I wrote this last message as the sitting president, I was daydreaming, and waxing philosophic. It does not matter what kind of company we own or for which we work. It does not matter whether you are the President of the United States or a laborer. It all comes down to one thing: Am I prepared?

Both my grandfather and father induced me to think about planning and preparation from a very early age. They always stand in my mind as the most forward thinking people I have ever known. Yet, the unthinkable almost happened. My grandfather was sick for a long time. He eventually passed at 68 years old (I was only 11). There was a Last Will and Testament that was well thought out and which specified neatly and cleanly how things would go upon his death. The son would get the company. It almost didn't happen.

Enter the IRS. If they are not the outright killers of an enterprise, then they are usually the vultures finishing off the remains. My grandfather's company had no valuation plan for the stock and the assets on which the estate taxes would be paid. The IRS valued the company for us, at nearly twice what it was really worth despite much information, evidence, and protest to the contrary. They worked very hard to see that they got their due. Had they succeeded, there would have been no company to hand down to my dad. I wonder what I would be doing now had that come to pass.

Dad made a plan. The company would be protected for the next generation. The stock was gradually divided up between him and me once I declared my intention to carry on. This was done so as to minimize the tax man's share. There was life insurance put in place to provide for the cross purchase of the shares in the event of the death of either one of us. The plan

had to be revised when my brother-in-law became involved in the company. It had to be revised again when Dad retired. The B. I. L. and I will have to revise it again down the road depending on the circumstances.

Dad was a big fan of planning. Every year he would call a meeting of the family members including our spouses, our lawyer, accountant, and financial adviser to plan not only the company affairs, but the affairs of each of the family members as it would be affected by the passing of the patriarch or matriarch of the family. It cost money. It took time. Some of the follow-up paperwork was brutal. One hand grenade in the room would have wiped out the brain trusts of three or four companies at one time! Say what you want, nothing like the above story would ever happen again.

Forget about the business for a minute. Do you have children, and do your children have children? What about them? What happens if your spouse dies and you are left a single parent? Will you have the means to support yourself and them? Life insurance on a spouse is almost mandatory these days to ensure at least in the short term that there will be money to take care of the everyday expenses. If you are to keep working, you may need childcare, domestic help or both. These do not come cheap these days.

Don't even get me started on college costs, weddings for the female children (and these days, even helping out the bride's parents), retirement and long term health care. Things are looking pretty bleak for many of us due to the economy and markets of the day. Planning for and putting away money for the future for you, your spouse, and children both during and after your working years has gone from difficult to "rocket science".

"But how can I afford all of this?" That is the \$64 question. Maybe you are lucky and you can. Maybe you aren't and you can't. The whole idea is to at least go through the exercise and make plans. You cannot afford not to pay for some of these things. We have all heard the axiom that failing to plan is planning to fail. No truer words were ever spoken.

There are so many things to plan for. In the above examples, we hit on just a few. Then there is the granddaddy of them

## PRESIDENT'S MESSAGE

all: legacy. The mechanics for how your organization will carry on is only one facet of the diamond. On your passing, will you or your company be thought of as a cast iron bastard with no thought for civilization around you? Or will your legacy be a kinder, gentler one, factoring in the needs and wants of others? Will you shed your mortal coil leaving this earth in better shape than when you were living? Will there even BE a legacy, or will nothing, not even the memories survive the death of one person?

Herein lays the whole crux of this message. I have two enterprises I worry about; my company and family as one, and the PDCA as the other. Everything that applies to the above examples applies to the PDCA as well. Cogent thought must be given to the long term survival of our organization.

Fortunately, many others before me have thought of this. Currently, the PDCA is in good financial condition. Contributions and retention of our members and careful investment of their dues have accomplished this even in a down market. Our membership numbers remain strong, though there is definitely room for more. We have an Executive Director and Staff who are strong, caring, and willing to put in the time to see PDCA not only survive but prosper. Same goes for the Executive Committee, the Board members, and all our Committee Chairs and members. All of this stands us in good stead for the future.

What more could be done to assure the long term survival and relevancy of the PDCA? Our bylaws have been amended recently to shorten the total available terms of the Board mem-

bers so that fresh minds with fresh ideas are continually being brought to bear. There is insurance on our Executive Director (don't get any ideas folks!) to assure we have the means to find another in the event of the unthinkable. We have instituted a Board orientation meeting to make sure new members are keenly aware of what is expected of them, not in an attempt to narrow their thinking, but to assure them that we are interested, and looking to them for any ideas to help assure the long term survival of PDCA. We have strong mission and vision statements, along with a strategic plan in place to guide us in all our decisions.

I always will remember my dad telling me that if you tell everyone everything you know, then they will be just as smart as you are, and how that wasn't necessarily a good thing. The governance of the PDCA needs to be an obvious exception to this axiom. As a matter of fact, the violation of that thought is another one of the things that make PDCA strong. A series of public service announcements in my television market always ends with, "The more you know..." How important is that? We need every member to step up to the plate and volunteer in one way or another for our mutual long term survival.

If I am to provide any kind of legacy for the PDCA, I would want it to be that I did nothing to hurt it, and that I have done something to assure survival and prosperity for the long run. Will PDCA survive and prosper? At this time the answer is a resounding "you bet'cha dupa brother"! Nothing else is acceptable. ▼

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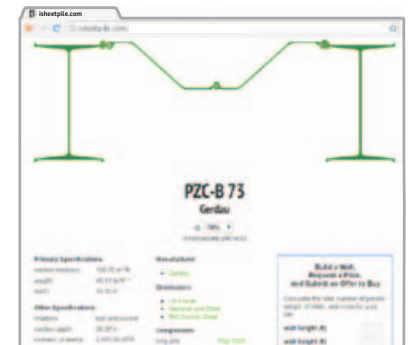
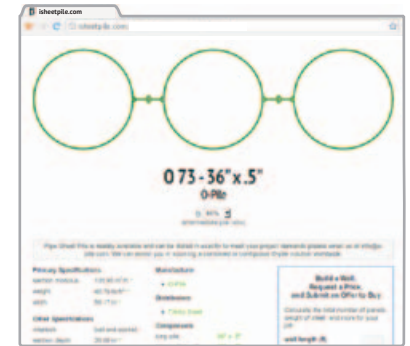
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# Reflections and Objectives

**It is hard to be successful without goals and it's hard to reach goals without objectives.**

*By Stevan A. Hall, Executive Director, Pile Driving Contractors Association*

The Holiday Season has come and gone. The New Year's celebrations have concluded. Now we are all settling in, not for a long-winter's nap, but to resume going about the business of business.

As we proceed into 2012, I want to wish all of you a successful 2012, filled with realized opportunity, prosperity and good health. I hope everyone is optimistic and excited about the possibilities 2012 holds for each of us and in twelve months we can all say our dreams and visions for the year were realized.

The beginning of 2012, as with most years, often begins with pause and reflection of the previous year. As we move steadily into 2012, it makes sense that our goals, objectives and aspiration are predicated, in part, on how we ended up in 2011. Did we accomplish all that was expected of us; did we reach our personal and business goals; and how can we use the answers to these questions to make a greater impact in 2012?

As in every year, it is important for the PDCA to analyze 2011, and identify areas where we excelled and brought true value to our members; and just as importantly, to identify areas where we fell short of your expectations and our objectives. The answers to these questions will help forge the goals for PDCA in 2012. Einstein said, "The future is an unknown, but a somewhat predictable unknown. To look to the future we must first look back upon the past. That is where the seeds of the future were planted."

Where does the PDCA go in 2012? It is hard to be successful without goals and it's hard to reach goals without objectives, so the PDCA Executive Committee is preparing to conduct its 3rd annual strategic planning session or "Tactical" meeting that will establish our goals for 2012, revise our strategic plan to include not only 2012, but also the direction for the PDCA over the next 2-3 years. However, for the first time, this year's Annual Tactical Meeting will also include the Directors of the PDCA Board of Directors. The meeting will take place in Buffalo, NY from January 18-20. The Executive Committee will meet on January 18 and 19, followed by the full Board on January 19-20. This "tactical"

meeting will actually serve two purposes: one, as a strategic planning session for the PDCA; and two, as an orientation for existing and new Board members. PDCA members can review the updated strategic plan, which will be available upon completion of the Annual Tactical Meeting.

This would be a good time to welcome the newest members of the 2012 PDCA Board of Directors. Joining the PDCA Board in 2012 are Dave Graff (Stroer & Graff, Inc., Antioch, CA), Kevin Shannon (Linde-Griffith Construction Co., Newark, NJ), Mike Moran (Cajun Deep Foundations, LLC, Baton Rouge, LA), and Pollyanna Cunningham (International Construction Equipment, Inc., Matthews, NC).

The PDCA has also begun planning our more "traditional" events for 2012. The annual conference will be held at the Albuquerque Hyatt Regency Downtown, Albuquerque, NM from April 25-27, 2012. This year's annual conference will feature a General Session with some exceptional educational programs, including topics on case studies, industry and technology and business.

The Exhibit Hall will provide companies with an opportunity to showcase their products and services along with an ongoing and fun exhibitor's raffle at the booths; a Companion's Program that will feature visits to Old Town Albuquerque and a tour of the Pueblo of Acoma – Sky City, speakers on historical Albuquerque and other scheduled social events; the PDCA 5th Annual Golf Tournament and Luncheon at the UM Championship course; scheduled social and networking events each evening in the Exhibit Hall and business and social luncheons throughout the day.

You have heard about "Social Media". This PDCA conference will unravel some of the mystery behind social media and how you can use this technology to your advantage. The PDCA will feature Wendy Forbes as one of the speakers for the Business portion of the General Session. Wendy brings 20 years of experience in media, marketing and public relations to the podium. She has served as an agency media strategist, award-winning television news producer, public relations director and advertising agency account executive – giving

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her a broad and deep knowledge of marketing and public relations from many different vantage points in the industry, including the effective use of Social Media technology. The PDCA will also use QR (Quick Response) Codes throughout the conference, including codes on name badges and at exhibitor booths, so conference participants can obtain vendors, friends, colleagues, and business information on their iPhone or Droid without having to collect the "traditional" business card. It is quick, easy and provides complete information for your records or contact list. The PDCA will be available to help walk you through the process, so you can get started right away.

In keeping with the Business portion of the conference, the PDCA will feature Garrison Wynn, Keynote and Guest Speaker at the Opening Ceremony. Garrison will talk about "Generations Working Together". With four generations in the workplace and five or more in the marketplace, different values, different ideas, different ways of getting things done and different ways of communicating creates a challenge for Presidents/CEO's, Project Managers and Superintendents. Garrison will entertain you, make you laugh, but more importantly, he will give you ideas on how you can effectively manage all generations to produce a productive and successful work environment.

You can read more about the annual conference and special programs in this edition of *PileDriver* or by visiting the PDCA web site, [www.piledrivers.org](http://www.piledrivers.org) for a full brochure and registration information.

In 2012, the PDCA will conduct several workshops and seminars, including the Design and Installation of Cost-Efficient Piles (DICEP) conference in October, 2-3 workshops on Deep Foundation Dynamic Testing and Analysis and the Dynamic Measurement and Analysis Proficiency Test, and a Pile Driving Inspectors course. New to the PDCA's course agenda in 2012 will be a one-day seminar on Dynamic and Static Load Testing Options for Driven Pile.

The momentum the PDCA has seen over the past several years will continue if two important factors are met. One, the PDCA must stay committed to providing its members with the very best service and benefits possible; and we must continue to represent our industry with unparalleled passion and professionalism.

The second factor is our members must stay committed to the PDCA. PDCA members will have the advantage of profitability, growth and improvement through membership. Your association will be stronger, your industry will be stronger and your business will be stronger through your participation. In 2012, the PDCA encourages you to participate – at the annual conference, in educational programs, on a committee, writing an article or letting us hear from you.

I want to thank all of the PDCA members for making 2011 a tremendous year. I want to thank the Executive Committee and Board of Directors for their involvement, support and leadership; and I want to thank the PDCA Committee Chairs and members for all the work they did – you are the backbone of the PDCA and your work is instrumental to our success.

I look forward to working with you in 2012 on another great year for the PDCA. ♦



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### Pat Hannigan GRL Engineers, Inc.

P: 847-221-2750  
F: 847-670-7008  
1540 E. Dundee Road, Suite 108  
Palatine, IL 60074  
pat@pile.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

### Mike Elliott Pile Equipment, Inc.

P: 904-284-1779  
F: 904-284-2588  
1058 Roland Avenue  
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

### Doug Keller Richard Goettle, Inc.

P: 513-825-8100  
F: 513-828-8107  
12071 Hamilton Avenue  
Cincinnati, OH 45231  
dkeller@goettle.com

### Eric Alberghini Norwalk Marine Construction

P: 203-866-3344  
F: 203-853-0342  
111 Harbor Avenue  
Norwalk, CT 06850  
ealberghini@norwalkmarine.com

## PDCA CHAPTER REPRESENTATIVES TO THE BOARD OF DIRECTORS

### South Carolina

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Charleston, SC 29405  
Johnskinner@parkermarine.net

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**Cianbro Corporation**  
P: 410-636-3000  
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605 Pittman Road  
Baltimore, MD 21226  
bbonneau@cianbro.com

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**Coastal Bridge Co., LLC**  
P: 225-766-0244  
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4825 Jamestown Avenue  
Baton Rouge, LA 70808  
overall@coastalbridge.com

### Pacific Coast

**Dermot Fallon**  
**Foundation Constructors, Inc.**  
P: 925-754-6633  
F: 925-625-5783  
81 Big Break Road  
Oakley, CA 94561  
dfallon@foundationpile.com

### Florida

**Mike Carter**  
**Blue Iron Foundation and Shoring, LLC**  
P: 504-469-6650  
F: 407-436-4423  
467 Lake Howell Road, Suite 104  
Maitland, FL 32751  
mcarter@blueironllc.com

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**Loftus Contracting Corp.**  
P: 914-488-5820  
F: 914-488-5821  
51 Route 100  
Suite 2A  
Briarcliff Manor, NY 10510  
mikeloftus@loftuscontracting.com



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P: 716-632-1125  
F: 716-632-0705  
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bdarling@hfdarling.com

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Randy Dietel, Harry Robbins,  
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Committee Chair:**

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kingpiledrive@aol.com

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Mark Weisz  
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Randy Dietel

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dbiggers@bohbro.com

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F: 716-632-0705  
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bdarling@hfdarling.com

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**Safety Committee:  
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P: 888-311-PDCA (7322)  
steve@piledrivers.org



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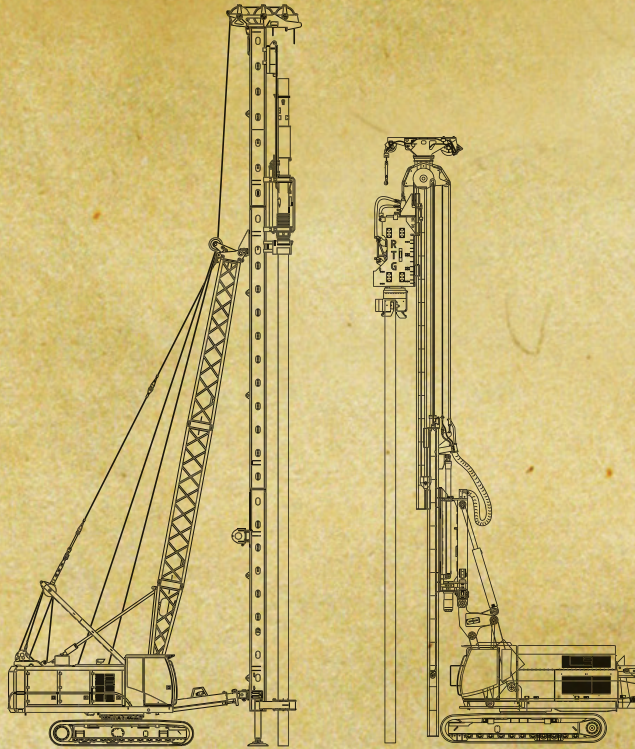
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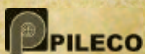


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# MEMBERSHIP BENEFITS

## 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 have 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](http://www.piledrivers.org)

The PDCA's newly redesigned website at [www.piledrivers.org](http://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. ▼



## 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. This is a non-voting membership category.
- Retired Industry Member** – (\$50.00)  
Individual who has reached retirement age, left active employment, and wishes to remain a member. This is a non-voting membership category.
- Student Member** – (\$20.00)  
Full time students studying towards a bachelor, master or doctorate degree in a regular university program. This is a non-voting membership category.
- Affiliate Labor Organization Member** – (\$100.00)  
Concerned with pile driving for the purpose of gathering and sharing information. This is a 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:**

