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Hawaiian Dredging Drives Pile In Hawaii And The Pacific

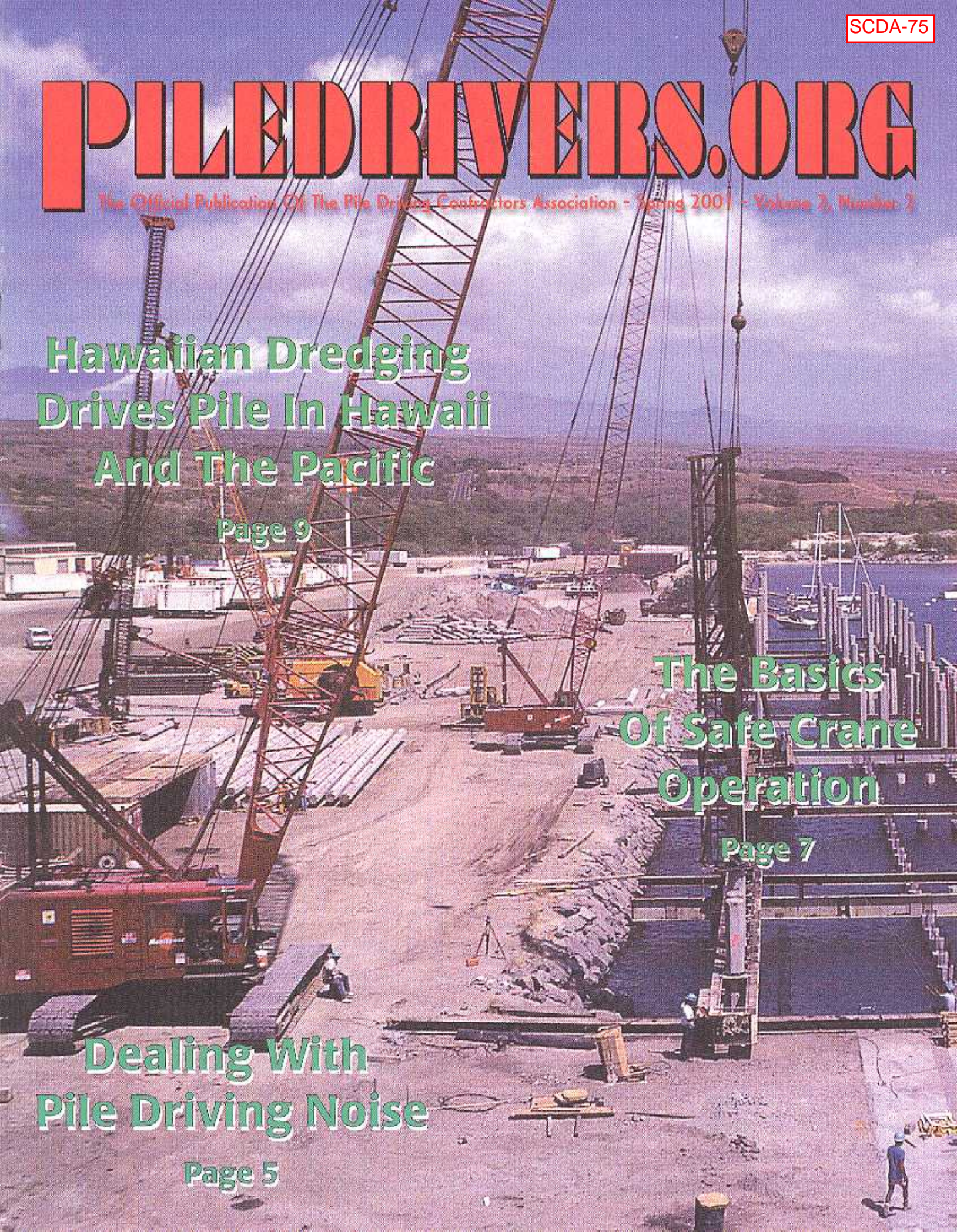
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The Basics Of Safe Crane Operation

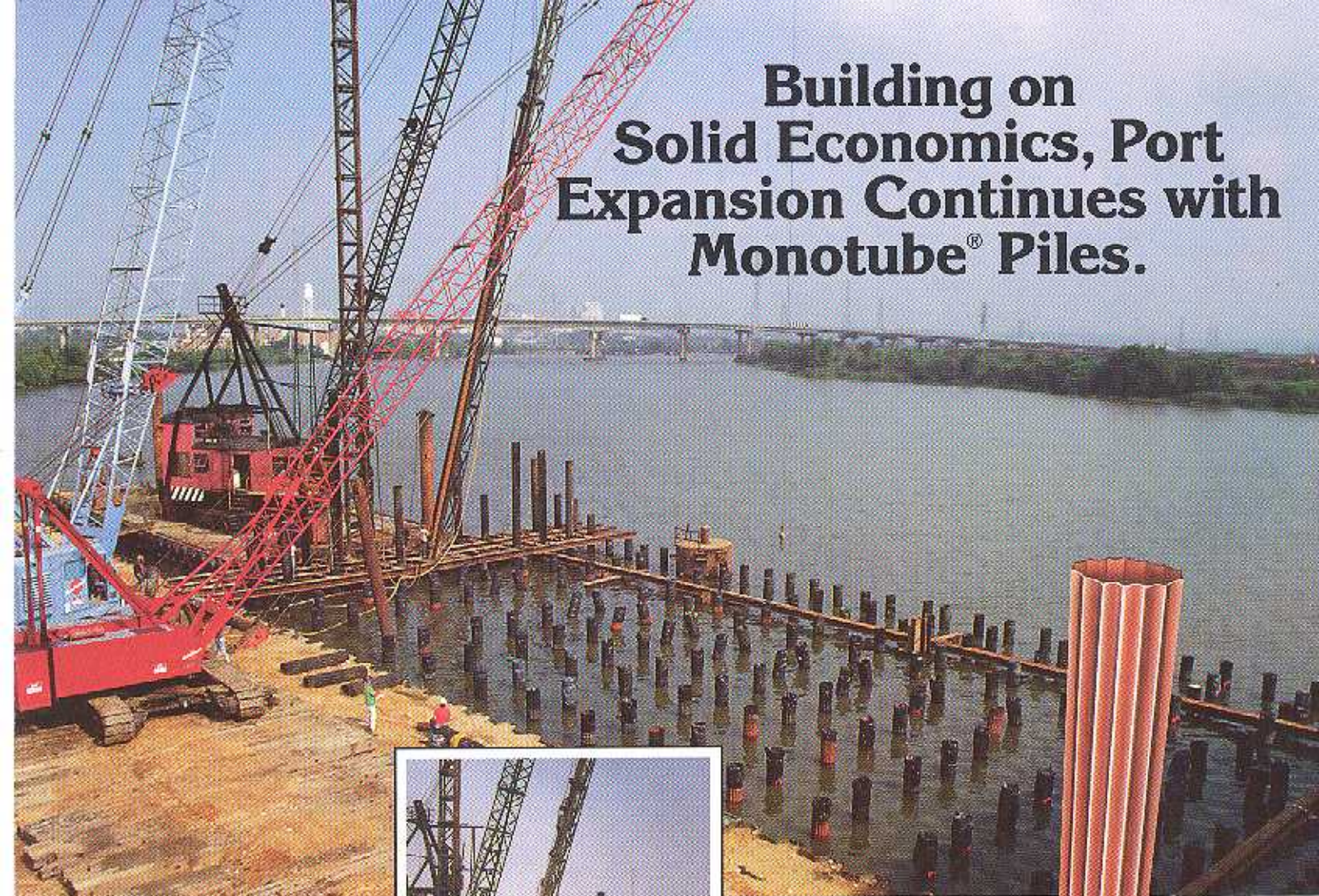
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PDCA Continues To Grow

PDCA was incorporated Dec. 5, 1995, in Missouri. In the first five years of its organizational life, steady progress and expansion have brought your organization to its current status.