- |  |  |                                       |
|--|--|---------------------------------------|
| <input type="checkbox"/> Bridge Buildings        | <input type="checkbox"/> Docks and Wharves       | <input type="checkbox"/> Marine       |
| <input type="checkbox"/> Bulkheads               | <input type="checkbox"/> Earth Retention         | <input type="checkbox"/> Pile Driving |
| <input type="checkbox"/> Deep Dynamic Compaction | <input type="checkbox"/> General Contracting     | <input type="checkbox"/> Other        |
| <input type="checkbox"/> Deep Excavation         | <input type="checkbox"/> Highway and Heavy Civil | <input type="text"/>                  |

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

**Accessories**

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Cutter Heads and Drill Bits | <input type="checkbox"/> Hoses and Fittings    | <input type="checkbox"/> Pile Points and Splicer's |
| <input type="checkbox"/> Dock and Marine Supplies    | <input type="checkbox"/> Lubricants and Grease | <input type="checkbox"/> Rigging Supplies          |
| <input type="checkbox"/> Hammer Cushions             | <input type="checkbox"/> Pile Cushions         | <input type="checkbox"/> Other                     |
| <input type="checkbox"/> Safety Equipment            |  | <input type="text"/>                               |

**Materials**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Aluminum Sheet Piles     | <input type="checkbox"/> Composite Piles             | <input type="checkbox"/> Steel Sheet Piles |
| <input type="checkbox"/> Coatings and Chemicals   | <input type="checkbox"/> H-Piles                     | <input type="checkbox"/> Structural Steel  |
| <input type="checkbox"/> Concrete Piles           | <input type="checkbox"/> Steel Pipe Piles            | <input type="checkbox"/> Other             |
| <input type="checkbox"/> Synthetic Material Piles | <input type="checkbox"/> Timber Piles/Treated Lumber | <input type="text"/>                       |

**Equipment**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Air Compressors and Pumps | <input type="checkbox"/> Drive Caps and Inserts | <input type="checkbox"/> Leads and Spotters             |
| <input type="checkbox"/> Cranes                    | <input type="checkbox"/> Hammers                | <input type="checkbox"/> Marine Equipment               |
| <input type="checkbox"/> Drill Equipment           | <input type="checkbox"/> Hydraulic Power Packs  | <input type="checkbox"/> Specialized Rigs and Equipment |

**Services**

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Consulting        | <input type="checkbox"/> Geotechnical            | <input type="checkbox"/> Testing              |
| <input type="checkbox"/> Design            | <input type="checkbox"/> Marine Drayage          | <input type="checkbox"/> Trucking             |
| <input type="checkbox"/> Freight Brokerage | <input type="checkbox"/> Surveying               | <input type="checkbox"/> Vibration Monitoring |
| <input type="checkbox"/> Analysis          | <input type="checkbox"/> Civil and Design        | <input type="checkbox"/> Other                |
| <input type="checkbox"/> Materials Testing | <input type="checkbox"/> Pile Driving Monitoring | <input type="text"/>                          |

**General**

- |                                 |                                |
|---------------------------------|--------------------------------|
| <input type="checkbox"/> Rental | <input type="checkbox"/> Sales |
|---------------------------------|--------------------------------|

**Step 4: Geographic Areas Where Services and Products Are Available**

(All applicants check all that apply)

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

**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

Card Number: \_\_\_\_\_ Expiration Date: \_\_\_\_\_

Name on Card: \_\_\_\_\_ CVV Code: \_\_\_\_\_

Statement Billing Address: \_\_\_\_\_

Signature: \_\_\_\_\_

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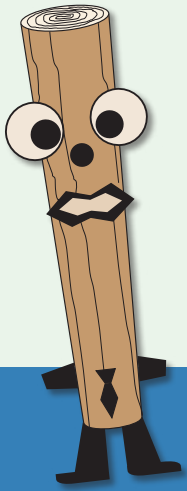
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# Did You Know?

One of the many services/benefits of PDCA membership is the ability to provide your company information (company name, contact, address, phone, fax, email, and services provided) to literally millions of people. The PDCA website saw 1.9 million visitors from Jan – Nov 2011. This does not include phone calls to the PDCA office; emails, “Ask PDCA” and other inquiries requesting the PDCA provide information on our member companies.

One additional way the PDCA provides this information is through the PDCA Membership Directory.

The PDCA can ensure membership accuracy by having up-to-date information on your company in our data base. The PDCA tries to maintain a complete and very accurate data base, but sometimes we make minor mistakes.

In reviewing the 2011-2012 Membership Directory, which was recently released, the PDCA has been notified that some errors do exist. If your company information is not 100% correct, we want to make the corrections not only in our data base, but also as a continued announcement in *PileDriver* magazine. Therefore, the PDCA is requesting you notify us of any errors, so we can make the corrections as quickly as possible.

## CORRECTIONS:

### Page 53

Bayshore Concrete



Change main contact to:  
Gary Shrieves



Change email address to:  
gary.shrieves@skanska.com

### Page 67

Mid-Atlantic Foundation Supply, Inc. d/b/a MAFCO & Poseidon Barge Corporation



Change to:  
Mid-America Foundation Supply, Inc. d/b/a MAFCO & Poseidon Barge Corporation.

### Page 94

Seismic Surveys, Inc.



Change email address to:  
dmiller@seismicsurveys.net

### Page 131

Seismic Surveys, Inc.



Change contact info to:  
Phone: 301-663-6630  
dmiller@seismicsurveys.net

## PDCA Updates

### PDCA is on social media

Facebook:

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[PDCAonFaceBook](http://www.facebook.com/PDCAonFaceBook)

Twitter:

<http://twitter.com/PDCAorg>

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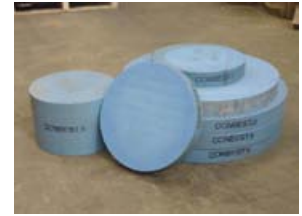
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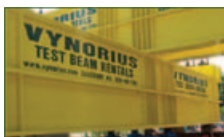
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# 2012 New PDCA Members

The following is a list of all members who have joined the PDCA in the last quarter. The association welcomes everyone on the list!

## CONTRACTOR MEMBERS:

### Spark Contractors

Paul Ruga  
1307 14th Avenue  
Dorothy, NJ 08317  
Phone: 609-476-2175  
Fax: 609-476-2702  
www.sparkcontractors.com

### Trevcon Construction Co., Inc.

Ronald Treveloni  
30 Church Street  
Liberty Corner, NJ 07938  
Phone: 908-580-0200  
Fax: 908-580-0880  
www.trevcon.com

## ASSOCIATE MEMBERS:

### Conrad Forest Products

Donald Bratcher  
2613 Riverview Court  
Modesto, CA 95351  
Phone: 800-499-2662  
Fax: 209-537-7768  
www.conradfp.com

### CPS Houston, Inc.

Kyle Yarbrough  
P.O. Box 250 / 301 South Sheldon  
Road  
Channelview, TX 77530  
Phone: 281-457-2454  
Fax: 281-457-7243  
www.cps-houston.net

### Kahn Steel Co.

Nelson Smith  
1710 Southern Road  
Kansas City, MO 64120  
Phone: 913-642-6426  
Fax: 913-642-6622  
www.kahnsteel.com

## ENGINEERING AFFILIATE MEMBERS:

### AMEC E&I

Brian Hathaway  
2580 Metrocentre Blvd. Suite #6  
West Palm Beach, FL 33407  
Phone: 561-242-7713  
Fax: 561-242-5591  
www.amec.com

### BSM Consulting Engineers, Inc.

Bill Marczewski  
P.O. Box 502  
Astoria, OR 97103  
Phone: 503-325-8065  
Fax: 503-325-8061  
www.bsmengineering.com

### Dyer, Riddle, Mills & Precourt, Inc.

Ricky Langley  
1125 Bartow Road  
Lakeland, FL 33801  
Phone: 863-686-7100  
Fax: 863-686-7111  
www.drmp.com

### Florida Bridge & Transportation

Juan Valenzuela  
633 Dartmouth Street  
Orlando, FL 32804  
Phone: 407-513-9709  
Fax: 407-513-9712  
www.flbridge.com

### Fugro Consultants, Inc. – Loadtest

Paul Bullock  
4233 Rhoda Drive  
Baton Rouge, LA 70816  
Phone: 225-292-5084  
Fax: 225-292-8084  
www.fugroconsultants.com

### HSA Engineers & Scientists

John Marquardt  
4019 E. Fowler Avenue  
Tampa, FL 33617  
Phone: 813-971-3882  
Fax: 813-971-1862  
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## NEW MEMBERS

### **Kaderabek**

Barry R. Goldstein  
9565 NW 40th Street Road  
Doral, FL 33178  
Phone: 305-666-3563  
Fax: 305-666-3069  
www.kaderabek.com

### **Linfield, Hunter & Junius, Inc.**

Anthony Goodgion  
3608 18th Street, Suite 200  
Metairie, LA 70002  
Phone: 504-833-5300  
Fax: 504-833-5350

### **TRC Engineers, Inc.**

Craig Olson  
16000 Commerce Parkway, Suite B  
Mount Laurel, NJ 08054  
Phone: 856-273-1224  
Fax: 856-273-9244  
www.trcsolutions.com

### **STUDENTS:**

#### **Eustis Engineering Services, LLC**

Chad Held  
3011 28th Street  
Metairie, LA 70002  
Phone: 504-834-0157  
Fax: 504-834-0354  
www.eustiseng.com

#### **Jordan Twist**

108 Via Undine  
Newport Beach, CA 92663  
Phone: 949-342-6832  
Fax: 949-342-6832

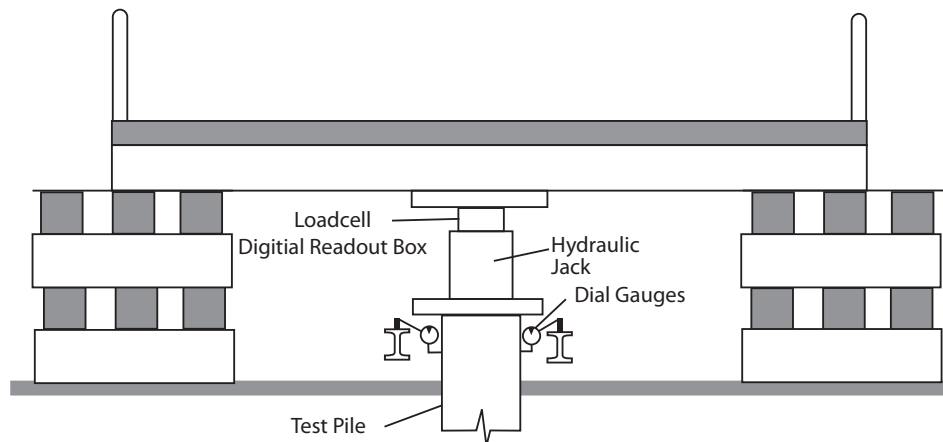
#### **Louisiana State University**

Stuart Johnson  
24625 Fairweather Drive  
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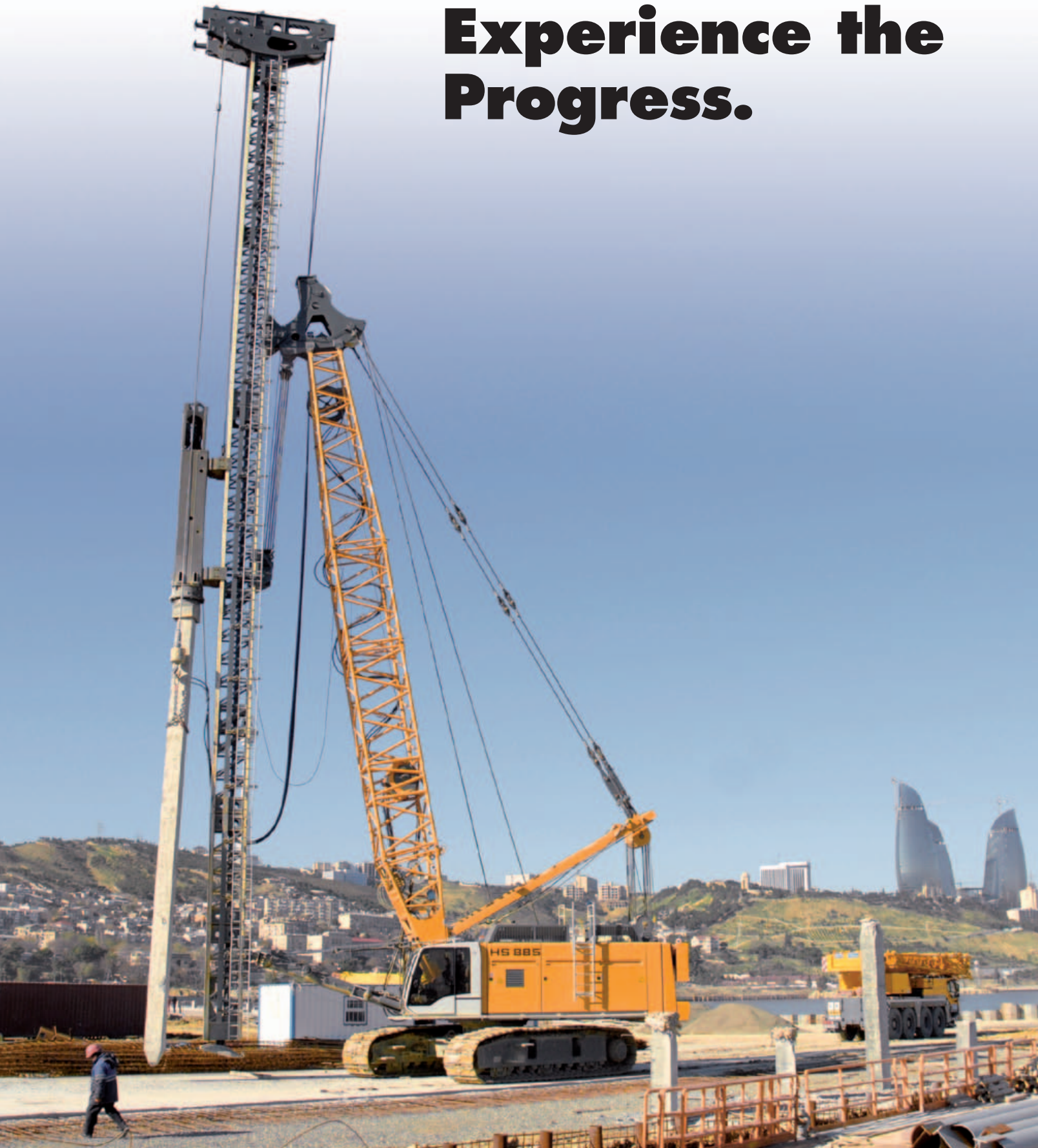
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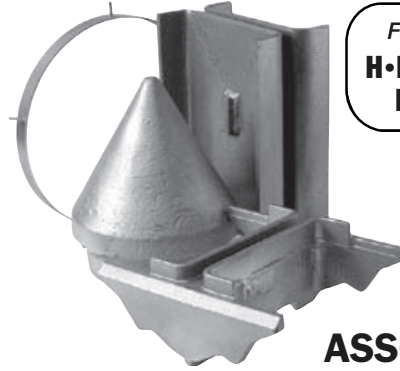
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# The 16th Annual International Conference and Expo 2012

The Hyatt Regency Albuquerque  
April 25 – 27, 2012



**GARRISON WYNN**

Featured Guest and  
Keynote Speaker

*A Driven Pile ... Is a Tested Pile!*



Herbert F. "Buck"  
Darling III  
President



It is my distinct pleasure to invite absolutely, positively, and resolutely, every one of you to the PDCA 16th Annual International Conference and Expo 2012, to be held from April 25th – 27th! This year will see us travel to beautiful Albuquerque, NM, and The Hyatt Regency Albuquerque Hotel. The Hyatt Regency Albuquerque and the City of Albuquerque will be assisting us in pulling out all the stops to provide a fun, informative, and interactive experience that everyone will not only enjoy, but hopefully talk about until we reconvene again in 2013! Once again this year we have a great lineup of speakers and topics for your participation and edification.

Over the last few years, you have talked to us about the Conference and how it could be made better than it already is. PDCA leadership has listened! The golf event will be held this year at the University of New Mexico Golf Course in Albuquerque, NM on Wednesday, the first day of the Conference. This will allow everyone to make travel plans according to their wishes. Depending on your travel distance, you can come the day prior, or early enough on the first day, ready to enjoy a relaxing (for some of us anyway!) round of golf. Otherwise, you can shake off the dust and relax by taking in the sights and venues provided by our host city prior to the conference start. If you are not a golfer, and wish to limit your time investment to the really important part of the conference, then come later on Wednesday ready to enjoy the opening session and opening reception Thursday morning.

We also heard loud and clear that traffic to and through the exposition portion of our Conference needed to be increased to offer added incentive to our Contractor and Associate members to exhibit their services and products.

They provide a unique and large part of the overall experience, and we would be much worse off without them. To that end, we have provided a one-day pass option to entice the local area contractors to attend. We will also be undertaking a local advertising effort to further forward this goal. At this point, I need to thank our regular exhibitors who are always there for us, and hope to see you as well as some new faces at the Conference.

Finally, I would encourage everyone to take advantage of our sponsor opportunities. These options help you to increase your exposure at the Conference and assist us in keeping the cost of the Conference down. Sponsorships are offered at many different financial levels, hopefully making your participation possible, and your attendance even more pleasurable. From a cost cutting effort, the PDCA and the Hyatt Regency Albuquerque have negotiated an outstanding room rate offer at just \$139.00 per night. We hope that you can see that we are addressing those things that make for a quality conference that all of our members will enjoy.

So please, come one, come all and help us make the 16th Annual International Conference and Expo 2012 edition our best one yet. I look forward to personally meeting as many of you as I possibly can. I am in the contractor portion of the directory under "H" for Herbert F. Darling, Inc. Please feel free to contact me.

With sincere hope that you will attend and warmest regards,

*Buck Darling*



Garrison Wynn  
Featured Guest  
and Keynote  
Speaker

## Generations Working Better Together

**Opening Ceremony, 9:00 AM Thursday, April 26**

*Don't miss this informative and relevant presentation!*

**G**arrison is a leader on bridging the generational gap from Gen Y to Baby Boomers. With four generations in the workplace, and five or more in the marketplace, Garrison's message delivers results.

His message combines the keys necessary to effectively communicate and reach all generations. He provides real-life

**"If you can't manage the future, you don't have a future."** – Garrison Wynn

*The PDCA is proud to present Garrison Wynn as the Featured Guest and Keynote Speaker at the PDCA 16th Annual International Conference and Expo 2012 Opening Ceremony.*

To learn more about Garrison Wynn please visit:  
[www.wynnsolutions.com](http://www.wynnsolutions.com)

examples and tools to close the gap between generational communication errors, work ethic, management styles, and technology barriers.

One generation of employees exhibit maturity and steadfast loyalty, while workers of a younger generation who show brilliance and application have an exit strategy ready if boredom or dissatisfaction sets in.

Population booms and generational differences in mind-set combine to create adverse conditions that will gradually worsen, creating a perfect storm that can spell disaster for employers without the proper knowledge and tools to handle this adversity.

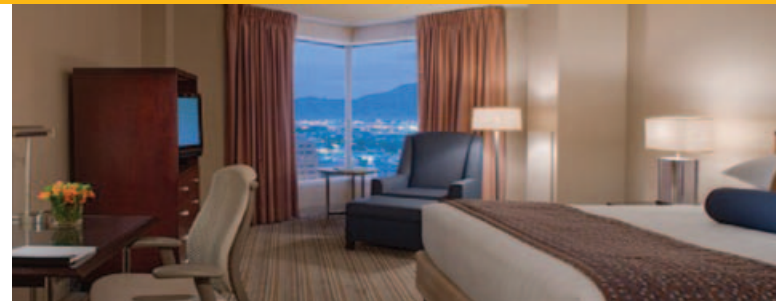
## The Hyatt Regency Albuquerque

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Within this distinctly "Southwestern" feeling New Mexico hotel, you'll find spacious guestrooms that reflect the beauty of the surrounding Sandia Mountains.

The PDCA Exhibit Hall will be located directly next to the general session room for easy access between breaks. The 16th Annual International Conference and Expo 2012 offers 8,112 square feet of Exhibit Hall space and 3,276 square feet for general session presentations.

Anyone requiring travel assistance or special needs of any kind should contact **Lorraine Engelman at (718) 767-5455 or email at [lorraine@travelblueribbon.com](mailto:lorraine@travelblueribbon.com)**.



### Accommodation Details:

- Reservation deadline for the Special Conference Rate – **April 8, 2012**
- Individuals are responsible for making their own reservations
- To book reservations in the Continental U.S. and Canada, call (888) 421-1442
- To book, modify or cancel a reservation online, go to: **[www.piledrivers.org](http://www.piledrivers.org)**

## Wednesday, April 25

- Exhibitors Registration and Exhibit Hall Set-Up
- Executive Committee Meeting
- 5th Annual Golf Tournament and Luncheon
- Evening Registration
- Opening Reception
- Silent Auction Begins
- Board of Directors, Past Presidents, Committee Chairs and Spouses Dinner

## Thursday, April 26

- Registration Open
- Opening Ceremony Breakfast
- Opening Ceremony with Featured Guest and Keynote Speaker Garrison Wynn
- General Session – Presentations
- Companion’s Program – Seasons Rotisserie & Grill Luncheon with Featured Guest Speaker Mo Palmer and Afternoon Exploring/ Shopping Old Town Albuquerque (Transportation Provided)
- PDCA Annual Business and Awards Luncheon
- Evening Reception

## Friday, April 27

- Hot Air Balloon Ride
- Continental Breakfast
- PDCA Committee Meetings – Education, Communication, Safety, Environmental, Technical, Market Development
- Companion’s Program Breakfast
- General Session – Presentations
- Companion’s Program – Tour of Pueblo of Acoma – Sky City and Lunch (Transportation Provided)
- Board of Directors’ Meeting
- Silent Auction Ends
- Annual Reception, Dinner and Entertainment

## Wednesday, April 25\*

- 7:00 AM Registration  
– Exhibitors Only
- 7:00 AM Exhibitor Set-up
- 7:30 AM Executive Committee Breakfast
- 8:00 AM Executive Committee Meeting
- 10:45 AM The PDCA 5th Annual Golf Tournament and Luncheon – Transportation Departs for University of New Mexico Championship Golf Course
- 11:00 AM PDCA 5th Annual Golf Tournament Luncheon
- 12:00 PM PDCA 5th Annual Golf Tournament (Pre-Registration Required)
- 4:00 PM Registration Opens  
– Full Conference Passes Only



- 6:00 PM Exhibit Hall Opens  
Conference Opening Reception  
Silent Auction Begins
- 7:30 PM Board of Directors, Past Presidents, Committee Chairs and Spouses Dinner



## Thursday, April 26\*

- 7:00 AM Registration Opens – All  
Exhibit Hall Opens
- 8:00 AM Opening Ceremony Breakfast
- 9:00 AM Opening Ceremony  
Presentation of Colors, Pledge of Allegiance  
Welcome and Opening Remarks  
– Buck Darling, PDCA President  
Keynote Speaker: Garrison Wynn
- 10:45 AM General Session
- 11:15 AM Companion’s Program – Transportation Departs  
for Seasons Rotisserie & Grill
- 11:30 AM Companion’s Program – Luncheon at Seasons  
Rotisserie & Grill with Featured Speaker  
Mo Palmer
- 11:40 AM Exhibit Hall Opens
- 12:15 PM Business & Awards Luncheon
- 1:30 PM Companion’s Program – Self-Guided Tour,  
Old Town Albuquerque
- 2:10 PM General Session
- 3:00 PM Exhibit Hall Opens
- 3:40 PM General Sessions
- 4:00 PM Companion’s Program – Transportation Departs  
for The Hyatt Regency Albuquerque
- 5:00 PM Exhibit Hall Opens
- 6:00 PM Evening Reception

## Friday, April 27\*

- 6:30 AM Hot Air Balloon Ride – Transportation Departs
- 7:30 AM Registration Opens – One Day Passes Only  
Exhibit Hall Opens  
Continental Breakfast
- 8:30 AM Companion’s Program – Breakfast
- 10:00 AM Committee Meetings – Education,  
Communication, Safety
- 10:45 AM Companion’s Program – Transportation Departs  
for Pueblo of Acoma – Sky City and Lunch
- 11:15 AM General Session
- 11:45 AM Exhibit Hall Opens  
Exhibitors Luncheon – Exhibit Hall
- 1:20 PM General Sessions
- 3:00 PM Exhibit Hall Opens  
Companion’s Program – Transportation Departs  
for The Hyatt Regency Albuquerque
- 3:30 PM Committee Meetings – Technical, Environmental,  
Market Development
- 4:30 PM Board of Directors’ Meeting
- 6:30 PM Annual Dinner Reception
- 7:00 PM Annual Dinner and Entertainment  
Silent Auction Ends
- 8:30 PM Cellicion Traditional Zuni Dancers
- 9:15 PM Silent Auction Winners Announced
- 9:30 PM Evening Headlining Entertainment

### Attending All PDCA General Sessions: Earn 7 Professional Development Hours

Note: Attendance for PDHs will be verified by scanning attendees' QR Codes

#### Thirty-year-old Piles Used to Support Dulles Extension of Washington Metrorail Project

**Kenneth R Bell, Ph.D., P.E., D.GE**  
– **Bechtel Power Corporation**

When the construction of the new Silver Line to Washington Dulles International Airport was recently undertaken, a detailed subsurface investigation was planned and carried out. At the location where the elevated guideway for the new Silver Line ties into the existing Orange Line, a soil boring was planned at or near each proposed large diameter drilled pier location. However, at several of these proposed locations existing H piles were found at or just below grade. As it was later determined these piles were driven in the 1980s as part of foundation structures to support the then original proposed aerial guideway for the Silver Line. It was decided that these existing H piles should be incorporated into the final design and construction of the Silver Line. As no records could be located for these piles, the decision to use them would be contingent on testing and inspection to meet the Dulles Transit Partners (DTP) requirements for load, settlement, and potential for corrosion. This presentation will present the steps that were undertaken to qualify these 30 year old existing piles for use as part of the foundation for the new construction and eliminating the need for the drilled piers.

#### What Every Business Owner Needs to Know About Asset Protection, Tax Reduction, and Estate Planning.

**G. Kent Mangelson, CFP, Author, Senior Advisor**

Discover the tools pile driving professionals can use to become invisible to lawsuits, save thousands in taxes, and achieve financial peace of mind. By the end of the presentation participants will know how to protect 100% of your personal and professional assets from lawsuits and avoid common asset protection mistakes. Learn five tax reduction strategies most people fail to utilize which could save you more than \$10,000 each year in taxes. Learn how to avoid probate and eliminate all estate taxes and effectively use corporation, trusts, wills, and family limited partnerships. It takes a lifetime to accumulate assets. Take fifty minutes to protect them.

#### Getting on Track with Social Media

**Wendy Forbes**  
– **Wendy92, LLC**

How to jumpstart business networking, lead generation and customer service with social media. What are the benefits of using social media? What social media accounts are right for you? What tools can be used to fit social media into your daily business routine? You'll learn the fundamentals of using social media effectively and efficiently to promote your business and engage your customers.

#### New Mexico DOT Driven Piles Practices

**Bob Meyers, P.E., M.S.C.E.**  
– **New Mexico DOT State**

This presentation will include discussions on current NMDOT pile design philosophy and procedures, implementation of AASHTO LRFD, common pile types and hammers used, specifications requirements, testing, two case histories, and lessons learned.

#### Navarre Beach Pier - A Case History

**Eric Prendergast**  
– **Ed Waters & Sons Contracting Co. Inc.**

The Navarre Beach Pier is located in Santa Rosa County along the Florida Panhandle on the Gulf of Mexico. This project consisted of the demolition of an existing pier damaged by hurricanes and the construction of a new, longer and taller pier along with renovations to the existing pier building. During the course of the 13 month schedule, many challenges unique to the pile driving industry were faced and overcome. Now, at 1,545 feet long the new pier currently holds the record for the longest pier in the State of Florida and on the Gulf of Mexico and is a large part of the economic engine that fuels Santa Rosa County. Ed Waters & Sons Contracting Co., Inc. is pleased to have been a part of this rewarding project and we look forward sharing its unique challenges and attributes during the PDCA 16th Annual International Conference & Expo.



## In Water Above Piles

**Bassam N. Ghanem M.S.C.E.**

Using a crane or a jackup barge to drive piles in open water is usually the most common method contractors use to drive piles. A redesigned method could assist marine contractors to install piles in open water more efficiently in locations where waves and wind effect play a critical role in the ability to generate production. A contractor in the Middle East decided to construct a large crane platform supported on top of driven piles in the middle of the water. The piling crew should be able to drive piles around the platform and subsequently lift part of the platform from behind the crane and place it in front and continue driving forward. This presentation will detail the challenges encountered in designing and using a movable crane platform and will highlight the efficiency, time saving and cost saving to the contractor in adopting this method to drive the piles versus a barge or a jack up barge.

## Wacker Manufacturing, Steel Piles vs Drilled Shaft

**Douglass Ford**  
– **Skyline Steel**

This presentation will walk through the foundation design process. It will explain why the original design calling for drilled shafts was replaced by steel piles. The natural conditions as well as the financial aspects all helped to make the H pile the preferred choice.

## The History of Coatings used for Steel Piles

**Steve Harrison, Sr. Market Manager**  
– **Carboline**

This presentation will cover the corrosion issues affecting steel pilings, previous research done on this subject, and the history of coatings used for corrosion protection of steel pilings. Information will be presented on a 33-year-old study conducted by the Corps of Engineers. Finally, newer technologies will be discussed that may have a future fit for steel piling protection.

## E45 Highway project in Gothenburg

**TC Heller, VP Sales, Central US**  
– **Liebherr Nenzing Crane, Co.**

The presentation consists of a jobsite within the expansion of the double-track railway and highway between Gothenburg and Trollhattan, both Port Cities on the West coast of Sweden.

The job entailed driving pre-cast concrete piles.

Used as an aid with the project was a data logging system where the bearing pressure for each pile was pre-programmed and the Machine's GPRS System was used to remotely send the contractor's office the individual pile results from the E45 Highway project for review and documentation.



*A Driven Pile ... Is a Tested Pile!*



## The PDCA 5th Annual Golf Tournament and Luncheon University of New Mexico Championship Golf Course



Since its opening in 1967, the Championship Golf Course at the University of New Mexico remains one of the finest golfing venues in the nation.

The Championship Golf Course also has a long history of college tournaments, hosting the William H. Tucker Invitational for over 34 years, and in Women's college golf, the Dick McGuire Intercollegiate tournament since 1979. UNM has also hosted 5 NCAA Golf Championships.

### Tournament Details:

The 5th Annual PDCA Golf Tournament and Luncheon will take place Wednesday, April 25, 2012, lunch being provided at 11:00 AM in the University of New Mexico Clubhouse, and Shotgun Captain's Choice Scramble starting promptly at 12:00 PM. No handicaps are needed for the PDCA Tournament.

**Cost:** \$115 per player and includes transportation to and from the course, lunch, 18 holes of golf, golf cart, unlimited practice balls, complimentary beverages, snacks on the course during play, and a tournament gift.

**Rental Clubs:** The golf course offers Cobra clubs for a rental fee of \$35.00. Players must indicate right or left handed and check yes for rental clubs on the registration form.

**Awards:** Awards will be presented during the PDCA Business and Awards Luncheon on Thursday, April 26, 2012.

**Dress Code:** Appropriate golf attire required, including collard shirts, Bermuda-length shorts or slacks for men and appropriate attire for women. No T-shirts, tank tops, cut-offs, sweat pants, bathing suits, athletic shorts or denim permitted. The University of New Mexico Golf Course is a soft spike only facility.

**Tournament prizes are as follows:**

- First Place Foursome
- Longest Drive
- 4 Closest-to-the-Pins

The PDCA will host another exciting Companion's Program with special activities throughout the conference. This PDCA tradition brings spouses and guests together once again to renew old friendships and create new ones.

## Wednesday, April 25

- All companions and guests are welcome to participate in the PDCA's 5th Annual Golf Tournament and Luncheon
- Opening Reception – Exhibit Hall, The Hyatt Regency Albuquerque

## Thursday, April 26

- Opening Ceremony Breakfast
- Opening Ceremony with Featured Guest and Keynote Speaker, Garrison Wynn
- Lunch at Albuquerque's Famous Seasons Rotisserie & Grill with Featured Speaker, Mo Palmer - Columnist, Albuquerque Historian and Teacher
- Old Town Shopping – Featuring local and Native American shops, museums, art galleries, and science centers
- Evening Reception

## Friday, April 27

- Companion's Program Breakfast
- Lunch at Yaak's Cafe
- Tour of the Haak'u Museum
- Tour of Pueblo of Acoma – Sky City – the oldest continuously inhabited city in the United States; roughly 5 million acres occupied for over 800 years
- Afternoon on Your Own
- Annual Reception and Dinner



## Hot Air Balloon Rides :

The Land of Enchantment is home to the world's largest hot air balloon event, Albuquerque International Balloon Fiesta, where hundreds of balloons take to the sky. While visiting you can also take to the skies and enjoy the beautiful backdrop of the Sandia Mountains. Glide along the Rio Grande and take your shot of catching "the box wind." It's an experience like no other!