We reached a significant milestone in 2000 with the creation of our home office and the arrival of Stan Orr, our executive director.

From The President By Charles Ellis

PDCA has successfully launched our annual Roundtable Program, and our membership has grown. Our

model code project and efforts to deal with timely issues confronting your industry are continuing.

It seems to me that we have emerged from our formative processes and are now embarking on the second stage of our organizational development.

Our executive director steered the Board of Directors through the strategic planning process, which provided a sharper image of the scope of PDCA interests.

Areas of responsibility have been identified. Our organizational structure is being modified to better serve and respond to the enthusiasm of our members and customers.

We have requested volunteers from within our membership to participate in the proposed committee structure, and I am pleased to report that we received a very generous response.

Among suggested goals for this year is the task of getting our committee structure up and running. With input from you, your fellow members will organize the second Pile Installation Seminar and move forward on our College Professor Education Course and our 2002 Roundtable.

Stan will be busy attending to a large number of other details related to our growth, and I urge you to consider lending a hand.

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PDCA

Dealing With Pile Driving Noise

By Colin S. Brownlow, CIH

There are several reasons why few construction activities generate more complaints from the general public than pile driving:

- ✓ Pile driving is an inherently noisy operation.

- ✓ Much of the noise is impulsive in nature. People tend to adapt to and accept continuous noise more readily than impulsive or intermittent noise.

- ✓ Pile driving produces vibrations, which causes alarm among the general public.

- ✓ Due to the height of the mast and the bulk of the associated equipment, pile driving equipment is often the most visible construction equipment on the site. In many cases, people can see it from several hundred feet away.

Just how noisy are pile driving operations? There are several different answers to this question. Obviously noise levels vary depending on the type of equipment used, the size and type of pile being driven and the type of soil into which the pile is being driven. Pile driver noise has several components:

“Obviously noise levels vary depending on the type of equipment used, the size and type of pile being driven and the type of soil into which the pile is being driven.”

- ✓ Continuous noise, which includes compressor and engine noise.
- ✓ Intermittent noise, which includes the impulsive noise of the hammer strike, the ringing of steel piles and, for certain pile types, air exhaust.

Sound levels can be measured in a number of different ways that might not accurately describe the annoyance level of pile driver noise. A brief discussion of noise measurement methods and community noise standards follows to help explain this ambiguity and to illustrate why compliance with standards alone may not be sufficient to prevent complaints from the general public.

Sound level meters incorporate various frequency weighting and time response factors. Most of the sound level meters on the market, particularly lower-end instruments, were designed to monitor the exposure of industrial workers to noise. They use an A-weighted frequency filter to mimic the response of the human ear to different sound frequencies and a slow time response since it is long-term exposure that is of most concern for industrial noise exposure. Since the slow response time tends to “clip-off” the peak noise levels of very short sounds, using a meter set for a slow, A-weighted response usually will underestimate the noise level. Typically, using such a meter, noise levels of 80 dBA to 90 dBA are measured at locations 30 feet to 60 feet from the pile driver.

Sound levels can be measured using a sound level meter with peak or impulse time response. The very fast response time of these meters allows measurement of the highest or nearly highest instantaneous noise level. Peak noise levels are useful in characterizing the intermittent noises associated with the hammer strike. They are measured 30 feet to 60 feet from the pile driver and typically range from 100 dB to 120 dB. Note that the noise level is usually reported unweighted since for very high noise levels of very short duration, there is little difference in the response of the human ear to different noise frequencies.

There is no national noise exposure standard applicable to construction. States or municipalities might regulate community or environmental noise, but the standards they use vary from jurisdiction to jurisdiction. Some examples of community noise standards are given in Table I on page 6.

Measurement of compliance with these state standards might require different measurement techniques. Measurement of compliance with an equivalent sound level (L_{eq}) based standard requires the use of an integrating sound level meter or meter with data logging capability. The L_{eq} accurately describes the total amount of sound energy measured over a

time period but says little about the nature of that sound. The same L_{eq} level could be due to a single continuous noise level or to several short loud noise bursts interspersed between long periods of relative quiet over the same period.

For standards based on statistical measures, such as L10 or L50, noise levels are

recorded every 10 seconds over the course of an hour. The noise level is measured either as an observed reading (dBA, fast response) or a 10-second L_{eq} . The L10 statistic is the noise level exceeded 10 percent of the time during the monitoring period. It is a measure of intermittent noise. The L50 statistic is a measure of the most prevalent noise levels (median) during the monitoring period. For pile driving and construction operations, the L10 number is an indication of the noise attributable to the intermittent sources (hammer noise) and the L50 number is an indication of other construction-associated noise that is more continuous in nature.

The accurate and, perhaps more important, truly descriptive measurement and characterization of noise from pile driving operations is difficult. As noted above, measurement for purposes of compliance with local noise standards is not uniform among jurisdictions. The use of compliance noise monitoring for pile driving operations is likely to be of little value in preventing community complaints, particularly when operating in or close to residential areas.

Given that a reactive, compliance-based approach is unlikely to be effective in reducing complaints from the general public due to the unique nature of pile driving-associated noise, a proactive approach that

“The use of compliance noise monitoring for pile driving operations is likely to be of little value in preventing community complaints, particularly when operating in or close to residential areas.”

Pile Driving Noise (Continued From Page 5)

recognizes that pile driving produces annoying noise may be of more value in preventing complaints. The following steps may help minimize complaints:

✓ Communicate directly with state and local government environmental health and other relevant agencies. Discuss with local government personnel where, when and for how long pile driving operations will be going on. Since local government personnel are likely to be the first to receive complaints from residents, they can provide reassurance to those residents if they are made aware of potential problems ahead of time.

✓ Talk directly with nearby residents. Let them know when pile driving will be taking place and how long it will continue. Let them know they might hear loud noises and sense vibration but that the noise will not be harmful and the vibration will not cause property damage. Local residents will usually be quite receptive, especially if you are willing to curtail evening and nighttime operations.

✓ Evening and nighttime operations will bring the most complaints. Anything that interferes with residents' use of their property for recreational purposes or interferes with their sleep will be viewed negatively.

✓ Take whatever measures you can to reduce noise levels and reduce the visibility of the pile driving operation. Let local residents and government agencies know what steps you are taking to reduce noise levels.

Noise reduction efforts that focus on reducing the impulsive noise component of pile driving operations are likely to provide the greatest benefit in terms of reducing complaints. Specifically, pile driver operators should use the minimum force neces-

Selected State Community Noise Standards

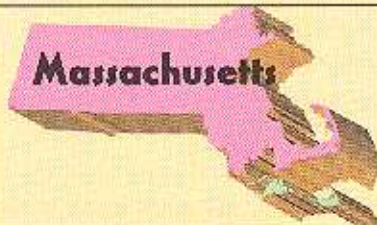
Table 1

Delaware



- ✘ Nighttime noise levels may not create a noise disturbance.
- ✘ Nighttime noise levels in residential areas must not exceed 55 dBA L_{eq} .
- ✘ Nighttime noise levels during construction must not be greater than 10 dBA higher than normal background levels in a residential area.
- ✘ At no time may noise levels in a receiving property exceed an L_{eq} for a period of one hour.

Massachusetts



- ✘ Construction activity must not increase the noise level at a receptor property by more than 10 dBA.

Minnesota



- ✘ Daytime residential noise standard: 60 dBA 1-hour L_{50} ; 65 dBA 1-hour L_{10} .
- ✘ Nighttime residential noise standard: 50 dBA 1-hour L_{50} ; 55 dBA 1-hour L_{10} .