Soar gently through the heavens for an hour while the pilot shows local points of interest, shares balloon history and their unique enthusiastic perspective. Upon landing, the flight team will provide a light continental breakfast with assorted pastries and juices.

Raise your glass with the pilot to share in the traditional balloonist champagne toast; flight pin and certificate to mark the occasion.

**Cost:** \$175 per person, register in Section VIII on the conference registration form.



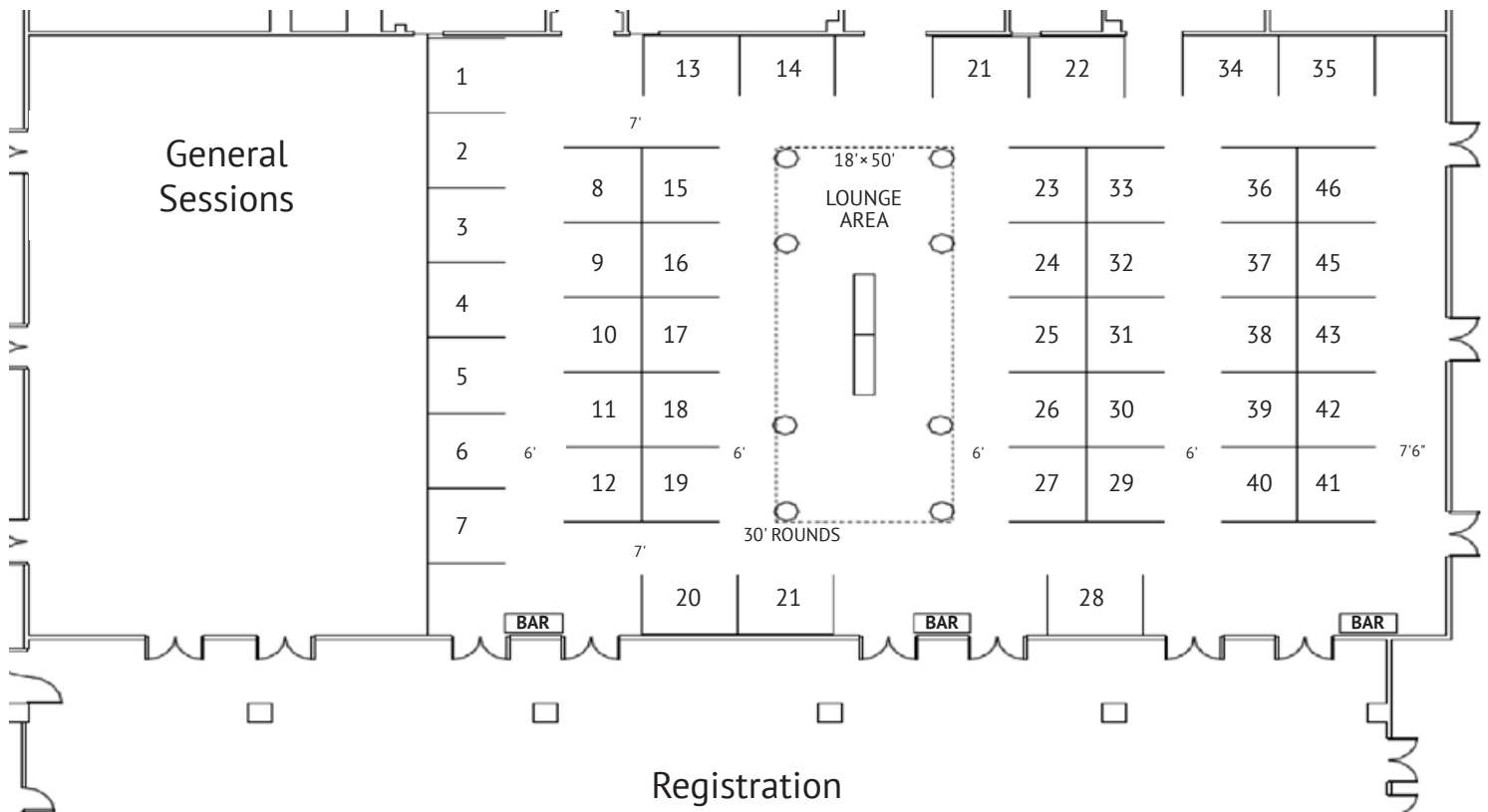
The PDCA will provide opportunities for 42 exhibitors to display information about their company, products, services and materials at the conference. Exhibitor Fees include one 10' wide booth. Each booth will have an 8' high back wall and 3' high side walls with cloth drapery. Booth side-walls extend out 8' on each side. Booths also include one 6' x 2' skirted table, two chairs, wastebasket, and company ID sign.

Along with the exhibits, the Exhibit Hall will be the site of the Opening Reception, Evening Reception, Continental Breakfast, Luncheon and Breaks. The Exhibit Hall is located next to the General Session Rooms in the Hyatt Regency Albuquerque, providing for easy access and a constant flow of traffic between the General Sessions and Exhibitors. The Exhibit Hall will be closed during the General Sessions.

\* PDCA members who attended and exhibited at the 2011 Annual International Conference and Expo in Savannah, GA will receive a 25% discount on the 2012 Annual Conference Booth Fee. Discount is taken on the Registration Form attached to this brochure.

Booth selection is made by the PDCA only after the company completes and submits a Registration Form and payment to the PDCA. Exhibitors will receive one full conference registration with the reservation of a booth. Additional Exhibitor attendees from the same company may use the fee schedule found in Section II or Section III on page 1 of the registration form.

**\*Booth Fees:** PDCA Members: \$1,200  
**Non Members:** \$1,600





**E**xhibitors will be given the opportunity to raffle off various prizes at their booths during selected times. Raffling companies, booth locations and times will be provided to all attendees at registration.

Raffle events will take place during the Opening Reception, AM & PM Breaks, Exhibitor Luncheon, Continental Breakfast and during normal Exhibit Hall opening hours.

One exhibitor will be given the opportunity to raffle off a grand prize during the annual dinner.

If you would like to have a raffle drawing at your booth please indicated that on the registration form Section VI and PDCA will contact you to confirm and ensure that your item is placed in the attendees information packet at the Annual Conference.

**W**hat better way to help your industry succeed than to support the association which helps to promote driven pile through education and continuous improvement of methods, materials and equipment?

The PDCA will hold its 2nd Annual Silent Auction throughout the conference dates, concluding at the Annual Dinner Friday, April 27, 2012. The Pile Driving Contractors Association is asking for donations

*Any individual or company interested in contributing to the silent auction should contact the PDCA.*



***A Driven Pile ... Is a Tested Pile!***

The tradition of featuring PDCA conference sponsors in a highly visible, consistent and professional manner throughout the conference will be continued with emphasis in 2012.

All sponsorship programs include advertising in the PDCA's e-letter, website, social media sites, *PileDriver* magazine and conference signage.

## Platinum - \$2,500

Major Conference Sponsor includes one conference registration and highly recognizable promotion of your company throughout the conference.

## Opening Ceremony - \$2,000

*(only 2 available)*

Sponsorship of the Opening Ceremony includes opening ceremony breakfast, color guard, featured guest and keynote speaker, Garrison Wynn, and highly recognizable promotion of your company throughout the conference.

## Annual Reception Dinner and Entertainment - \$2,000

Sponsorship includes light hors d'oeuvres during the reception, full buffet dinner, all evening open bar, entertainment and highly recognizable promotion of your company throughout the conference.

## Name badge Lanyards - \$2,000

*(only 1 available)*

Sponsorship includes your company name and logo printed on every conference name badge lanyard given to all attendees and highly recognizable promotion of your company throughout the conference.

## Companion's Program - \$1,800

Sponsorship of the Companion's breakfast, lunch at Seasons Rotisserie and Grill, Featured Speaker Mo Palmer, Old Town shopping, Daytrip to Pueblo of Acoma – Sky City and access to all other conference programs. Sponsorship includes one free Companion's Program Registration Fee and highly recognizable promotion of your company throughout the conference.

## Opening and Evening Receptions - \$1,800

Sponsorship of the Opening and Evening Reception in the exhibit Hall, including heavy buffet-style hors d'oeuvres, carving stations, all evening open bar and highly recognizable promotion of your company throughout the conference.

## Business and Awards Luncheon - \$1,500

Sponsorship includes Lunch Buffet, Project of the Year Awards program, Committee Chair of the Year Award, the Presidential Award for Distinguished Service and highly recognizable promotion of your company throughout the conference.

## Guest Room Key Cards - \$2,000

*(only 1 available)*

**SOLD**

Your company name and logo printed on every hotel guest room key and highly recognizable promotion of your company throughout the conference.

## PDCA 5th Annual Golf Tournament - \$750

Sponsorship includes two player's registrations for the Golf Tournament (not including club rentals) and highly recognizable promotion of your company throughout the conference.

## Continental AM & PM Breaks - \$450

Sponsorship of the expanded Continental Breakfast, all AM & PM Breaks and highly recognizable promotion of your company throughout the conference.

## Cooperating Organizations:



## Annual Reception and Dinner Entertainment

The PDCA 16th Annual Reception and Dinner will be held on Friday, April 27. This year's entertainment will include two fun and exciting events. First, listen and watch as the Cellicion Traditional Zuni Dancers from the Pueblo of Zuni perform their time-honored music and dance (see details in the right column). Additionally, the PDCA will feature a headlining performance, which will be completely different from anything we have done during past conferences. The PDCA is sure you will enjoy this special program, which is certain to keep you entertained. The PDCA Market Development Committee is finalizing the details for this portion of the evening's entertainment. Details will be made available as soon as possible.

To view a video of The Cellicion Traditional Zuni Dancers, scan QR code.



### Native Dance Entertainment

The Cellicion Traditional Zuni Dancers from the Pueblo of Zuni, New Mexico performs music and dances that preserve and reflect the 1000 year-old Zuni culture. They have been performing for more that 28 years and are internationally renown. Some of the dances being performed are The Eagle Dance, The Pottery Dance, The Zuni Turkey Dance, The Deer Dance, The Star Dance, The White Buffalo Dance, The Rainbow Dance, The Harvest Dance and The Cloud Dance.

## Early Bird Registration Deadline is Friday, March 9, 2012

Registration forms must be completely filled out and submitted with payment information to the Pile Driving Contractors Association before registration can be considered finalized. Receipts will be sent upon request by email to [Lori@piledrivers.org](mailto:Lori@piledrivers.org).

Submit completed registration form and payment information or checks to:

**PDCA**  
**1857 Wells Road,**  
**Suite 6**  
**Orange Park, FL 32073**

Payment by credit card can also be submitted as follows:  
Fax to the PDCA office: 904-215-2977  
Scan and email to the PDCA office:  
[Lori@piledrivers.org](mailto:Lori@piledrivers.org)



### Note:

Please print clearly or type all information on the Registration Form. If submitting credit card information, all information must be filled out clearly and completely for PDCA to process your registration. Incomplete information will delay your registration.

All inquires should be addressed to the PDCA office by phone toll-free at 888-311-PDCA (7322) or by email to [Lori@piledrivers.org](mailto:Lori@piledrivers.org).

## Section I: Company Information:

Contractor		Supplier		Manufacturer		Engineer		Other:	
Company Name:									
Address:						Suite:			
City:				State:				Zip:	
Phone:				Website:					

## Section II: Registration Information:

Name:		Email:	
Name:		Email:	
Name:		Email:	
Name:		Email:	

## Section III: PDCA Member Conference/Co-operating Organizations Choice:

Registration Type	Indicate # of Registrations		Amount	Total:
Early Bird -1st Registration		x	\$675.00	
Early Bird – Additional Attendees		x	\$625.00	
After Early Bird		x	\$725.00	
On-Site Registration		x	\$875.00	

## Section IV: NON-PDCA Member Conference Choice:

Registration Type	Indicate # of Registrations		Amount	Total:
Early Bird -1 <sup>st</sup> Registration		x	\$775.00	
Early Bird – Additional Attendees		x	\$750.00	
After Early Bird		x	\$825.00	
On-Site Registration		x	\$875.00	

## Section V: All Others Conference Choice:

Registration Type	Indicate # of Registrations		Amount	Total:
Companion's Program		x	\$375.00	
Children (under the age of 21)		x	\$75.00	
FHWA & State DOT Employees		x	\$500.00	
Students (Must identify attending college or university)		x	\$250.00	
One Day Pass – Thursday or Friday (may attend all events for that specific day)		x	\$450.00	
			<b>Total:</b>	<b>\$</b>

Companion's Name:	
Companion's Name:	



## Section VI: Exhibitor Registration:

Registration Type	Indicate # of Registrations		Amount	Total:
Exhibitors who exhibited at the 2011 Conference		x	\$900.00	
Early Bird –Exhibitors		x	\$1000.00	
PDCA Member Exhibitors		x	\$1200.00	
NON-PDCA Member Exhibitors		x	\$1600.00	
<b>Additional Attendee use section III or Section IV for Fees</b>				
<b>Exhibitor Representative:</b>		Email:		
<b>Exhibitor Representative:</b>		Email:		
<p><b>PDCA will be conducting raffle drawings during all Breaks and Receptions.</b> One of which will be raffled off during the Annual Dinner. - Please indicate the item you would like to have raffled off. Attendees must register for the drawings with exhibitors and be present to win.</p>				

## Section VII: Golf Registration:

Player's Name		Rental Clubs Y/N	Right Hand	Left Hand
Golfer 1:				
Golfer 2:				
Golfer 3:				
Golfer 4:				
Number of Club Rentals		X	\$65.00	\$
Number of Player's		X	\$115.00	\$
			<b>Total:</b>	<b>\$</b>

## Section VIII: Hot Air Balloon Ride:

Rider 1:				
Rider 2:				
Rider 3:				
Rider 4:				
Number of Riders		x	\$175.00	\$
			<b>Total:</b>	<b>\$</b>

## Section IX: Sponsorship:

Sponsorship	Number Available	Please Check Box	Amount	Total
Platinum Sponsor	Unlimited		\$2500.00	
Opening Ceremony	2		\$2,000.00	
Name Badges	1		\$2,000.00	
Guest Room Key	1	<b>SOLD</b>	\$2,000.00	
Annual Reception & Dinner	Unlimited		\$2000.00	
Companion's Program	Unlimited		\$1800.00	
Opening & Evening Receptions	Unlimited		\$1800.00	
Business & Awards Luncheon	Unlimited		\$1500.00	
Continental Breakfast	Unlimited		\$1200.00	
Golf	Unlimited		\$750.00	
AM & PM Breaks	Unlimited		\$450.00	
Silent Auction Item - please indicate if you or your company would like to contribute a silent auction item(s) by checking the box  *The PDCA will contact you to discuss.				
			<b>Total:</b>	<b>\$</b>

## Section X: Payment Information:

<b>Company Name:</b>								
<b>Payment Method</b>	VISA	<input type="checkbox"/>	Master Card	<input type="checkbox"/>	AMEX	<input type="checkbox"/>	Check	<input type="checkbox"/>
<b>Credit Card Number:</b>							CVV #	
<b>Expiration Date</b>			<b>Name on Card</b>					
<b>Billing Address:</b>								
<b>City:</b>				<b>State</b>		<b>Zip Code</b>		
<b>Signature:</b>								

\$

**No Refunds after April 1<sup>st</sup>, 2012**

Return the completed Registration Form and Payment to:

PDCA

1857 Wells Rd. Ste. 6

Orange Park, FL 32073

Registrations with Credit Card information may be faxed to the PDCA at

904-215-2977; or scanned and emailed to [lori@piledrivers.org](mailto:lori@piledrivers.org)

For travel and hotel information contact:

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 Blue Ribbon Travel / American Express  
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 Whitestone, NY, 11357  
 Tel: 718-767-5455 Fax: 718-767-5601

[lorraine@travelblueribbon.com](mailto:lorraine@travelblueribbon.com)

[www.travelblueribbon.com](http://www.travelblueribbon.com)



# Kahn Steel Co., Inc.

## 100 Years of Entrepreneurial Spirit

**K**ahn Steel Co., Inc. is a steel and pipe distribution business built on 100 years of entrepreneurial spirit. The company was founded in 1983 by Ted, Fred, and Norman Kahn after successful leadership careers at Brown Strauss Steel Co., a division of Azcon Corp. Their headquarters and warehouse are located in Kansas City, Missouri. They also have satellite offices in Steamboat Springs, CO and Chicago, IL, as well as representation throughout North America. They have distribution centers in California, Texas, Illinois, and Oregon, as well as ongoing operations coast to coast.