Oregon



- ✘ Construction activities exempted from noise standard.

L_{eq} - The equivalent steady state sound level for a stated period of time which contains the same acoustical energy as the actual fluctuating sound level for the same period of time.

L_{50} - The sound level that is exceeded 50 percent of the time for a one-hour period.

L_{10} - The sound level that is exceeded 10 percent of the time for a one-hour period.

sary to drive the pile. Where possible, operators should consider the trade-off between hammer force and number of hammer strikes. Neighbors probably will be more accepting of impulsive noise that is just slightly louder than background (even if the number of hammer blows are greater) as opposed to noise that is considerably louder than background.

Defining and measuring pile driving-associated noise is complex. Compliance with community noise standards (assuming that there are community noise standards in the jurisdiction in which you're working) might be sufficient to minimize the nuisance impact of the noise for near-

by residents. A proactive approach that emphasizes good communication with local residents and local government is strongly recommended.

Brownlow is a certified industrial hygienist with 20 years of experience in evaluating and controlling occupational and environmental hazards. He can be reached at Barr Engineering Company, (952) 832-2615, or by e-mail at cbrownlow@barr.com. Barr Engineering is a multidisciplinary engineering and environmental firm based in Minneapolis, with regional offices in Duluth, Minn., Hibbing, Minn., Ann Arbor, Mich., and Jefferson City, Mo.

The Basics Of Safe Crane Operation

By Pat Collins

This entire article could be dedicated to the basic principles and rules of safe crane operation. After all, everyone involved in pile driving needs all the crane lift training possible. Cranes used in pile driving applications probably aren't the most glamorous machines on the job site. They often don't have long booms, they don't have jibs, they don't place loads at dizzying heights and they don't pick up objects people "ooh" and "aah" about. But even if they aren't glam-

orous, pile driving cranes are in most cases the real workhorses. They must do their job before other construction can begin.

Unfortunately, because of their pile driving attachments and, in many cases, their age, some people view these cranes as older, "well-used" machines that no longer require strict adherence to the manufacturer's maintenance recommendations. Few statements are further from the truth.

First some facts: In most cases, cranes equipped with pile driving attachments are under load most of the time, either from having fixed leads hanging off the boom or from vibrations from the pile driving operation itself. Many times, because the application requires "single part" high line pull on its drum winches, it tests the entire hoist system, from the hook or cable end to the cable itself, to the sheaves, to the boom, to the dead ends of the wire ropes, to the brake band linkage, all the way to the foot pedal and foot clip, which, in the end, holds the load in the air on many older mechanical cranes

working on bridges, overpasses and foundation sites.

Next we should consider the undercarriage and travel system. These machines, once on the job site, travel with leads and load in place. Everywhere a machine goes, its travel system supports not only the weight of the crane, but also the weight of the attachment. Often not evenly balanced, the machine may be "up on its toes," putting strain and causing uneven wear on the undercarriage. (See "A Critical Safety Issue") Also, most of the time, these machines travel on unprepared sites where conditions are less than

ideal. Add to this the additional hardware a pile driving attachment brings with it: the leads, the spotter, the hammer con-

A Critical Safety Issue

There are many safety issues to be considered in pile driving, one of which is the lifting of a pile (also known as "hoisting a pile" or "lofting a pile") into the leads. It is one of the most frequent activities of pile driving, and it can be dangerous.

Piling comes in many sizes, shapes and weights and in a variety of materials. A heavy pile usually causes the greatest concern when raising it from a horizontal to a vertical position. A long pile has its own hoisting problems, but a pile that is both heavy and long provides the most taxing of safety issues.

Pile location and placement on the ground prior to hoisting it into the leads is critical. There are many approaches and concepts about where a pile is best placed in relation to the crane. It varies from company to company and from crew to crew and usually is based on past practices that have worked safely.

Sometimes available space — or lay-down area — is not ideal. When this is the case, it is important that a planned hoisting procedure be developed and discussed with the entire crew.

Whatever method a crew uses to hoist a pile up, it is always wise for all crew members around the leads to be alert and always watching out for one another.

— Randy Dietel
Piling, Inc.



A Link-Belt LS-138 H II at work at the Honda Manufacturing Plant in Lincoln, Ala.

controls and various auxiliary equipment such as power units. This added hardware mounted on the crane could make access difficult for routine maintenance. It's obvious that crawler cranes used in pile driving applications deserve more attention in regard to routine maintenance, adjustment and inspection. Operator training also is important; most people would agree that you can't get enough of it. This is certainly true in traditional crane operation. But let's consider crawler cranes, how they relate to pile driving and the training operators receive.

First of all,

(Continued On Page 8)

Safe Crane Operation (Continued From Page 7)

many of the units in use are older mechanical cranes, which means you must train new operators on older machines that in many cases are not equipped with any operator aide devices such as load indicators and anti-two block. This is difficult enough when training for conventional crane operation, but put on top of that the responsibilities of pile driving, and it becomes quite a challenge for even a sharp new operator.

It's no wonder pile driving contractors across America view their operators as the centerpiece of their operation. Not only does the operator perform the crane and pile driving functions, he is also ultimately responsible for keeping trucks and materials flowing and, hence, for keeping everyone busy and doing their job. Some of this pressure has been reduced by the new hydraulic crawler cranes that are fast replacing many of the older mechanical cranes. Hydraulic controls with automatic brakes, selectable free fall, hydraulic swing and hydraulic travel with automatic brakes, and easy assembly/disassembly can



A Link-Belt LS-138 H II doing its job in Charleston, S.C.

make this learning process much easier.

Let's address crane travel operation, an area where some operators get into trouble. When the crane is driving pile, many times the leads are stabilized on the ground or on a supporting surface. The crane is really the positioner for the leads and controls the hammer and pile. A problem arises when we move the machine. Since many times the lead length requires a high boom angle, an operator will move the machine with the boom at a high angle and the leads in the vertical position. On a firm, level supporting surface, this can be done safely and without problems as long as the total load is within chart. Problems occur, however, when moving the machine onto mats or onto an incline. When the operator moves forward uphill, the leads tend to tilt back, and the boom might fall into the backstops. We assume that, most of the time, the backstops hold the boom and the leads and that the operator is able to stop, change his travel plans and proceed safely.

This isn't always the case, however. If the boom backstops fail, everything falls over backward, possibly causing property damage and injury to the operator and people around the crane.

Another scenario is that the boom stays in position but the leads, if freely suspended, act as a pendulum and can find their way around the face of the boom to the side of the machine. The leads can come into contact with the cab, causing damage to equipment and injury to the operator and others. Another possibility is that the unit, unable to maintain its position "over the end" because of the side loading of the leads, could overturn.

It's obvious that great care should be taken when traveling a crane in pile driving applications. You should plan the route on which the crane is to travel and ask some important questions. Is the ground firm and level? What is the machine's ultimate destination? Does it have to traverse an uphill grade? If it is too steep a grade, it must be reduced by whatever means necessary. "Try it and see what happens" is not acceptable.

Another item that must be considered by everyone who works with cranes is electrocution. Cranes with attachments

"Cranes with attachments working at high boom angles with leads up in the air are a conduit for electricity. A contractor must do whatever is necessary to keep a safe distance from a power source."

working at high boom angles with leads up in the air are a conduit for electricity. A contractor must do whatever is necessary to keep a safe distance from a power source. I have heard people who have compromised safety for convenience say "Well, we have to get there. We have to do the job." This is not an acceptable attitude. All risk must be eliminated in this area of crane safety. There should be no compromise. Many manufacturers recommend a minimum distance of 15 feet from any power line at all times. Many cities and states also have established a minimum distance from power lines. Lines must be shut off or rerouted and a full time signalman, as well as a crane safety director, must monitor the job site 100 percent of the time.

An operator should have support from someone on the ground, such as a signalman, to make sure no other personnel are near the crane while it's driving pile. Workers should vacate the area while the machine is traveling, and a trained signalman should be giving clear instructions to the operator.

Crawler cranes and pile drivers have been together a long time. Those in the industry agree it's the best way to drive pile. That is not going to change. What is changing is the increased focus and attention to safety on cranes. If these efforts continue, we all will have a safer place to work.

Collins is a 22-year Link-Belt veteran. He has served as a district service representative, internal sales manager and telescopic boom crane product manager and is currently the senior product manager for lattice boom cranes. He can be reached at (859) 264-6260.

Hawaiian Dredging Drives Pile In Hawaii And The Pacific

"Due to the geological conditions in Hawaii, almost all the buildings are on piles," said Reggie Lee, vice president, Division of Waterfront and Industrial, for Hawaiian Dredging Construction



Company.

Hawaiian Dredging, a division of Dillingham Construction Company of Pleasanton, Calif., is almost a century old and was started by the Dillingham Corporation, which made a name for

itself with projects such as the Suez Canal and Pearl Harbor. Dillingham Construction was formed in 1987 as a privately held employee stock ownership

road construction and tunneling; marine and waterfront construction; and industrial powerplant construction. Lee oversees the Waterfront and Industrial Divisions and handles all the pile driving for the other divisions of the company.

Hawaiian Dredging represents approximately 25 percent of Dillingham's \$1 billion business. Of that, the Marine and Waterfront Division contributes about \$20 million of business. The company has a staff of 12 full-time employees and 50 union workers. On the pile driving side, Lee and his staff work primarily with Manitowoc crawler cranes and diesel and hydraulic hammers.

"In our experience, the Manitowoc crane is the Cadillac of crawler cranes," said Lee. "We have chosen to use the highest quality equipment because it is not easy to repair or replace cranes when

outcome of all waterfront, marine and industrial projects, as well as all pile driving jobs. This includes bidding, operations management and assignment of equipment and personnel for each project.

Pile Driving Projects

Hawaiian Dredging does most of its pile driving in Hawaii, but the company is responsible for pile driving projects throughout the Pacific.

Lee and his team have driven piles on and around islands including Guam, Wake Island, Johnston Island and Midway.

Two of Hawaiian Dredging's most recent

waterfront projects were the construction of Piers Five and Seven on the island of Oahu, Hawaii. Both jobs took 20-inch octagonal prestressed concrete piles and were driven using Delmag 32-30 diesel hammers. For Pier Five, a \$5 million project, 16,000 linear feet of piles were used and Pier Seven, a \$16 million project, used 70,000 linear feet of piles.

Hawaiian Dredging drove 12,000 linear feet of 20-inch octagonal prestressed concrete piles, complete with boulder rip-rap, dredging, sheer piling bulkhead and tie-back system, for an \$8.2 million 300-foot wharf extension at Kahului Harbor on the island of Maui.

On land, Hawaiian Dredging is currently driving 48,000 linear feet of 16.5-inch octagonal prestressed concrete piles for parking decks at a shopping mall. The recently completed Ward Entertainment Center took 25,000 linear feet of 16.5-inch octagonal prestressed concrete piles. For land-based projects such as these, Lee believes in using Junttan hydraulic hammers.

"We have chosen to use the highest quality equipment because it is not easy to repair or replace cranes when operating in the middle of the ocean."

— Reggie Lee

Vice President

Hawaiian Dredging
Construction Company



Hawaiian Dredging does its work at Barbers Point Harbor in Oahu, Hawaii.

plan company and was allowed to use the Dillingham and Hawaiian Dredging names even though the Dillingham family had no ownership interests going forward.

Hawaiian Dredging is a multidisciplinary general contractor with four construction divisions, including high- and low-rise residential construction; highway

operating in the middle of the ocean."

A 32-year veteran of the company, Lee mentioned that he has had the good fortune to work in all Hawaiian Dredging's divisions but has spent most of his career in the Marine and Waterfront group. Industrial construction was a recent addition to his responsibilities. As vice president, Lee is responsible for the ultimate

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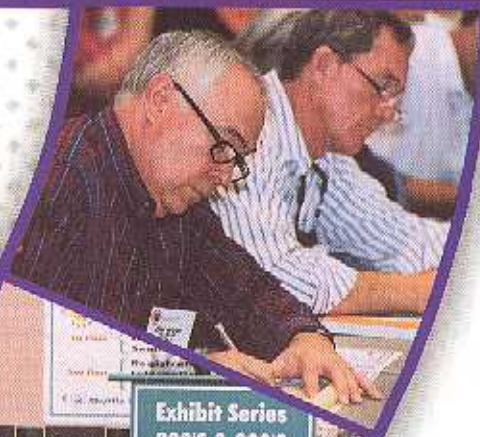
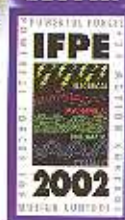


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Hawaiian Dredging Member Spotlight (Continued From Page 9)

"We have found that hydraulic hammers are much more efficient, less noisy and more environmentally friendly than diesel hammers," Lee stated. "We have tried several different types of hammers and have determined Junttan's to be the best."

According to Lee, there is a lot of pile driving to be done in Hawaii.

"In the past two-and-a-half years, Hawaiian Dredging has driven more than 33 miles of piles," he said.

Lee feels that part of the reason the company has been successful is that it is willing to embrace new technology.

"We are always searching for a better, more efficient and more environmentally conscious way to do business," said Lee. "We feel it is important to invest time and resources to finding the best equipment for our projects. In the long run, we believe this pays big dividends."

Lee earned his engineering



Hawaiian Dredging at work on Piers Five and Six at Barbers Point Harbor. More recently, the company did additional work at Pier Five and completed a project on Pier Seven.

degree from California Poly Tech University. In addition to PDCA, he is a member of the Association of General Contractors, the American Concrete Institute and the Deep Foundation Institute.

"We are always searching for a better, more efficient and more environmentally conscious way to do business. We feel it is important to invest time and resources to finding the best equipment for our projects."

— Reggie Lee
Vice President
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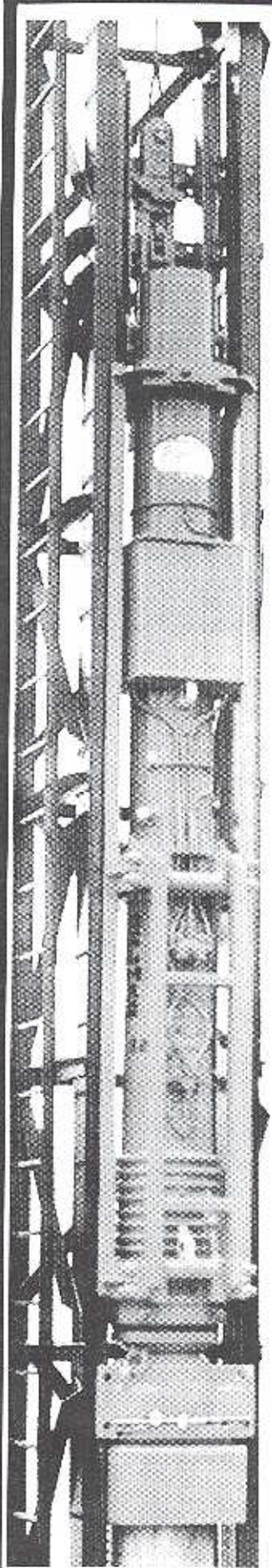
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CONEXPO-CON/AGG Plans For Largest Show Ever In 2002

The next CONEXPO-CON/AGG will be the largest ever.