Kahn Steel's core business is wholesale distribution. Their steel products include pipe, tube, plates, bars, sheets, coils, structurals, H-piles, and metal culverts. Through an extensive network of customers, suppliers, and partners, Kahn Steel distributes a full line of steel products into a variety of industries. As steel pipe is a point of focus at Kahn Steel, they are currently participating in a sizable piling project in the Northeast, as well as other smaller micropile jobs throughout the United States.

Kahn Steel is also heavily involved in the distribution of mill plate and coil products throughout the country. A large percentage of their plate and coil products are converted into pipe products and piling sizes. They have customers that roll form pipe, as well as customers that manufacture spiral weld pipe. In addition, they have plates and coils converted into pipe for Kahn Steel specific to job requirements, or for resale.

In addition to their distribution business, Kahn Steel has multiple facilities engaged in manufacturing. Kahn Steel has an ERW pipe mill located in Kansas City, MO. The mill produces pipe sizes from 1.66 OD through 6.625 OD. They also manufacture square and rectangle tubing. Kahn Steel manufactures pipe and tube to ASTM specifications, as well as for structural applications. Primary industries served are construction, agriculture, energy, and fabrication. Kahn Steel also produces pipe from coast to coast. They also have agreements with other producers to market numerous pipe and related products. In addition, they serve the farm and ranch community by providing very competitive pricing on guardrail, and fence pipe & tubing.

Another manufacturing division of the Kahn Companies is Kahn Culvert, Inc. This operation manufactures corrugated galvanized culvert pipe. At their custom metal fabrication plant in Paola, Kansas they also make Vent Pipe. After they have produced the corrugated metal culvert on their pipe mill, they perforate the pipe in engineered patterns with various size holes depending on the customer's requirements. The perforated pipe is then sold to the large farming operations involved in products such as potatoes, beets, etc. The farmer blows forced air through the pipe to ventilate their crops in order to keep them fresh after the harvest. Please inquire with Dave Robison at 800-817-1599.

Continued on page 51



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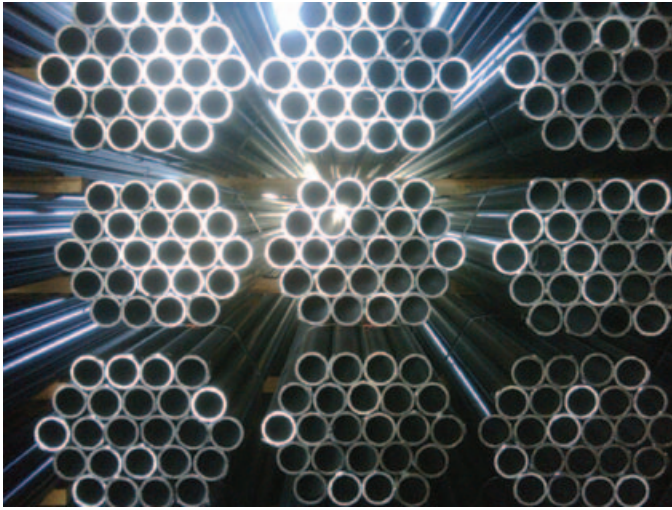
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They are active members of several associations including National Association of Steel Pipe Distributors, Metal Service Centers Institute, and National Corrugated Steel Pipe Association. Kahn Steel looks forward to becoming involved with the Pile Driving Contractors Association and exploring all of the opportunities available with membership.

Kahn Steel believes the foundation of their success is based on developing long-term relationships with their employees, customers, partner companies, and our vendors. Their team applies their core values. On a regular basis these values are reviewed to ensure that they are meeting the ever-changing needs of their constituents. Some of the key core values are:

- Our people are our most valuable asset. We value individual and team achievements
- We are committed to supporting personal growth and educational development
- We take great pride in exceeding customer and vendor expectations
- We are proud of our ability to meet varied and constantly changing markets
- We are financially solid and responsible

For additional information, please visit their website at [www.kahnsteel.com](http://www.kahnsteel.com). ▼

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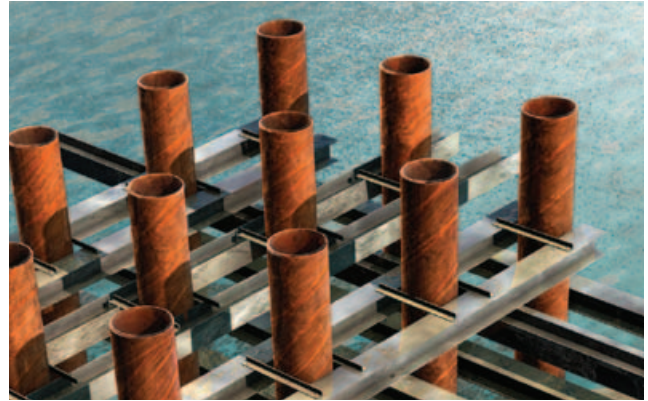
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HP 16 and 18 pile sections used in the construction of the westbound bridge structure of I-90.

# Cleveland's Innerbelt Bridge Project

## Cleveland, Ohio

By Ben White, P.E. – GRL Engineers, Inc. & Joel Halterman, P.M. – Walsh Construction

The Innerbelt Bridge is a vital link into downtown Cleveland from the western suburbs. However, the steel members of the existing 50 year old structure are aging faster than expected. In the spring of 2009, The Ohio Department of Transportation (ODOT) announced plans to construct a new westbound Innerbelt bridge. Construction of the westbound bridge structure of I-90, called the central viaduct, is ODOT's first Value-Based Design Build Project. The Value-Based process scored teams technical proposals along with price to determine the best value. The Design-Build Team of Walsh Construction (Contractor), HNTB (Designer), and HDR (Independent Quality Firm) was selected and in August of 2010, a \$287 million dollar contract was awarded to Walsh Construction. The project is the first of seven in a program totaling over \$1 billion dollars to reconstruct I-90 through downtown Cleveland.



Rendering of the completed Innerbelt Bridge in downtown Cleveland.

When it came time for foundation design choices, one of the obstacles included the need to support very high vertical and lateral loads, especially in the center 5 piers, where the superstructure extended approximately 120 ft above existing grade. Additionally, bedrock was 150 ft or more below existing grade. Drilled shaft foundations were considered, but were determined to be a very expensive option as ODOT requires that drilled shafts be socketed into bedrock. Driven piles were chosen as the solution

for nearly all of the substructures. Dozens of wave equation analyses were performed by GRL Engineers, Inc. to evaluate the driveability of a wide range of pile sizes and types. Ultimately, material cost drove the decision on pile type and size. Due to the depth of the bedrock, it was determined that minimizing the number of piles and maximizing the factored load on each was the most cost effective solution.

In late 2010, Skyline Steel began distributing HP 16 and 18 pile sections, the largest being HP 18x204.



A construction worker welding the piles.

The choice to use this large section allowed for very high factored loads. In addition, the piles were fabricated using ASTM A572 Grade 60 steel, which allowed for even higher factored loads. However, with increased factored loads comes the need for larger installation equipment, i.e., the pile driving hammer and crane. To address this issue, GRL Engineers, Inc. proposed to drive the piles to refusal on bedrock with a relatively undersized hammer and perform a load test using GRL's APPLE dynamic load testing system. Dynamic testing during driving with the production pile driving hammer would provide a mobilized pile capacity, not the full geotechnical resistance. The APPLE dynamic load testing system could perform a load test to the full geotechnical resistance.

Driveability analysis indicated that the Pileco D80-23 diesel hammer proposed by Walsh Construction could drive the piles to bedrock; however, the predicted mobilized capacity at refusal was roughly 1500 kips, which was well below the required capacities. The factored loads for the main piers ranged from 1,183 to 1,917 kips. In this case, the required ultimate capacities were 1.5 times the factored design loads, as established by ODOT, or 1,775 to 2,875 kips. The APPLE load testing system would be used to prove the required capacities.

The APPLE dynamic load testing system is an 80 kip ram inside a guide frame that allows for variable drop heights up to approximately 10 ft. Wave equation analysis indicated that the APPLE could mobilize approximately 3,000 kips or more while maintaining compressive stresses below AASHTO



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The APPLE dynamic load testing system is an 80 kip ram inside a guide frame that allows for variable drop heights up to approximately 10 ft.

approximately 1,450 to 1,900 kips. Testing with the APPLE dynamic load testing system has been performed on the same day as initial driving and up to 15 days after initial driving. The results indicated mobilized capacities ranging from approximately 2,050 to 2,850 kips. On average, the total mobilized capacity increased by approximately 900 kips when using the APPLE dynamic load testing system. At six of the seven locations, the required capacity was proven using the APPLE system. At one location, the capacity was slightly less than the required capacity, and piles were added to the footing to compensate for the lower capacity piles. In all cases, pile acceptance was based on dynamic testing results during initial driving and results from testing with the APPLE dynamic load testing system.

The ability for engineers to use very high factored loads on the large H-pile sections and minimize the number of piles provided significant cost savings and schedule advantages when compared to traditional sized H-piles. But the cost savings wouldn't have been realized if very large equipment had to be used to install the piles. The use of the APPLE load testing system to load test the piles allowed for use of smaller installation equipment while still providing the high capacities that the design required. ▼



In all cases, pile acceptance was based on dynamic testing results during initial driving and results from testing with the APPLE dynamic load testing system.

recommended driving stress limit of 54 ksi.

To date, this proposed system of driving to refusal on bedrock with the production pile driving hammer and performing a load test with the APPLE dynamic load testing system has been performed at seven pier locations. The mobilized capacities from PDA testing at the end of initial driving with the Pileco D80-23 hammer ranged from



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Begin driving sidewalk pile, S sidewalk, E end of pool.

# Lincoln Memorial Reflecting Pool Grounds Rehabilitation

*Lincoln Memorial gets a facelift: Mid-size construction company tackles huge historic job*

By Heather Hudson

**Y**ou can forgive the crew members of the Lincoln Memorial Reflecting Pool Grounds Rehabilitation Project if they sometimes get the feeling they're being watched.

Aside from the millions of tourists who flock to the hallowed ground they're restoring in Washington, DC, they've also been under the watchful eyes of the infamous 19-foot marble sculpture of Abraham Lincoln himself.

When the \$30.7 million facelift is complete in April 2012, after 18 months of exhaustive work, it promises to rise up to meet the American legend it was built to honor back in 1922.

Corman Construction, one of the mid-Atlantic region's largest heavy construction contractors, has taken on the massive job. Despite working on projects like the 2,300-foot Woodrow Wilson Bridge in Virginia and an 11-bridge I-95/I-694 interchange, even they have never taken on a project of this magnitude.

With just under 600 employees, Corman Construction survived the recession of the last several years by teaming up

**“They were putting an excess of 200 million gallons of water into the pool every year just to keep water in it.”**

– Corman Construction Project Engineer Tom Mulcahy

with other contractors. Project Engineer Tom Mulcahy says they're now getting back into smaller jobs and more utility and pipe work. The reflecting pool restoration was considered a good opportunity to strike out on their own in a more meaningful way while sub-contracting some of the components.

Photos courtesy of Corman Construction

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From left: Conditions in 2W, looking W; Crane Mat in 1E with Pile Cut-off Stabilizer; PM-16 driving in 1E.

### How it all began

One can imagine the grandeur that architects had in mind when installing the almost 2,500-foot long reflecting pool that mirrors both the Washington Monument and the Lincoln Memorial. Lined by walking paths and giant elm trees on both sides, it plays host to more than 24 million visitors each year.

But time has not been kind to the pool or its surroundings. The asphaltic roofing material originally used to line the pool and cover the soft soil underneath made for a leaky and uneven bottom. The concrete slab poured on top to remedy the problem in the 1970s has settled, cracked and leaks.

“They were putting an excess of 200 million gallons of water into the pool every year just to keep water in it,” said Corman Construction Project Engineer Tom Mulcahy.

“Water was seeping into the ground and concrete slabs around it... the pool was pulling away from its edge and there were large gaps in places where water was leaking into the ground.”

The National Park Service has also asked for a small water treatment building to be erected nearby, which will put ozone into the water to treat and allow recirculation. Other parts of the restoration include adding new security bollards and changing some of the sidewalks by the Lincoln Memorial to offer a larger secured area and create more capacity for crowds.

**“On good days, we were able to get 80 to 90 piles driven in an eight-hour shift with one of those rigs and we used them for a total of 35 days across three months.”**

– Corman Construction Project Engineer Tom Mulcahy

### Getting to work

Mulcahy says the project has required a complicated choreography of crews working on different facets of the enormous job. At its peak, there were roughly 60 workers on site each day from Corman Construction alone, plus other subcontractors completing other tasks.

By far one of the biggest and most challenging aspects of the job has been driving the more than 2,300 piles into a soft ground.

“We used southern pine timber piles because it’s a marine-like environment considering the brackish soil with salt water coming in from the tidal basin,” said Mulcahy.

“We’re on very soft soil with bedrock 50 feet down. When



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From left: CAT 330 feeding Pm-20 Crane Mats; CAT 330 feeding Pm-20 Crane Mats; and pool conditions in 3W.

we would put a pile in the ground, the weight of the hammer would drive it down 20 or 25 feet because the soil is so soft. You had to be very careful because it's easy to drive these piles right to bedrock and you wouldn't know till you hit it and broke the pile."

Despite the care they took, about 5 percent of the piles were snapped off. Crews remedied the situation by driving one on either side of it.

Two Junttan PM 23LC pile driving rigs performed the bulk of the piles with a kind of efficiency Mulcahy hadn't seen before. "These rigs were almost like an excavator on tracks with pile driving attachments to them. They were all hydraulically operated with leads that were hooked onto them so

everything was all in one piece."

Using claws, the Junttan picked up the pile itself, lined it up and then used the attached hammer to drive the pile down.

"On good days, we were able to get 80 to 90 piles driven in an eight-hour shift with one of those rigs and we used them for a total of 35 days across three months."

Another feature that helped increase efficiency was the real-time data the rigs displayed every time a hammer hit a pile, offering a window into how much capacity an individual pile had.

Though driving the pile went swiftly, it was the prep work that had crews scrambling. "We had steel pile shoes to fit on the bottom end of the pile to protect it from cracking if the



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Pile in pool, W end looking E.

**“When you’re into this kind of capacity it’s a major job to get 100 piles ready every day and get ahead of these guys.”**

– Corman Construction Project Engineer Tom Mulcahy

pile hit rock on the way down, but we had to shave the pile down to get that boot on there. And the top end had to be shaved down to fit it into the driving cap on the pile driving rig. With 2,130 piles in the pool, that’s a lot of prep work.

“When you’re into this kind of capacity it’s a major job to get 100 piles ready every day and get ahead of these guys. It took pretty much a crew and a half just to do prep of piles every day – two or three with chainsaw and the rest marking the piles where they needed to be shaved down.”

Mulcahy is satisfied with the relatively smooth running of the project, but if there was one thing he’d do differently, it would be to order larger pile shoes that would eliminate the need to shave the piles and cut down on the prep work.

“The Junttan machines were perfect; we made the exact right decision to use them. It was just the little things like the pile shoes that we’ll tweak in the future.”

A mechanically-minded man himself, Lincoln would surely approve of the systematic approach to rehabilitating the place he calls home. ▼

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# Boston-Logan International Airport Runway 33L

## A design build project by J. F. White Contracting Co.

By Judy Penz Sheluk

Serving as a gateway to the New England region, Boston Logan International Airport offers nonstop service to 72 domestic and 29 international destinations, generating \$7 billion in total economic impact each year. In 2010, Logan handled 27.4 million passengers. The air traffic is managed through six runways, varying in length from 2,557 feet to 10,081 feet. Runways are aligned in three directions, with runway ends pointing toward six distinct compass headings.

### Runway 33L

Operating flexibility is especially important given Logan's coastal location and highly variable wind conditions. And when those winds shift to the northwest, the prevailing wind during Boston's winter months, the runway configuration of 33L/15R as one of three available options.

Unfortunately, Runway 33L's Runway Safety Allowance (RSA) — a safety surface designed to reduce the risk of damage to an aircraft in the event of an undershoot, overshoot, or exit from the runway— no longer met with Federal Aviation Administration (FAA) minimum standards. In 2006, Massachusetts Port Authority (Massport), owner/operators of Boston-Logan International Airport, implemented interim measures until approval and funding could be obtained to extend the safety area.



Photos courtesy of JF White Contracting Co.

Top: The first month into the Logan 33L Runway extension project. Above: A partially completed pier.