According to organizers for the construction and construction materials exposition, exhibit space sales have now passed the 1.73-

million-square-foot mark, the record set at the 1999 CONEXPO-CON/AGG.

The 2002 show is scheduled for March 19 through March 23 in Las Vegas. A total of 1,200 exhibitors already have signed up to participate.

CONEXPO-CON/AGG is the Western Hemisphere's largest exposition for the construction and construction materials industries and was the largest trade show in any industry in 1999. The 2002 show is now projected to surpass 1.9 million square feet.

The top 100 exhibitors from 1999 have all reserved space for CONEXPO-CON/AGG 2002. Despite business

uncertainties in the manufacturing sector, the show is also attracting many first-time exhibitors, with 405 new companies participating so far.

"We're very gratified that space sales have been so robust, positioning the show as the industry gathering place in spite of the challenging economic times," CONEXPO-CON/AGG

Managing Director Dennis J. Slater stated. "We're looking forward to a great show that is representative of the worldwide scope of the construction and construction materials industries and their continuing ability to make strong contributions to both the national and global economies."

CONEXPO-CON/AGG 2002 has received industry-wide support, with a record number of industry associations bringing their members to the show for annual meetings and conventions.

Show management also cited co-locating the IFPE exposition with CONEXPO-CON/AGG for the first time in 2002 and sponsorship of the show Information Technology Pavilion by the

Associated General Contractors as factors in expanding exhibitor participation and building a broader audience.

"The support of leading associations across the construction and construction materials industries and the creation of a more comprehensive one-stop shopping experience by co-locating IFPE with CONEXPO-CON/AGG have built excitement for both events," said Peter T. Vlahos, CONEXPO-CON/AGG managing director.

Keeping exhibitor costs down is a point of emphasis that show management said has also added to exhibitor enthusiasm. The show's exhibitor package plans bundle exhibit space rates with a variety of services, including general exhibit cleaning and drayage services such as delivery of freight between the exhibits and the marshaling yard and the storage and return of empty containers.

The international flavor of the shows will also grow in 2002. Approximately 20 percent of the expected audience of more than 135,000 visitors at CONEXPO-CON/AGG 2002 and IFPE 2002 will be from outside the United States. Both

shows have been granted International Buyer Program Status by the U.S. Department of Commerce, which will help promote worldwide attendance.

Although space sales for CONEXPO-CON/AGG 2002 have already set a new record, space is still available, according to show management.

For more information, contact the show offices at (800) 867-6060, (414) 298-4141 or (301) 587-3140, or visit the Web site at www.conexpoconagg.com.



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Southeast:	Bill Smith	800-570-3844	email: bills@apevibro.com	1973
Mid-Atlantic States:	Jimmy Deemer	767-518-9740	email: jimmyd@apevibro.com	1990
Southwest:	Joe Wright	800-596-2877	email: joew@apevibro.com	1978
West Coast:	Steve Cress	925-417-1397	email: Stevec@apevibro.com	1985
Shanghai:	Steve Gough	011-86-13021006020	email: Steveg@apevibro.com	1999
President:	John White	253-872-0141	email: Johnw@apevibro.com	1978

Lucas Marine Puts New Hammer To The Test On Putah Creek Bridge

Lucas Marine Construction Inc., of West Sacramento, Calif., saw an increasing need for large hammers on the pile driving projects in its Northern California market area. But rather than renting or purchasing a large hammer, Lucas Marine designed and built its own.

"John Lucas had a vision for this very powerful LMC 50 hydraulic impact hammer," said Dominick Gulli, Lucas Marine's general manager. "Once the hammer was conceptualized, we had the ram assembled in China. When the ram arrived in-house, the entire hammer was built in about a month."

The hydraulic hammer has a 50,000-pound ram, seven-foot stroke and 350,000 foot

(Continued On Page 15)



The LMC 50 hydraulic impact hammer, designed and built by Lucas Marine, is delivered to the Putah Creek job site.



A Manitowoc 4000 crane and Lucas Marine's LMC 50 hydraulic impact hammer driving a 60-inch pile at Putah Creek.



Lucas Marine's LMC 50 hydraulic impact hammer driving a 60-inch pile for the Putah Creek bridge.

Putah Creek Project Spotlight (Continued From Page 14)



County, Calif., will require four piles at each end. The first set of piles will take about one month to complete. Lucas Marine drove the test pile for the project in early May, but to keep traffic flowing on the bridge, the second set of four piles will not be driven until next year.

The piles for this project are 60 inches in diameter and 1.5 inches thick. They are 120 feet long and weigh 600 pounds per foot. Each pile is driven in three pieces;

pounds of energy. Gulli believes this could be the largest hammer ever built in the United States and most certainly one of the most powerful.

"The first time we used this hammer, its sheer power smashed the drive cap," said Gulli. The Putah Creek Bridge project will be the second time Lucas Marine uses this mighty hydraulic hammer.

The construction of the Putah Creek Bridge, located in Lake

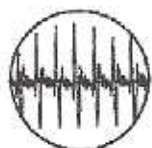


the pile pieces are spliced and then re-driven. Lucas Marine will then drill out, install rebar cage and fill with concrete.

For environmental reasons, work on the Putah Creek bridge can only be conducted from May through December.

Lucas Marine has been in business since 1986 and reports gross sales of about \$10 million per year. The company has a staff of 20 employees.

“Once the hammer was conceptualized, we had the ram assembled in China. When the ram arrived in-house, the entire hammer was built in about a month.”
 — Dominick Gulli, General Manager
 Lucas Marine Construction, Inc.



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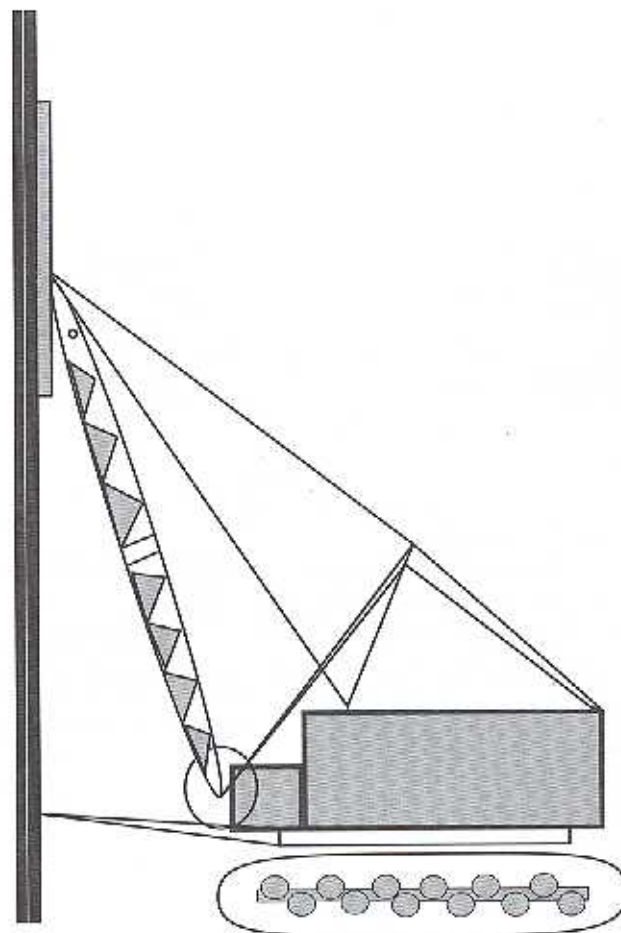
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About New Products News

Industry Gets Look At New Luffing Jib

The Manitowoc Cranes, Inc. display at Bauma 2001 gave the construction world its first look at the new No. 149 high-capacity luffing jib recently developed for the Model 999 lattice boom crawler crane.

Since its introduction in June 2000, the 999 has become the hottest selling crane in the 250-metric ton class, with



The new No. 149 high-capacity luffing jib was recently introduced by Manitowoc Cranes.

more than 90 units purchased in less than a year.

Equipped with 180 feet of boom and 160 feet of luffing jib, the 999 has a

unique intermediate fall that permits operation of a second load line offering 30-ton capacity at an intermediate location on the luffing jib. The intermediate fall enhances operating efficiency by minimizing the need to luff the jib or reposition the crane for close-in lifts.

The 999 also features optional low-profile counterweights designed for easy shipment with boom sections on Europe's most popular trailers, as well as an auxiliary drum and optional freefall system.

The No. 149 luffing jib offers 80-ton maximum capacity and boom-and-jib combinations to 480 feet.

Bruce Introduces Hydraulic Hammer

The Bruce hydraulic hammer has been introduced to the market. Bruce hammers have been engineered to meet the demanding requirements of the civil engineering and piling sectors, but they also are user and environmentally friendly. With ram sizes from 3-ton to 40-ton and higher, Bruce hydraulic hammers offer high driving efficiency, simplicity in design and maintenance, precise stroke control, low emissions, easy trouble-shooting and high reliability. The hammers can drive any style of pile and run in any style of leader system. Bruce power packs have been designed to supply optimum oil flow and pressure to match the hammers' impact energy requirements. Using only quality compo-



The Bruce hydraulic hammer has been introduced to the market.

nents, Cummins engines, Rexroth pumps and Bosch valves, the power packs cool efficiently, ensuring no overheating of the hydraulic oil. Soundproofing greatly reduces unwanted noise levels. For more information about Bruce hydraulic impact hammers, contact Neil Corrado or Craig Thaggard at M.D. Moody & Sons, (800) 869-4401.

Dura-Bond Coating Is More Durable Than Liquid Epoxies

Dura-Bond is now offering a coating for pipe piling that is harder and more durable than traditional liquid epoxies.

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The Fusion Bonded Epoxy line.

either an abrasion resistant overcoat for rocky soil conditions or an ultraviolet-resistant powder for piles exposed to sunlight.

Epoxy powders are very hard, so there is less damage during transit, handling and driving. Even in the Winter, small repairs can be made just prior to driving, using a hot melt stick. The thickness of the coating is comparable to that of liquid epoxies. In addition, Fusion Bond Powder is environmentally safe and approved by AWWA and NSF for contact with potable water.

Major suppliers of the coatings are 3M Corp., DuPont, BASF and Lilly Powder Products.

Currently, Fusion Bond Epoxy is available only on pipe piling. However, in the future, Dura-Bond plans to offer the powder coating on sheet piling, H-piling and tie back systems.

For further information, contact Jason Norris at Dura-Bond Steel Corporation at (724) 327-0782, ext. 17, or by e-mail at jwn@stargate.net.

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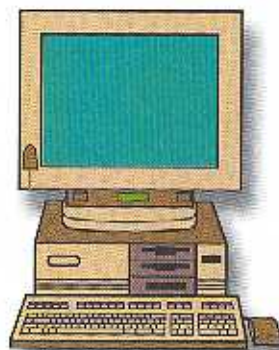
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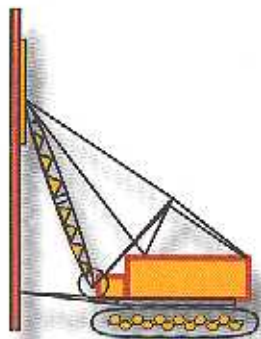


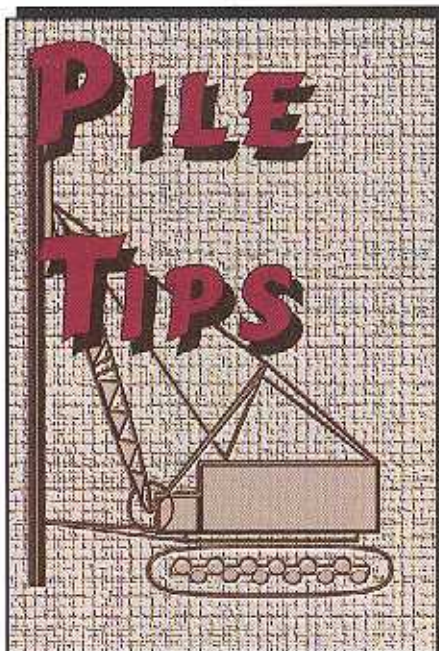
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Labor Department Redefines "Site Of The Work"

The U.S. Department of Labor has issued a final rule defining "the site of the work" under the Davis-Bacon Act. The revised definition includes federal prevailing wage law coverage for material or supply sources, tool yards and job headquarters in the site of the work only where they are dedicated to the covered construction project and are adjacent or virtually adjacent

to the location where the construction is taking place. The ruling also changed the regulatory definition of construction to provide that the off-site transportation of materials, supplies and tools is not covered unless such transportation occurs between the construction worksite and a dedicated facility located adjacent or virtually adjacent to the construction site. The rule was effective Jan. 19, 2001.

From Lift & Transportation, March 2001.

OSHA Issues Poster In Spanish

The Spanish version of the Occupational Safety and Health Administration's (OSHA) "plain language" poster is now available from OSHA. "Lo Establece La Ley" or "It's the Law" describes workers' rights to a safe and healthy workplace. The poster clearly explains how workers may file a complaint, report an emergency or seek OSHA advice, all with the right of confidentiality. Copies may be downloaded from the OSHA Web site at www.osha.gov/osh-pubs/poster2.html. They also may be obtained by calling any OSHA office, usually listed under federal government in local telephone directories.

From Lift & Transportation, March 2001.

OSHA Updates Compliance Directive

The Occupational Safety and Health Administration (OSHA) recently updated its compliance directive on powered industrial truck operator training standards. The update was necessary because OSHA "is reviewing the appropriate training and coverage of personnel and burden carriers," said the directive. Because of the review, OSHA will not enforce the training standard for "Personnel & Burden Carriers, ASME B56.8." The compliance directive has been posted on the OSHA Web site at www.osha.gov since Dec. 7. For more information, call OSHA's Patrick Kapust at (202) 903-1850.

From Lift & Transportation, March 2001.

Executive Order Prohibiting GMIA's Being Considered

President Bush is expected to issue an executive order banning government mandated labor agreements (GMIA's) on federal and federally-assisted construction contracts. A draft of the order is currently being circulated within the administration and could be officially issued at any time, but it would cover only contracts awarded subsequent to the date of the executive order. The order would nullify a memo issued by former Transportation Secretary Rodney Slater encouraging state departments of transportation to utilize project labor agreements on DOT-funded projects, including federal-aid highway projects.

From Hard Hat News, March 2, 2001.

Seismic Design Handbook Now Available

Sponsored by the International Conference of Building Officials and the National Council Structural Engineer Association, the new edition of the Seismic Design Handbook includes three new chapters on seismic upgrading of existing structures, performance-based seismic engineering and computer applications in seismic design. The book's substantial increase in size reflects the addition of many lessons learned from damaging earthquakes worldwide during the last decade. It includes a bonus CD-ROM containing the complete text. For information and ordering, call (800) 284-4406 or visit www.icbo.org on the Web.

From Structural Engineer, April 2001.

Construction Suggestions For Sheet Piling

- Material damage may occur if handling is excessively rough or storage is careless. Store material on level ground and place blocking correctly to prevent excessive sag. Care should be exercised to protect the threads of the anchor rod and nuts from foreign material prior to use.