“This is a critical public safety project for Boston-Logan,” said Massport Director of Aviation Edward C. Freni. “The airport has been operating with an interim, Engineered Material Arresting System (EMAS) arresting system (a technology designed to safely stop a jumbo jet entering the RSA at 70 knots). Once completed, Runway 33L's RSA will be extended from 187.5 feet to a total of 600 feet and include a pier built



ICE's IP-1514 with off shore bonnet driving 18"sq PCPS piles. These hammers were built new for this job, in Korea, and shipped to JFW on time for the start of the Logan project.

on piles. The enhanced RSA will extend the existing EMAS bed to a total of 500 feet." The total cost of RSA construction will be approximately \$65 million.

**The Winning Bid**

On September 16, 2010, Contract L166-C2 was put out for tender by the Massport. The scope of work included "the design and construction of improvements to the Runway Safety Area (RSA) at the Runway 33L end at Boston-Logan International Airport." Pre-qualifications for the design/build project were due by October 8, 2010. Boston based J. F. White Contracting Co., in collaboration with the Boston office of Jacobs Engineering Group, went into action.

"The pre-qualification process was based on a points system. J. F. White had worked with Jacobs on many large projects before, and so selecting them as our design build partner just made sense," said Jim Beach, Division Manager, Deep Foundation Systems.

In the end, there were three qualified bidders. "We were not the lowest bidder," admitted Beach, "but J. F. White's expertise in all manner of earth support, underpinning and deep foundation work certainly factored in. Support of excavation (SOE) is an essential element of the success of underground structures in the Boston area, and requires first-hand knowledge of the characteristics of local soils and marine clays. We also have significant design/build experience. In the end,



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Crews are preparing to set a four pile two stage template on one of the 96 pile bents for this pier. Note the safety precautions of the life vest. All crew members are required to wear the life vest while on the water. Off the water, they wear a bright green reflective vest.

we awarded the job based on points.”

Once the project was awarded, it was time to develop a strategic plan which would satisfy a myriad of terms and conditions.

“We spent four months putting it all together,” said Beach. “There were a lot

of things to consider.”

Timing was one of the primary considerations. The RSA project would have to be completed in two construction seasons, beginning with a complete runway closure starting from July 1, 2011 to September 30, 2011, and ending with



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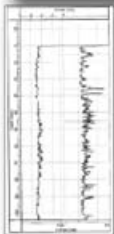
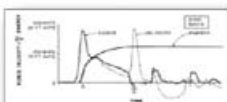


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September 2011: Aerial view of two Manitowoc 999's driving 18 square piles on the three line, one Manitowoc 2250 driving piles on the water, and the fourth Manitowoc 999 unloading barges.



All cranes and barges have to be moved off or away from the deck nightly.

daily closures in October and November. "Come October 1, we had to remove all of our cranes from the pier every night, and return every day," said Beach. "By November 20, we had to be completely cleared out to allow for the winter months, when Runway 33L is most needed due to the prevailing winter winds." A similar round of closures will take place during the 2012 construction season.

The project would also affect more than an acre of eelgrass, which provides a critical habitat for marine life. Although much of the eelgrass would be transplanted to other parts of Boston Harbor before construction began, the project required the use of an environmental silt barrier, similar to a hay bale at a construction site, to contain and control the dispersion of turbidity.

Finally, there was the noise factor for area workers and residents. Massport demanded the least amount of noise and disruption possible. "We agreed that most materials would be delivered by barge, and construction work hours were restricted to 7 a.m. to 7 p.m., Monday through Friday and 9 a.m. to 5 p.m. on Saturday's, with limited Sunday hours," said Beach, "but the largest potential noise source we had was the pile hammers. We had to evaluate the entire pile driving process, to pick a variable output hammer that would give us the capacity we required and the low noise level we had committed to."

J. F. White selected three ICE IP-1514 Hydraulic Hammers, which are typically found in offshore drilling or construction. "What is unique about the ICE IP-1514 is the hammers deliver up to 152 foot-kips of energy, but are very quiet—less than 94 decibels at fifty feet. When we couldn't hear the hammers on the far shores, we knew we'd met the challenge with a huge success."

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When completed, the project will include 354 18-inch square precast prestressed (PCPS) concrete piles, manufactured by Coastal Precast Systems. The piles, which range in length from 120 to 180 feet long, are driven to a 230 ton capacity using the ICE IP-1514 hydraulic impact hammer. Each pile has one splice. The hammers are equipped with an offshore bonnet to maintain alignment on the pile without leads. All bottoms have a two foot long HP14x117 steel pile section welded to

the 1.5-inch thick boot plate (stinger) to help with alignment and breaking up the rock at the bearing layer.

"It's worked out very well for us," said Beach. "Of the 262 piles driven in 2011, only two were broken at the bearing layer. The piles were tested to a safety factor of 2.25 or 1050 kip with a Pile Driving Analyzer (PDA) by GZA of Norwood, Mass."

Three cranes handled the multiple operations to build the




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Completed bents used for support of the 30' by 320' long temporary trestle.



pier, templates, pile driving, setting the pile caps and installing the NEXT beams. The fourth crane was used for material handling and unloading barges.

“Our intense schedules were further complicated by incoming and outgoing tides,” said Beach. “The tides here run 10 feet between highs and lows. And you can never entirely predict New England weather. In 2011, we even had to contend with Tropical Storm Irene.” ▼



Four Manitowoc's setting up to start another row at Logan.



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# Louisiana Scrap Metal Recycling Facility Open Cell Sheet Pile® Bulkhead Project

By Tri Le, Boh Bros Construction Co., LLC, New Orleans, LA USA

Todd Nottingham, PND Engineers, Inc., Seattle, Washington USA

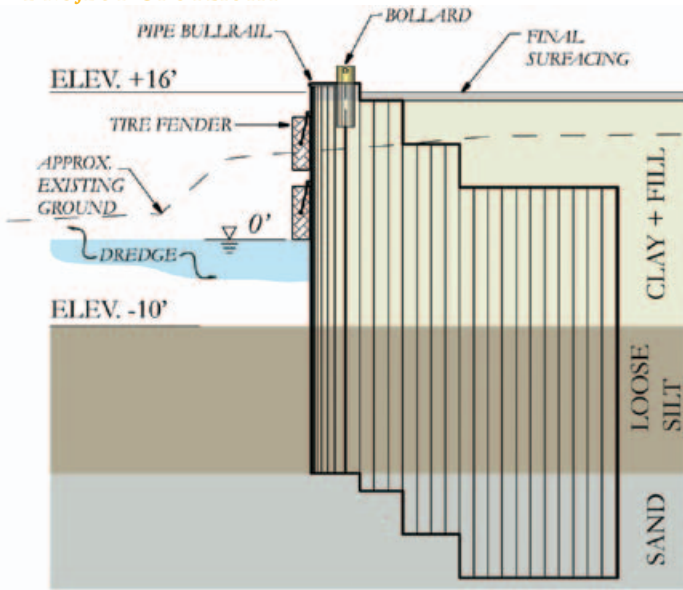
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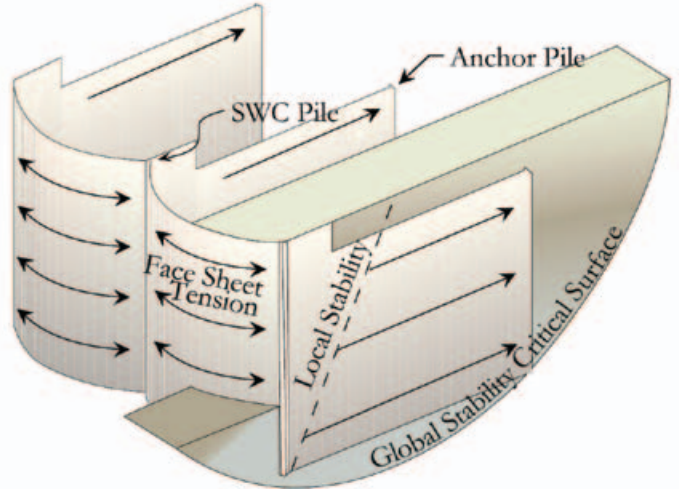
## Design

In 2011, Louisiana Scrap Metal Recycling (LA Scrap) began construction of a new 12-acre yard in Port Allen, Louisiana, an ideal site selected due to its proximity of the Intracoastal Waterway (Port Allen Canal) which will allow the owner to easily and efficiently transport scrap metal from their yard to other remote sites. LA Scrap will use this location, their second, to process and ship scrap metal of various metal producers around the region. The construction team consisted of The Lemoine Company (general contractors) and Boh Bros. (bulkhead construction), while the design team consisted of Pyburn and Odom (waterfront design) and PND Engineers (bulkhead design).

**PROJECT SPOTLIGHT**



LA Scrap OPEN CELL structure cross section showing soil profile, dredge areas, and relative elevations.



3-D model of global stability on the LA Scrap bulkhead.

Site conditions were fairly typical for Louisiana, with soft clays prevalent across the area. Water fluctuations along the Port Allen Canal varied substantially due to the close proximity of the Mississippi River requiring the yard area and bulkhead to be constructed at an elevation of approximately +16 feet. The canal depth of -10 feet required a total bulkhead height of 26 feet.

Operational requirements for the scrap yard required a 500-ton crane to operate on the bulkhead along with adjacent stockpiling of scrap metal of up to 500 psf. Due to size and reach, crane operations were required to transit within five feet of the bulkhead face.

*(Continued on page 78)*

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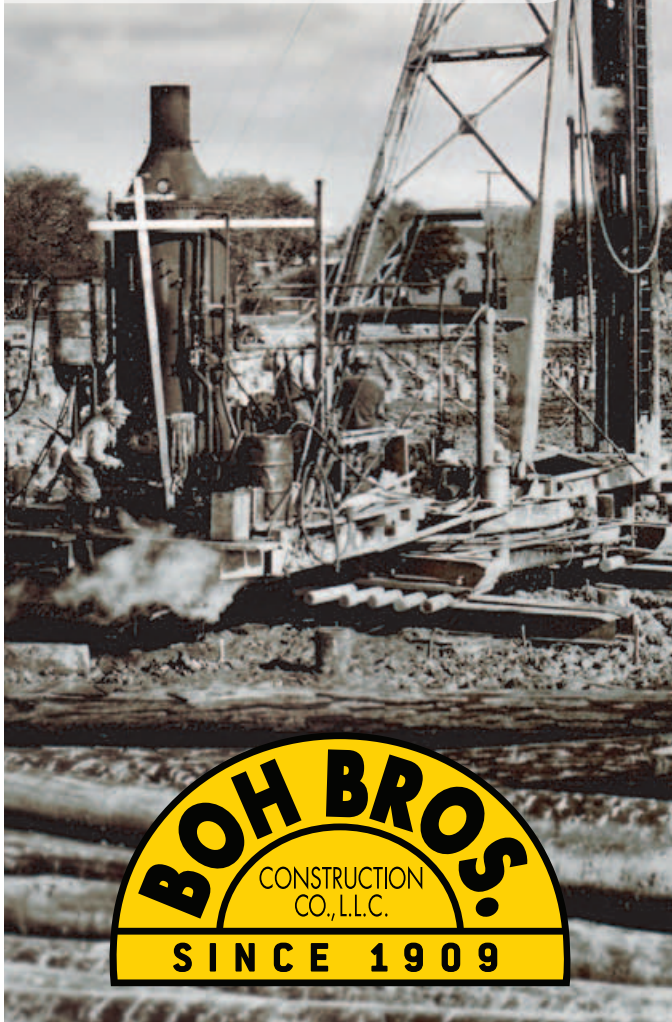
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Photos courtesy of Tri Le, Todd Nottingham and Ernie Koehler

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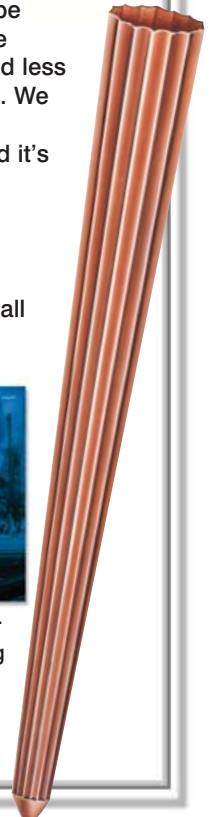
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# Driveability and Dynamic Capacity Estimation for Vibratory Driven Piles

By Frank Rausche, Pile Dynamics, Inc., Cleveland, OH, USA; frausche@pile.com

Vibratory pile driving often pushes piles in the ground with surprising ease, apparently defeating our traditional methods of soil resistance assessment. Under favorable conditions driving with a vibro hammer is indeed a highly economical pile installation solution posing the question, why this technology did not replace impact pile driving to a much greater degree? Certainly one reason is that the dynamic analysis methods for vibratory pile driving have had little research or application.

The dynamic analyses should answer two questions: (a) prior to pile driving, what equipment will be required to drive the pile to a certain depth (this is the driveability question) and (b) once the pile is installed, what is the pile's bearing capacity.

For many jobs, for example for most sheet pile installations, the second question is immaterial, because there is no bearing requirement. Also in that case the driving resistance is often minimal and simple formulas or previous local experience based on pile size may be sufficient to estimate the required hammer size. Hammer manufacturers can provide the contractor such experience based recommendations. However, actually quantifying the rate of pile penetration is much more difficult and requires three things: a valid numerical analysis, experience based input parameters for the soil, and some luck.

Determining the bearing capacity of the vibro installed pile based on static formulas or dynamic measurements is even more complex. While impact driving often temporarily modifies the soil strength surrounding the pile, a restrike test generally provides reliable information about the long term (LT) soil resistance. A vibratory restrike test moves both pile and soil right from the beginning thereby changing the soil conditions and therefore is not a helpful test.

In four issues of the 2005 *PileDriver* magazine, Kenneth Viking, who in 2003 had completed a doctoral thesis on this subject at the Royal Institute of Technology in Stockholm, Sweden, pointed out some of the complexities of vibratory theory and practice. For the reader, interested in background infor-

mation on this subject, reading these four articles of referenced material will be very helpful; the present article will not present in-depth background information.

Background information, unfortunately, does not help with estimating installation performance and capacity assessment. Often something has to be immediately done and with rather rudimentary soil information. Fortunately, the wave equation program, GRLWEAP, includes a quick vibratory driveability analysis capability. The program not only provides a large hammer data base, but also a comprehensive set of soil parameter recommendations. Obviously, such recommendations cannot compete with and do not replace actual experience from local case studies. On the other hand such a wave equation analysis should be a good starting value, which can be modified and reanalyzed after a first set of measurements has been acquired.

## Driveability by wave equation analysis

A driveability analysis basically involves the following steps:

1. Obtain pile information including: type or profile, length and required depth;
2. Obtain soil profile including strength information (e.g., SPT or CPT or friction angle and undrained shear strength), hammer model to be analyzed, clamp weight.
3. Decide on pile perimeter (for shaft resistance calculations) and toe area (for end bearing calculations). For sheet piles this is relatively easily estimated. For open ended pipe piles the assumption of some internal friction may be reasonable; for H-piles the complete contact area rather than the "box" may be chosen. These assumptions imply that the pile will core (not plug) during vibratory driving and therefore require that the steel cross sectional area is used as the toe area for toe resistance. Plugging may, however, be a possibility in hard or very dense soils.

(Continued on page 83)

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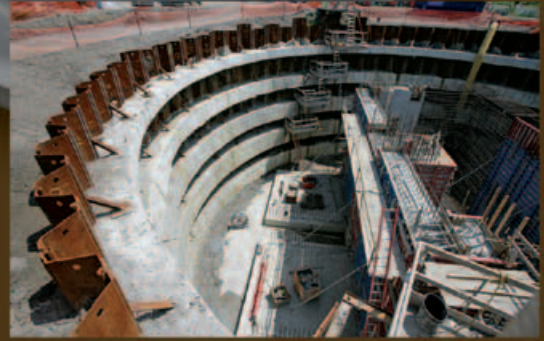
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4. Perform static soil analysis yielding the long term (LT) friction and end bearing as a function of depth. The GRLWEAP code offers three (four in the Offshore Wave version) different helpful static analysis routines.
5. Choose hammer model (hammer efficiency is usually set to 1) and input clamp weight. If a crowd force can be applied (this seems to be a very effective means for driving the piles faster) then that should be input as a negative line force; if instead the crane maintains some tension (maybe for stability) on the hammer then that force should be entered as a positive line force.
6. Select soil damping and quake (GRLWEAP's HELP suggests different values for vibratory driving than parameters selected for impact driven piles);
7. Select factors relating the Static Resistance to Driving (SRD) to LT (GRLWEAP's Help makes some suggestions). This step requires estimating how much resistance is lost due to the soil vibration. For submerged sands the losses may be as high as

90% while clays may not lose any resistance at all (note this assumption is exactly opposite to those made normally for impact driving.) This is the most important step and unfortunately the one fraught with the greatest uncertainty.