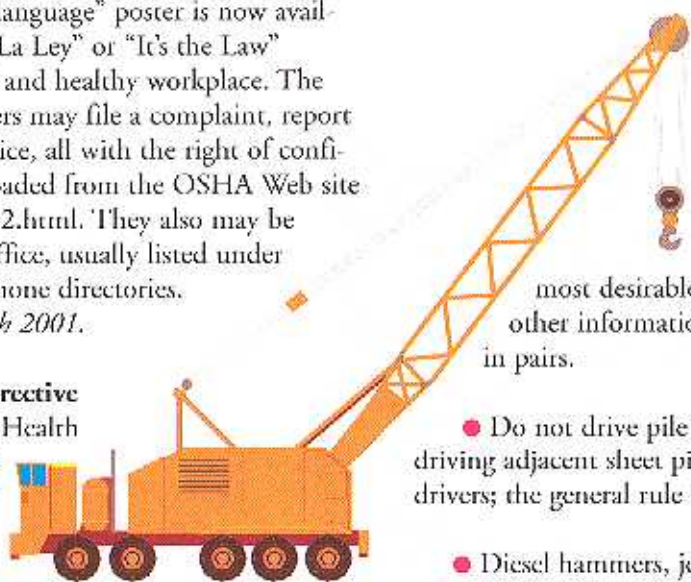
- Driving pairs of piles is usually more economical and offers less resistance than driving piles individually. Pairs are easier to guide and present the most desirable impact area for a hammer. If borings or other information show obstructions, drive the sheeting in pairs.

- Do not drive pile more than one-third its length before driving adjacent sheet piling. The exception is when using vibro drivers; the general rule is to drive each pair to grade.

- Diesel hammers, jetting, air hammers, vibro hammers, jackhammers, drop hammers and hydraulic hammers mounted on backhoes have been used successfully. Driving heads are recommended under difficult driving conditions.

- When an obstacle is hit, stop driving and move the hammer to the next pile that can be driven. With piles on both sides of the obstacle acting as guides, it is often possible to drive through the obstacle. You might have to dig out the obstruction if the piling cannot be driven

(Continued On Page 23)



Pile Tips (Continued From Page 22)

without being damaged.

- Sheeting should not be cut off without the engineer's approval.
- Straight alignment adds to driving ease, good looks and faster assembly of the cap and is best achieved using a template. The template can be a light beam, jigs or other methods commonly used by contractors.
- Sheet piling tends to lean in the direction of driving, due somewhat to slack in the interlocks but mostly to improper hammering and guiding.
- Leaning should be corrected immediately. This usually can be accomplished by sloping the line of action of the hammer toward the driven section of wall. Using a "come-a-long" also may help.
- Another method is to set a panel of piles, then drive the first and last pairs of piles about halfway to serve as master piles. Intermediate piles then are driven to the same depth, master piles are driven to final grade and intermediates are driven. A double-sided template should be used with this method.

● Do not over-drive a pile, because it is almost impossible to extract. A rapid succession of hammer blows is usually most effective in sand and gravel, (a vibratory hammer mounted on a backhoe) whereas slower, heavier blows are best in clay (a drop hammer works well).

● The interlocking joints should be located on the backfill side of the wall. The interlocking joint is best assembled and gives the least amount of driving resistance by driving the female joint over the male joint. Driving the sheeting with the male into the female might cause frictional driving problems and should be avoided whenever possible.

● Horizontal alignment usually cannot be corrected by tightening the anchor rod nuts and should not be attempted. Relieve the tension on the rods, then

tighten or loosen the rod to correct the the horizontal alignment.

● Weep holes can be installed where there is a possibility of excessive hydrostatic water buildup. They are a must with aluminum and vinyl sheet piles. A good practice is to install weep holes in all walls.

● The tie rods and bolts must be as close to the suggested locations as possible to ensure proper stress transfer.

● Backfill should be sand or granular material when possible. No plastic materials should be placed behind the wall. Backfill to proper compaction around the anchor plates first, then tension the tie rods. Next, following proper procedures specified by state and federal agencies, place the backfill against the wall. Finally, place the remaining backfill from the wall toward the anchors. Never push the backfill against the wall.

● If dredging is necessary, it should be done before the wall is installed.

From Pile Buck, January 2001.

OSHA Issues New Steel Erection Rule

The Occupational Safety and Health Administration (OSHA) issued its new rule on steel erection – developed in concert with industry and union groups – Jan. 17, 2001. OSHA estimates the rule will prevent 30 fatalities and 1,142 injuries annually and save employers nearly \$40 million a year.

The standard enhances protections provided to iron workers by addressing the hazards that have been the major causes of injuries and fatalities in the steel erection industry. The final rule protects all workers engaged in steel erection activities but does not cover electric transmission towers, communications towers, broadcast towers,

water towers or tanks.

Key provisions of the revised steel erection standard include:

Site Layout And Construction Sequence

- Requires certification of proper curing of concrete in footings, piers, etc., for steel columns.
- Requires controlling contractor to provide erector with a safe site layout, including pre-planning routes for hoisting loads.

Site-Specific Erection Plan

- Requires pre-planning of key erection elements, including coordination with controlling contractor before erection begins, in certain circumstances.

Hoisting And Rigging

- Provides additional crane safety for steel erection.
- Minimizes employee exposure to overhead loads through pre-planning and work practice requirements.
- Prescribes proper procedure for multiple lifts (Christmas treeing).

Structural Steel Assembly

- Provides safer walking/working surfaces by eliminating tripping hazards and minimizes slips through new slip resistance requirements.
- Provides specific work practices regarding safely landing deck bundles and promoting the prompt protection from fall hazards in interior openings.

Column Anchorage

- Requires four anchor bolts per column along with other column stability requirements.
- Requires procedures for adequacy of anchor bolts that have been modified in the field.

Beams And Columns

- Eliminates extremely dangerous collapse hazards associated with making double connections at columns.

Open Web Steel Joists

- Minimizes

(Continued On Page 24)



PDCA's New Members

New Associate Members

Righter Construction Services

2424 Harrison Rd.
Columbus, Ohio 43204-3508
Phone: (614) 272-9700

New Contractor Members

John A. Keeley - Phoenix Marine Co.

46 Highway 36
Keyport, N.J. 07735
Phone: (732) 888-9336 • Fax: (732) 888-5544
E-mail: phoenix@netlabs.net

Eldon "Blue" Gregory - Shinn & Gregory, Inc.

P.O. Box 344
Stephenville, Texas 76401
Phone: (254) 965-7585 • Fax: (254) 965-7053
E-mail: egregory@our-town.com

New Technical Members

Chris Surak - American Wood Preservers Institute

2750 Prosperity Ave., Suite 550
Fairfax, Va. 22301-4312
Phone: (703) 204-0500 • Fax: (703) 204-4610
E-mail: csurak@awpi.org

Pile Tips (Continued from Page 23)

collapses of lightweight steel joists by addressing need for erection bridging and method of attachment.

- Adds requirements for bridging terminus anchors with illustrations and drawings in a non-mandatory appendix.
- Adds requirements to minimize collapse in placing loads on steel joists.

Systems-Engineered Metal Buildings

• States requirements to minimize collapse in the erection of these specialized structures that account for a major portion of steel erection in the United States.

Falling Object Protection

• Performance provisions that address hazards of falling objects in steel erection.

Fall Protection

- Makes provisions for controlled decking zone to prevent decking fatalities.
- Requires deckers in a CDZ and connectors to be protected at heights greater than two stories, or 30 feet. Connectors between 15 and 30 feet must wear fall arrest or restrain equipment and be able to be tied off or be provided another means of fall protection.
- Requires fall protection for all others engaged in steel erection at heights greater than 15 feet.

Training

- Requires qualified person to train exposed workers in fall protection.
- Requires qualified person to train exposed workers engaged in special high-risk activities.

Compiled from a special report by SC&RA, Lifting and Transportation International, March 2001.

PDCA Committee Interest Form

Do you have some great ideas that would improve PDCA?

Is there something you know we can do better?

Join a committee and have a profound effect on PDCA policy and future activities.

Name: _____ Company: _____

Address: _____ City/state/zip: _____

Phone: _____ Fax: _____ E-mail: _____

I am interested in serving on the following Pile Driving Contractors Association committees:

- | | | | |
|--|--|-------------------------------------|---|
| <input type="checkbox"/> Membership | <input type="checkbox"/> Professional Activities | <input type="checkbox"/> Education | <input type="checkbox"/> Marketing & Public Relations |
| <input type="checkbox"/> Annual Conference | <input type="checkbox"/> Technical Activities | <input type="checkbox"/> Technology | |

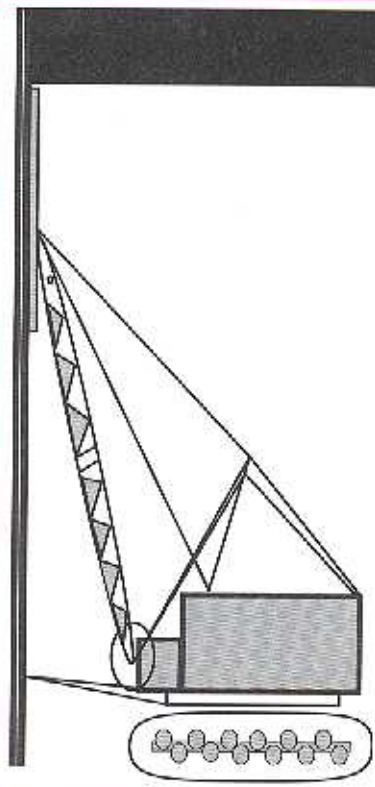
Please mail, fax or e-mail this form to PDCA at:
P.O. Box 1429, Glenwood Springs, Colorado 81602

Fax: (970) 384-0512 • E-mail: membership@piledrivers.org • Phone: (970) 945-1231

PDCA Membership Application

(Continued on back)

Primary or Official Representative



Company: _____

Name: _____

Title: _____

Phone: _____

Fax: _____

Address: _____

City/state/zip: _____

E-mail: _____

Home page: _____

Membership Type

(check one)

- Contractor
- Associate
- Technical Affiliate
- Student

Sponsored By: _____

Contractor Company Description

(check all that apply)

- Pile Driving
- Marine Contracting
- Earth Retention
- Bridge Building
- Deep Dynamic Compaction
- Bulkheads
- Other _____

Associate Company

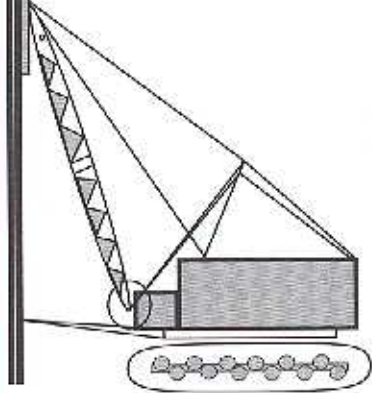
(check all that apply)

- | | | |
|---|--|--|
| <input type="checkbox"/> Rental | <input type="checkbox"/> Steel Fabrication | <input type="checkbox"/> Off Shore Leader System |
| <input type="checkbox"/> Sales | <input type="checkbox"/> Wick Installation Equipment | <input type="checkbox"/> Wick Drain Supplies |
| <input type="checkbox"/> Vibratory Drivers/Extractors | <input type="checkbox"/> Sheet Piles | <input type="checkbox"/> Drilling Supplies |
| <input type="checkbox"/> Steel Beams | <input type="checkbox"/> Drills | <input type="checkbox"/> Pile Hammers |
| <input type="checkbox"/> Pipe Pile | <input type="checkbox"/> De-Watering Pumps | <input type="checkbox"/> Vibratory |
| <input type="checkbox"/> Timber Pile | <input type="checkbox"/> Composite Pile | <input type="checkbox"/> Diesel |
| <input type="checkbox"/> Concrete Pile | <input type="checkbox"/> Cushion Materials | <input type="checkbox"/> Hydraulic |
| <input type="checkbox"/> Cranes | <input type="checkbox"/> Pile Driving Leads | <input type="checkbox"/> Air/Steam |
| <input type="checkbox"/> Fixed/Swinging Leads | <input type="checkbox"/> Wick Drain | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Steel Sheet Piling | <input type="checkbox"/> Cutter Head | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> H Bearing Piling | <input type="checkbox"/> Drill Bits | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Pile Point & Splicer | <input type="checkbox"/> H-Beam | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Jet Pumps | <input type="checkbox"/> Plastic Sheet Piles | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Plastic Pipe Piles | <input type="checkbox"/> Drive Caps | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Inserts | <input type="checkbox"/> Dock Supplies | <input type="checkbox"/> Other _____ |

PDCA Membership Application

Technical Affiliate Company Description

(check all that apply)



Analysis

Design

Testing

Vibration Monitoring

Surveys:

Consulting

Geo Technical Engineers

Pile Monitoring

Civil Engineering

Other _____

Description _____

Areas of Contracting, Products and Services Available

(all applicants check all that apply)

All States

Continental U.S.

Global

AK

AL

AR

AZ

CA

CO

CT

DC

DE

FL

GA

HI

IA

ID

IL

IN

KS

KY

LA

MA

MD

ME

MI

MN

MO

MS

MT

NC

ND

NE

NH

NJ

NM

NV

NY

OH

OK

OR

PA

RI

SC

SD

TN

TX

UT

VA

VT

WA

WI

WV

WY

Other _____

Method of Payment

Attached is my payment of \$_____ for annual dues.

Contractor - \$550 per company

Associate - \$550 per company

Technical Affiliate - \$75 per person

Student - \$25 per person

Check Number _____ Visa

MasterCard

American Express

Card Number: _____ Name on Card: _____

Expiration Date: _____ Signature: _____

Please make checks payable to PDCA. Copy this form and fax or mail it to:

PDCA, P.O. Box 1429, Glenwood Springs, Colorado 81602 • (970) 945-1231

Fax: (970) 384-0512 • E-mail: membership@piledrivers.org • Home page: www.piledrivers.org

WANTED



Original Articles For Piledrivers.org

PDCA is arming members with information relevant to the pile driving industry. Topics of interest include but are not limited to noise, vibration, safety, human resources and management skills.

Description

PDCA is seeking original articles that meet the following specifications:

- Length:** Is 1,500 to 2,000 words and is a typed, clean copy.
- Title:** Has a title with an active verb, followed by a one-sentence or one-paragraph lead that explains the purpose of the article.
- Content:** Provides information that is important and relative to a majority of equipment managers and technicians.
- Byline:** Includes a byline with a one-sentence description giving the author's full name, title, company or organization and contact number or e-mail address.
- Artwork:** Includes supporting charts, tables, photos or artwork in TIFF or JPG file format that are of proper clarity and relate to the article.
- Accuracy:** Is checked for accuracy.
- Submission:** Is submitted as a Microsoft Word attachment in an e-mail to membership@piledrivers.org or on a computer disk in Microsoft Word format to: PDCA, P.O. Box 1429, Glenwood Springs, Colo. 81602.

Caution

PDCA has editorial guidelines available with information on style rules, evaluation and decision of acceptance, copyright transfer and the editing process. Please take a moment to review these guidelines at www.piledrivers.org or by calling (970) 945-1231.

Reward

Articles meeting the PDCA's editorial guidelines will be published in future issues of *Piledrivers.org* and mailed to PDCA's membership. For a complete listing of the editorial guidelines, please visit www.piledrivers.org or call (970) 945-1231.

If you or someone in your office has an article or would like to write an article meeting the description above, please contact the PDCA at membership@piledrivers.org or (970) 945-1231.

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