8. Run the program with these input values and plot the calculated penetration speed, calculated SRD and pile stresses as a function of pile penetration (see Figure 1 for an example of the input screen and the driveability result).
9. Run alternative sets of soil resistance parameters to develop a "feel" for the sensitivity of the solution. In other words, run both upper and lower bound solutions.

Obviously, this analysis process involves many estimates and assumptions but anecdotal evidence suggests that at least in granular soils the wave equation results are conservative, i.e., the piles are actually driving easier than anticipated.

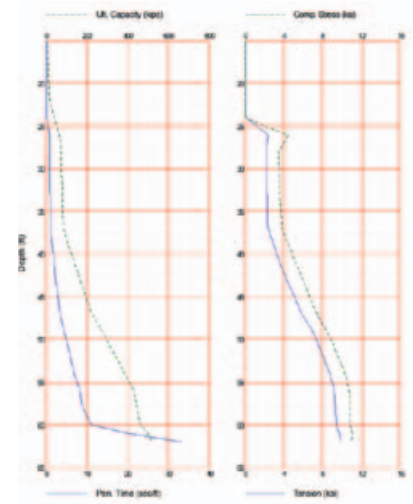


Figure 2: Capacity, Penetration speed, Compressive and Tensile Stress Maxima, all vs. depth.

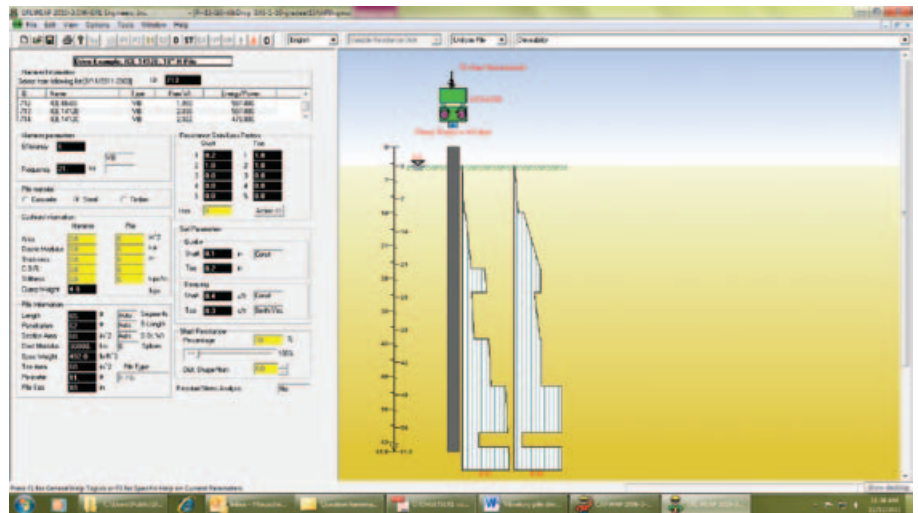
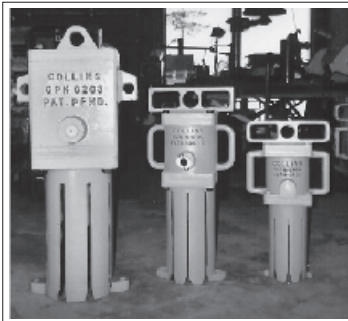


Figure 1: GRLWEAP Input Screen

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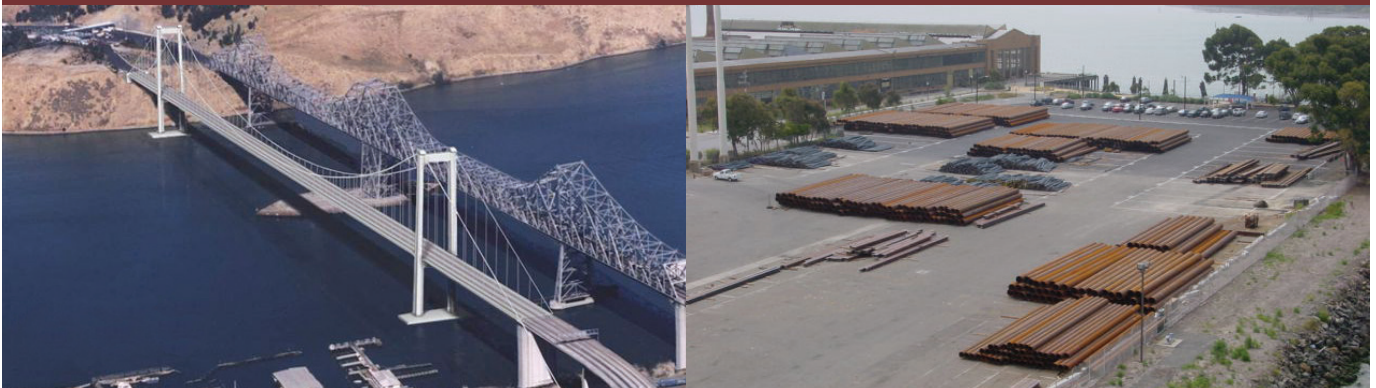
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### Bearing Capacity from Wave Equation

While dynamic or static load testing is better, the wave equation analysis is sometimes used to determine bearing capacity of impact driven piles. This process involves calculating a bearing graph (relationship between bearing capacity and driving resistance) and then using the blow count (e.g., blows/ft) observed during pile driving to estimate the associated ultimate pile bearing capacity. An equivalent procedure could be followed for vibratory driven piles where blow count would be replaced by driving resistance in seconds per unit penetration (e.g., s/ft); capacity should be replaced by SRD. Unfortunately, there is no evidence that this process has ever been successfully used as a capacity verification method.

### Dynamic Measurements

Using the Pile Driving Analyzer® (PDA), dynamic force and acceleration measurements taken on impact driven piles during installation have become routine during the past 40 years. These two quantities are rarely measured during vibratory pile driving even though engineers and contractors frequently ask how the PDA can help with construction control. Indeed PDA measurements can be as easily taken during vibratory driving as during impact driving. Sensors would be attached near the pile top with sufficient distance from the clamp to avoid non-uniform stresses (Figure 3). In addition, it is suggested that the penetration speed is independently recorded, for example by video camera.

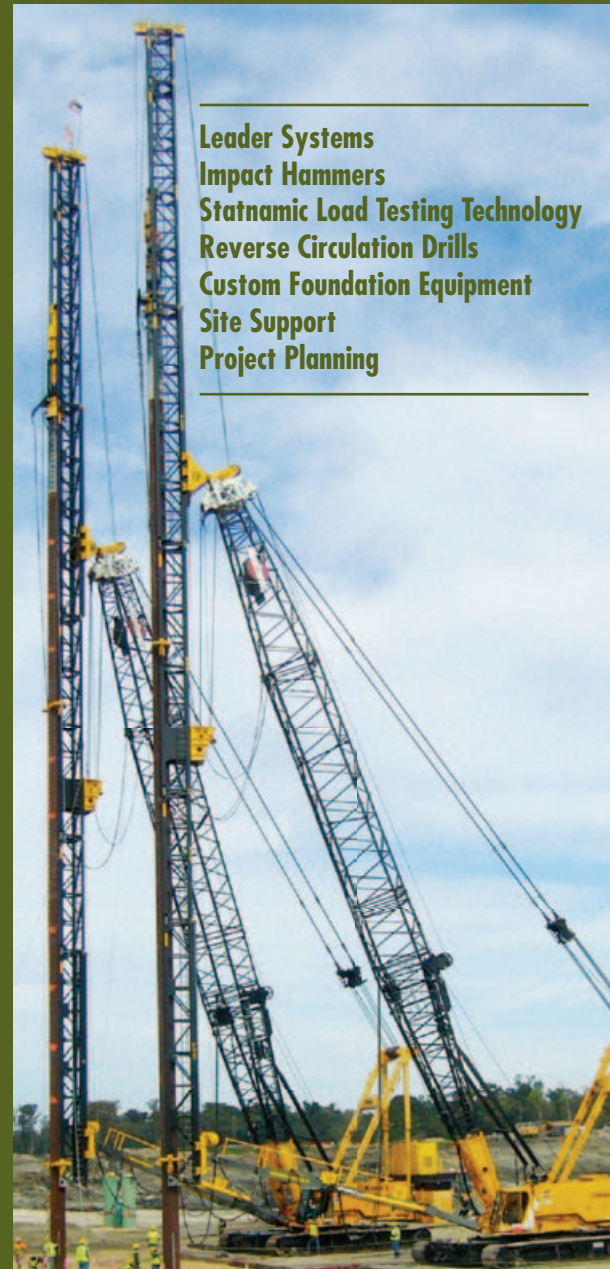
The analysis of vibratory driving data is different from the Case Method analysis of impact data. Pile Dynamics has prepared software which provides the following results:

- Frequency of vibration, because measurements show it is not always the expected value;
- Maximum force which is a function of the relative masses of hammer and pile and the SRD. It can and should be compared to both centrifugal force and the wave equation calculated force to assess the hammer performance;
- Maximum tension and compressive stresses at the gage location; although generally low compared to the strength of the pile material, these values are important for the assessment of fatigue damage and clamping stresses;
- Peak velocity;
- Peak displacement per cycle;
- Power transfer - both peak value during a cycle and average over several cycles;
- Soil resistance to driving according to Case Method (both rigid pile and elastic pile assumptions) and power formula based.

The soil resistance calculation needs an explanation. First of all, it is obvious that only the resistance to driving (SRD) and not an ultimate capacity can be calculated. Developing a relationship between SRD and capacity for various soil types requires additional studies. Secondly, the SRD can be calculated based on a variety of closed form solutions among them a power formula, a simple rigid body formula, or the standard Case Method for impact driven piles. Initial correlations show that damping considerations would unnecessarily complicate the Case Method resistance calculations while do little to improve the

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accuracy of this simplified approach... Also, the power method, which is analogous to an energy formula for impact driven piles, seems to give reasonable results, however, it requires that both the power and the vibration amplitude be measured with the PDA.

**Example**

The following example compares various results obtained from GRLWEAP and PDA testing. The project was the I-90 Innerbelt Bridge in Cleveland, Ohio. Walsh Construction Company installed large H-piles to more than 120 ft depth into shale using diesel impact hammers. However, the first 65 ft section of the HP 18x204 was installed by an ICE model 66-80 with 26.7 Hz (1600 rpm) rated frequency and 6,600 lb-inch (749 N-m) eccentric moment which corresponds to a rated centrifugal force of 483 kips (2,150 kN). A generalized soil profile, including SPT N-values and unconfined compressive strength values in tons per square foot is shown in Figure 4.

Measurements taken with the PDA, i.e. force and velocity (integrated from acceleration), for 60 ft penetration are shown in Figure 5, along with the Case Method calculated soil resistance, shown for a time period of approximately half a second. Results pertaining to hammer performance, i.e., actual frequency, pile top force and power transfer are shown in Table 1 together with calculated values for the centrifugal force based on rated and actual frequency and the pile top force range (depending on assumed resistance) from GRLWEAP. The peak power value and the average power, transferred over the analyzed time period, are shown. According to the hammer manufacturer, the required power output of the hydraulic power pack should be almost 600 kW. As such, the peak power transfer was somewhat higher (783 kW) while the sustained value (254 kW) was well below that limit.

Table 2 summarizes a variety of soil resistance and penetration speed (the inverse of the driving resistance) results all pertaining to a pile tip penetration of 60 ft (e.g. depth at the end of the vibratory installation). At that point the observed penetration speed was only 0.29 inches per second. Also for that depth, the N-value based GRLWEAP method calculated a long term soil resistance between 222 (assuming a 6 ft box perimeter) and 387 kips (11 ft complete perimeter). In either case the pile was assumed to core and therefore experience end bearing only against the steel. According to the GRLWEAP recommendations, SRD for vibratory driving should use 20% of the long term shaft resistance in sand and 100% in clay. This leads to an SRD range of 187 to 340 kips for the mixed soil type profile. The SRD values from the dynamic methods from elastic Case Method and measured power formula are 128 and 409 kips, respectively, with the rigid body result between those two values. Obviously this is a wide range and it favors the power approach as the more accurate approach in this particular case.

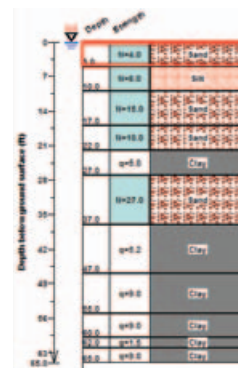
After the bottom section had been installed by the vibratory hammer to 60 ft, the pile was spliced and then impact driven with a diesel hammer; waiting time were typically more than one day. A neighboring pile was then PDA tested and the 2nd and 3rd blows were analyzed by CAPWAP resulting in 400 and 360 kips capacities, respectively. These values probably include some soil setup resistance although continued driving did not reveal a further distinct loss of resistance. While the CAPWAP



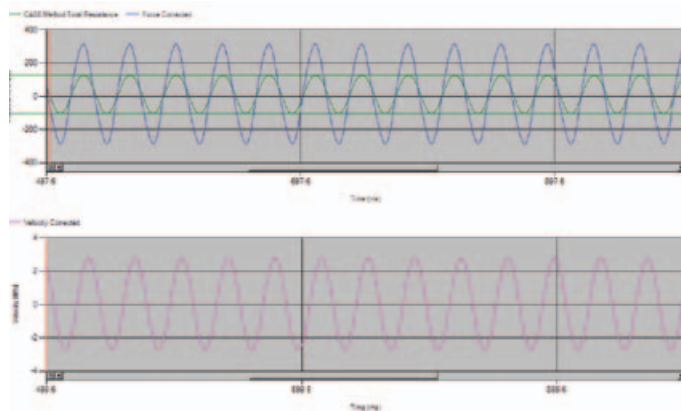
**Figure 3:** PDA instrumentation on an HP 18x204 and GRL Engineers' Dr. Brent Robinson (left) and Eric Bogen video recording while the PDA Model PAX processes the pile data.

results indicate values close to the upper ranges from static formulas and the power formula, a surprisingly high amount of end bearing (more than 65% of the total capacity) was also determined. It may be theorized that the pile plugged during restrike impact driving but not during vibratory driving (a plugged pile would most probably have refused under the vibratory hammer, however, the unplugged pile would have more shaft resistance).

The GRLWEAP penetration speed values, calculated assuming GRLWEAP recommendations for quake and damping, were much greater than the observed value. The analysis also suggested that the penetration speed calculation is rather sensitive to quake and damping assumptions. Also GRLWEAP would have indicated sudden refusal for not much higher SRD values.



**Figure 4: (left)** Example soil properties.




**Figure 5: (below)** Example record showing force and Case Method resistance (top) and velocity (bottom).

**TABLE 1:** Hammer and Pile Performance Results at 60'

Eccentric Moment	(ICE-66-80, rated)	inch-kips	6.62
Frequency	Rated	Hz	26.7
	Measured (Actual)	Hz	27.5
Force	Rated Centrifugal	kips	483
	Actual Centrifugal	kips	512
	Measured at sensor location	kips	337
	GRLWEAP at top	kips	286/479
Stress	Measured at sensor location	ksi	5.6
	GRLWEAP stress range	ksi	5.6/8.5
Power	Measured average-transferred	kW	254
	Measured peak-transferred	kW	783

**TABLE 2:** Capacity and Penetration Speeds at 60'

	Capacity	Pen.Speed
	kips	inch/s
Measured Penetration Speed		0.29
GRLWEAP (LT)	222/387	2.42/0.95
GRLWEAP (SRD)	187/340	3.2/1.4
CAPWAP (start of impact driving)	360/400	
SRD range from PDI-Vibro	128/409	




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More details on this project are found in the Project Spotlight article "Cleveland's Innerbelt Bridge Project" in this edition of PileDriver magazine.

### Recommendations

This review of available methods for pre-construction analysis and pile driving monitoring for vibratory driven piles is very limited, but it shows that both wave equation analysis and Case Method measurements can be employed for vibratory analysis and bearing capacity estimates which, at least in the example, are as good as static formulas.

While the results obtained are not unreasonable and maybe helpful in practice, more experience is needed. Only with experience will we get to the point where capacity and driveability assessments can be made with a higher confidence. The pile driving industry would certainly benefit greatly if the rather economical vibratory installation methods were more widely used and if the prediction of penetration speed and the determination of bearing capacity could be improved. For more precise driveability predictions, this would require pre-construction analyses, penetration speed measurement and PDA monitoring during driving. For soil resistance assessments, as is current practice, instrumented impact restrike testing and CAPWAP analysis must be conducted and the results compared with the SRD values from the end of vibratory installation. ▼



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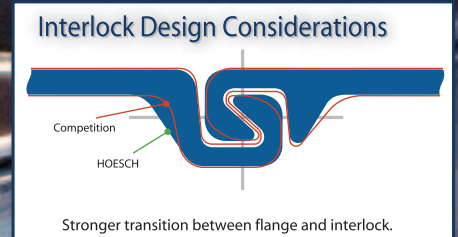


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- 574 piles to be driven in total
- Tubular steel piles, 1.32 (52 inch) meters in diameters, 16mm (0.63 inch) wall thickness, spirally welded, ST52 steel grade.
- 23 (75 ft) to 74 meters (243 ft) total length of each pile
- Ultimate capacity of the piles is 960 Tons (2117 klpf)
- Depth of water is at most 20 meters (66 ft).
- Weak soil is present in the upper layers followed by fractured rock at a depth between 16 (52.5 ft) to 74 meters (243 ft).
- Crane: Hitachi Sumitomo 300 Ton crane with a boom height up to 76 m long
- Vibrator: PVE 52M
- Impact hammer: Junttan HHK-20S (40 tons)

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The city of Beirut is located at the midpoint of three continents: Europe, Asia and Africa, positioning its seaport as a passage for ship fleets between East and West. Cargo discharged can be easily transported to Syria, Jordan and Iraq, via a network of highways. The port terminal is being expanded by means of land reclamation in the sea. The new terminal will contain 175,000 m<sup>2</sup> (43.2 acre) of new area, 3,408 numbers slots and 850,000 TEU annual output capacities. On the ships docking area is a new 500 m long quay wall, which is being built on top of tubular steel piles followed by a concrete deck.

The project presented the contractor various challenges due to the size and weight of the tubular piles and the distances between them. The contractor's engineers considered four (4) possible options to install the piles: a standard flat deck crane barge, a jack up barge, a much larger crane, and a movable steel platform fixed on top of the piles.

Two test piles were driven at the beginning of the project from a floating barge 30x70 m (98 x 230 ft) in size. The contractor was working in open water without protection from

*(Continued on page 93)*





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a breakwater and therefore waves will play a critical role in the ability to drive piles. During the test piles small waves produced a pendulum effect on the crane hook. The crane operator had difficulties keeping the toe of the 46 m (151 ft) pile steady to be placed in the pile-driving template. Once the pile was released, the hook swiggled violently and damaged the crane boom. Therefore a different solution had to be developed.

The contractor considered the use of a jack up, capable of lifting a total weight of 600 tons. The bottom of barge had to be clear of water level, to reduce the effect of waves. The disadvantages encountered were that the legs of the barge had to be long at approximately 30 meters (98 ft) each and the upper layers of soil are extremely weak and therefore a larger base for the legs was needed due to the effect of consolidated settlement of the clay layer and this effect would be amplified once the contractor uses the PVE 52M vibrator to drive the piles through the upper weak layers.

A larger crawler crane was considered with a maximum lifting weight of 600 Tons, This option was quickly ruled out. The crane could only be used in the first phase of the project

since the second phase would be inaccessible due to the elevated soil surcharge which would have to be built up and would remain until the end of the pile driving activity.

The last option considered was the construction of a crane platform supported on top of driven piles. The piling crew should be able to drive piles around the platform and subsequently lift part of the platform from behind the crane and place it in front and continue driving.

This article will detail the challenges encountered in designing and using a movable crane platform and will highlight the efficiency, time saving and cost saving to the contractor in adopting this method to drive the piles versus a barge or a jack up barge, which is usually the most common way.

The platform is constructed of 3 sections. The sections are connected to each other with bolts and to the top of piles with Dywidag tie bars. The platform has to be light enough to be lifted by the crane from behind and placed forward to the new row of piles, but at the same time the platform has to be strong enough to hold the weight of the crane, equipment, tubular piles and all lateral forces and vibrations induced by the work undertaken. The platform had to be supported on top of piles in deep water and therefore the lateral stability and acceptable structural vibration of the entire structure had to be closely analyzed using several finite elements software with various types of modeling and loading conditions. After the first few piles were installed from shore a lateral pull test was performed on several piles, the value from the weakest pile was used as criteria for the calculation.



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Once the piles were driven in the row, the back platform was jacked up, the pile top capes were repositioned, and subsequently the platform was lifted and re-positioned forward. The time from start to finish of the movement process was less than five hours.

Until now, the contractor has installed 60% of the piles and has flipped the platform 40 times. The platform proved to be a much more stable structure than expected, vibration and movement were noticeable to the personnel but not uncomfortable. The wave and wind effect were extremely minimal effectively placing the method of using the platform at an advantage over a barge or a jack up barge.

The crane was more efficient: it was able to work independently in the water without being subjected to the interference

of the other ongoing activities on the project, and therefore the contractor was able to install piles at a much faster pace than expected.

The platform is located on top of the center piles allowing the contractor to purchase a smaller size crane than previously planned. The crane was expected to reach only the pile located in the next row.

Finally, and as a consequence of the above, the cost to construct a crane platform positioned above piles in the middle of the water was dramatically lower than purchasing or leasing a barge, a jack-up barge or a larger crane, and using this method proved to be the best option for this type of project where waves and wind are a critical factor. ▼

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# A Trap for the UNWARY:

## Will a claim on a labor & material bond defeat a “pay if paid” clause in a contract?

By Jeff Blease & Bill J. Symes

A client, acting as the general contractor on a private project, is negotiating the terms of an owner-contractor agreement. The client uses subcontracts that contain a “pay if paid” clause which makes receipt of payment from the owner a condition precedent to any obligation to pay its subcontractors. The owner of the project now insists that the contractor post performance and labor and material bonds on the private project.<sup>1</sup> The client called to ask if posting performance and labor and material bonds for the project might defeat the “pay if paid” clause in the subcontracts and expose the contractor to claims by the subcontractors or the contractor’s surety for payment, even if the owner had not paid the contractor. The question raises sophisticated legal issues.

First, what is the distinction between a “pay if paid” and “pay when paid” clause? Second, when are “pay if paid” clauses in subcontracts enforceable, and in what states are “pay if paid” clauses prohibited? Third, how does the bond requirement change the analysis, if at all? Finally, what is the best way for a general contractor to limit its exposure to subcontractors if the owner does not pay, and conversely, what should a subcontractor look for in the contract documents to ensure that it is timely paid?

### 1. Distinction Between “Pay If Paid” And “Pay When Paid” Clauses

A “pay if paid” clause makes receipt of payment from the owner a condition precedent to any obligation for the contractor to pay its subcontractor. A “pay when paid” clause requires the contractor to pay the subcontractor within a reasonable time or a set number of days following receipt of payment from the owner. If the contract does not provide for a set number of days, courts will often impose a reasonable time for payment. Generally, a “pay when paid” clause does not allow a contractor to withhold payment from a subcontractor indefinitely,

even if it has not been paid by the owner. Thus, the critical distinction between the two clauses is that the “pay if paid” clause allows the contractor to withhold payment altogether if it has not been paid by the owner. With a “pay if paid” clause, the risk of owner nonpayment rests with the subcontractor.

### 2. Enforceability Of “Pay If Paid” Clauses

“Pay if paid” clauses are disfavored in many jurisdictions in the United States. Certain states ban them through legislation, while courts strike down the clauses in other states as against public policy.<sup>2</sup> The policy argument arises from an analysis of who has control over the financial safeguards for the project. The contractor has the direct relationship with the owner and is theoretically in the best position to guard against the risk of owner nonpayment. The subcontractor is viewed as an innocent third party who should not bear the risk of loss. The first question any contractor utilizing a “pay if paid” clause should be: Will the courts uphold the clause in the state where the project is located? The law in the state where the project is located may be entirely different than the law where the company home office is located.<sup>3</sup> Currently, a true “pay if paid” clause may be enforceable in the majority of states, but it must be well drafted as it will be scrutinized by the courts.<sup>4</sup> Even in states which allow the clauses, contractors should be wary of shifting sands in legal precedent and check with their lawyer before relying upon the enforceability of what is thought to be an enforceable “pay if paid” provision. Courts have sometimes refused to enforce purported “pay if paid” provisions, finding that the provisions failed to unequivocally express the parties’ intent to establish a condition precedent to payment. Ambiguous provisions are typically held to merely fix a reasonable time for payment rather than a condition precedent for payment.

*(Continued on page 97)*

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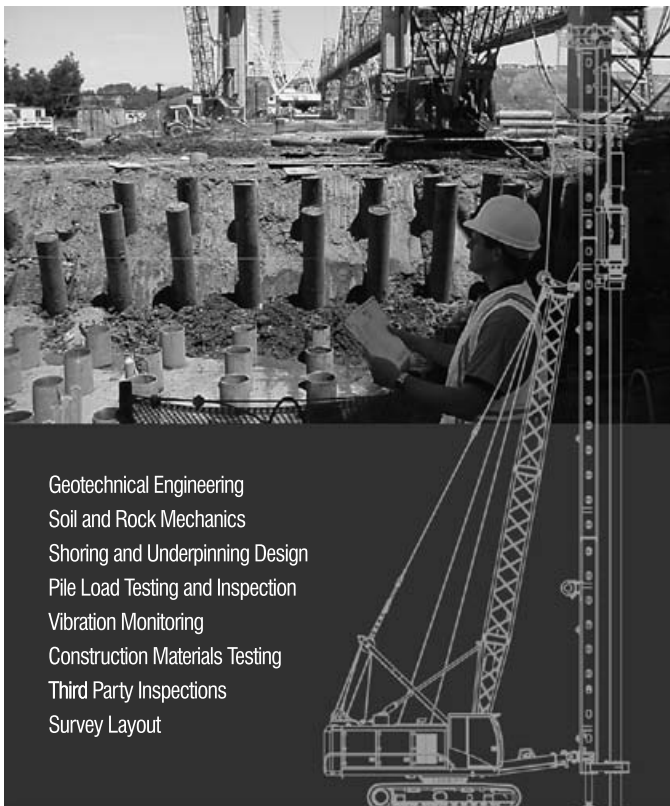
### 3. Effect Of A “Pay If Pay” Clause When The Contractor Posts A Bond

Assuming the project is located in a jurisdiction in which “pay if paid” clauses are enforceable, what happens when the owner requires the contractor to post performance and labor and material bonds? Arguably, posting the bonds may indeed defeat the protections of the “pay if paid” clause. The subcontractor will have a claim against the surety on the labor and material bond. Depending upon the jurisdiction, the surety may have to pay the subcontractor’s claim, regardless of the contractor’s use of an enforceable “pay if paid” provision.<sup>5</sup> Although the surety generally has all of the rights and defenses of its principal (i.e., the contractor), statutory language or case law may limit the defenses available to the surety. In addition, the surety may be bound by legislation requiring it to promptly adjust claims under the bond. Of course, the contractor will have exposure to the surety under the parties’ general indemnity agreement, so even though the subcontractor may not be able to recover directly from the contractor, if the subcontractor recovers from the surety, the contractor will have to reimburse the surety under the general indemnity agreement. Therefore, although the contractor may not have to pay the subcontractor directly, it would have to reimburse the surety. Whether you are a contractor or subcontractor, you should seek the advice of your lawyer to assist you with the analysis of the interplay between a “pay if paid” clause and any performance or labor and material bonds posted to the project. A surprise later could be costly.

### 4. What Should Contractors And Subcontractors Consider When Confronted by “Pay If Paid” Clauses?

If you are a general contractor on the project, first make sure the “pay if paid” clause is well drafted and enforceable in the jurisdiction in which the project is located. Second, to the extent possible through negotiations, avoid posting bonds on the project. If a bond is required, be sure to incorporate any “pay if paid” clause into the language of the bond. Third, check the indemnity clause in the construction contract to make sure you have not agreed to defend, indemnify and hold the owner harmless from any and all liens, claims or damages asserted by subcontractors on the project. Finally, double check the special provisions, general conditions and any standard specifications for any language that requires the contractor to defend, indemnify and hold harmless the owner, architect or others from project claims. The law evolves over time and the best practice is to have the contract documents reviewed by your lawyer. Even standard forms should be reviewed at least on an annual basis.

Not surprisingly, a subcontractor should review the project documentation from the other side of the looking glass to eliminate the risk of owner nonpayment from the transaction. Check to see if there is a “pay if paid” clause in the contract documents. If so, is it enforceable in the jurisdiction where the project is located? If the contract documents have a “pay when paid” clause, does it limit receipt of payment to a reasonable time or a definitive time period? Try to negotiate a definitive time for which you are willing to wait for owner payment to



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## LEGAL ARTICLE

the contractor before the contractor has an obligation to pay the subcontractor. Revise the language to make it clear that the risk of owner nonpayment is on the contractor if possible. Check to see if the contract documents require the posting of bonds for the project, and if so, check to see if you have a direct claim against the surety in your jurisdiction, unaffected by any “pay if paid” clause.

Contracts containing “pay if paid” and “pay when paid” clauses present sophisticated obstacles in the payment process. When a bond is required on the project, the situation is even more complicated. Checking with your lawyer before you sign a contract is the best way to avoid heartburn and heartache down the road whether you are a contractor or subcontractor on the project. ▼

1. A labor and material bond is sometimes referred to as a payment bond.
2. See, e.g., California, Delaware, Nevada, New York, North Carolina, South Carolina and Wisconsin. The law is less clear in states where the question has not been recently addressed.
3. A choice of law provision in the contract may alter the obligations of the parties, but that analysis is beyond the scope of this article.
4. The states in which “pay if paid” clauses are generally enforceable if well written include Alabama, Alaska, Arizona, Arkansas, Colorado, Connecticut, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, New Jersey, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, Tennessee, Texas, Utah, Virginia, Washington, and West Virginia.
5. For example, under Florida and Virginia law, courts have found a surety liable to a subcontractor even where the contractor utilized an enforceable “pay if paid” clause.



Jeff Blease is the chair of the national construction practice and also chair of the litigation department in the San Diego and Del Mar offices of Foley & Lardner LLP. With 32 lawyers in 13 offices nationwide, the Foley construction practice has received national recognition for excellence. Foley & Lardner LLP has nearly 1,000 lawyers across the globe and has been recognized for outstanding client service and award winning technology.



Bill J. Symes is an associate attorney in the San Diego office of Foley & Lardner LLP and a member of the national construction practice.

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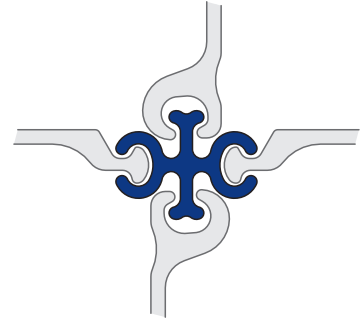
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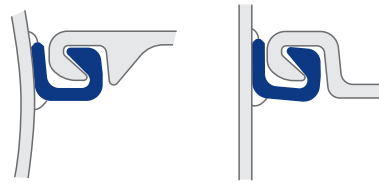


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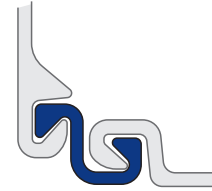


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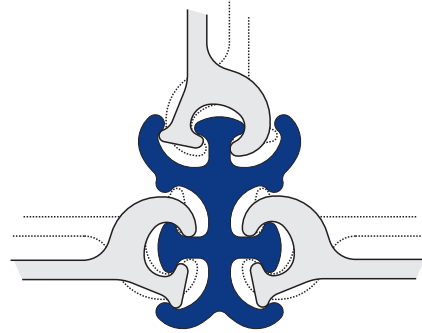


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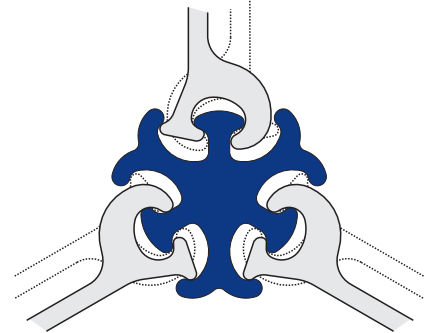


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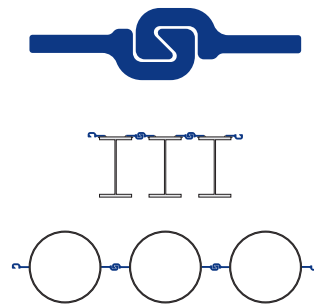


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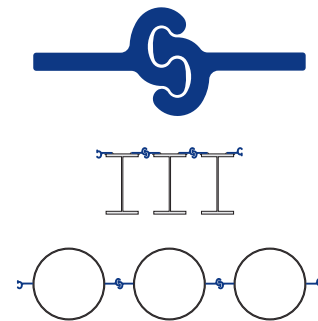


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