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Water & Wastewater Equipment,
Treatment & Transport Show

WILD RIDE

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ON THE COVER:

Workers with J. Moraga Construction pothole for utilities before starting a directional drilling job in San Jose, California. J. Moraga Construction, based in Merced, California, is a growing underground/communication construction company founded by Jose Moraga in 2006 specializing in directional drilling, concrete and asphalt restoration, and fiber installation. (Photography by Lezlie Sterling)

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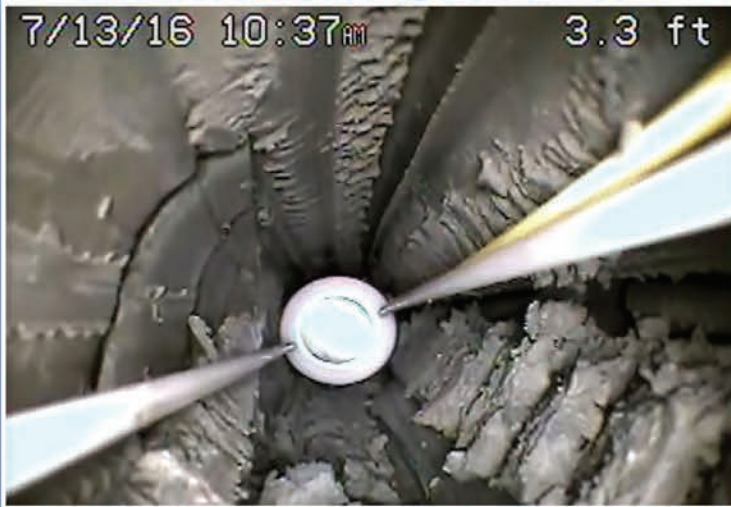
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FINDING THE BEST EMPLOYEES IS HARD. DURING THIS SLOW PERIOD, YOU MIGHT HAVE SOME TIME TO FINE-TUNE YOUR RECRUITING.

Down Time Can Be Profitable Time

WINTER'S HERE. WILL YOU SIT BACK AND RELAX OR DO THE WORK THAT WILL SET YOU UP FOR SUCCESS IN THE NEXT BUSY SEASON?

BY CORY DELLENBACH

The holidays are over, and winter is in full effect, especially in the North. Your equipment is stored; you and your employees are waiting for warm temperatures to return. The slow season is officially here.

It's up to you how you spend this downtime. Some may just want to kick back and recover from a busy year. Others might be itching to keep moving and driving the business ahead.

Here are some productive and profitable ways to use the off season:

ATTEND A TRADE SHOW

It's time once again for two of the biggest shows in the industry. The **Water & Wastewater Equipment, Treatment & Transport (WWETT) Show** returns to the Indiana Convention Center in Indianapolis on Feb. 21-24, while the **North American Society for Trenchless Technology No-Dig Show** is in Palm Springs, California, on March 25-29. Both are great places to see the latest equipment and technologies, obtain continuing education credits, watch live demos, and network. Our Smart Business feature offers tips for making the most of trade shows.

PERFORM AN EQUIPMENT INVENTORY

When your technicians are working sunup to sundown, proper maintenance can get lost in the shuffle. Take time now to prepare for the busy season. Develop an equipment readiness checklist for your excavators, trenchers, pipe bursting machines, directional drills and other equipment. Fix everything now, and you may avoid that costly surprise breakdown in summer.

This month's Machine Shop feature focuses on maintenance for the support vehicles you rely on to deliver your equipment to the job sites.

RECRUIT A NEW WORKER

Jose Moraga, owner of J. Moraga Construction and featured in this issue, has plenty of experience in finding the right workers. His company has grown from just himself in 2006 to nearly 30 people now.

Finding the best employees is hard. During this slow period, you might have some time to fine-tune your recruiting.

Think about the skills you want your next worker to possess. Write a job description that covers all the bases; it can help you find a great employee who will help the company grow. Ask your crew members if they can recommend someone. Tell your friends and family that you have an opening. Post the job on social media sites. Broadcast your needs any way you can.

When you find good candidates, make an offer that stamps your company as a place to make a career. Hire someone who can grow in the position and take on new responsibilities down the road.

FILLING YOUR TIME

Do you have ideas that can help contractors take advantage of slower winter days? Send your suggestions to editor@digdifferent.com.

Enjoy this issue! ▼

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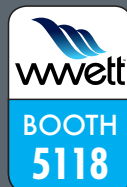
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ANTICIPATED GROWTH

Continued Growth Predicted for Pipe-Bursting Market

Capital City Services owner Wayne Norman believes that as utility providers upgrade their underground lines, the need for pipe bursting will increase, giving companies like his plenty of work to go after in the future.

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TAKING A CLOSE LOOK

7 Information Management Questions Your Business Must Answer

For many businesses, accessing valuable company information in the digital word is becoming complex. Take a look at what information you need to keep, in what form, how long, and many other questions you need to figure out.

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MORE MONEY

What You Need to Know About Offering a Hiring Bonus

As the labor market in the construction industry has tightened, businesses have started using signing bonuses or sign-on bonuses as a way to attract entry-level workers and lower-tier managers. There are things that you need to be looking at before deciding if this is right for your company.

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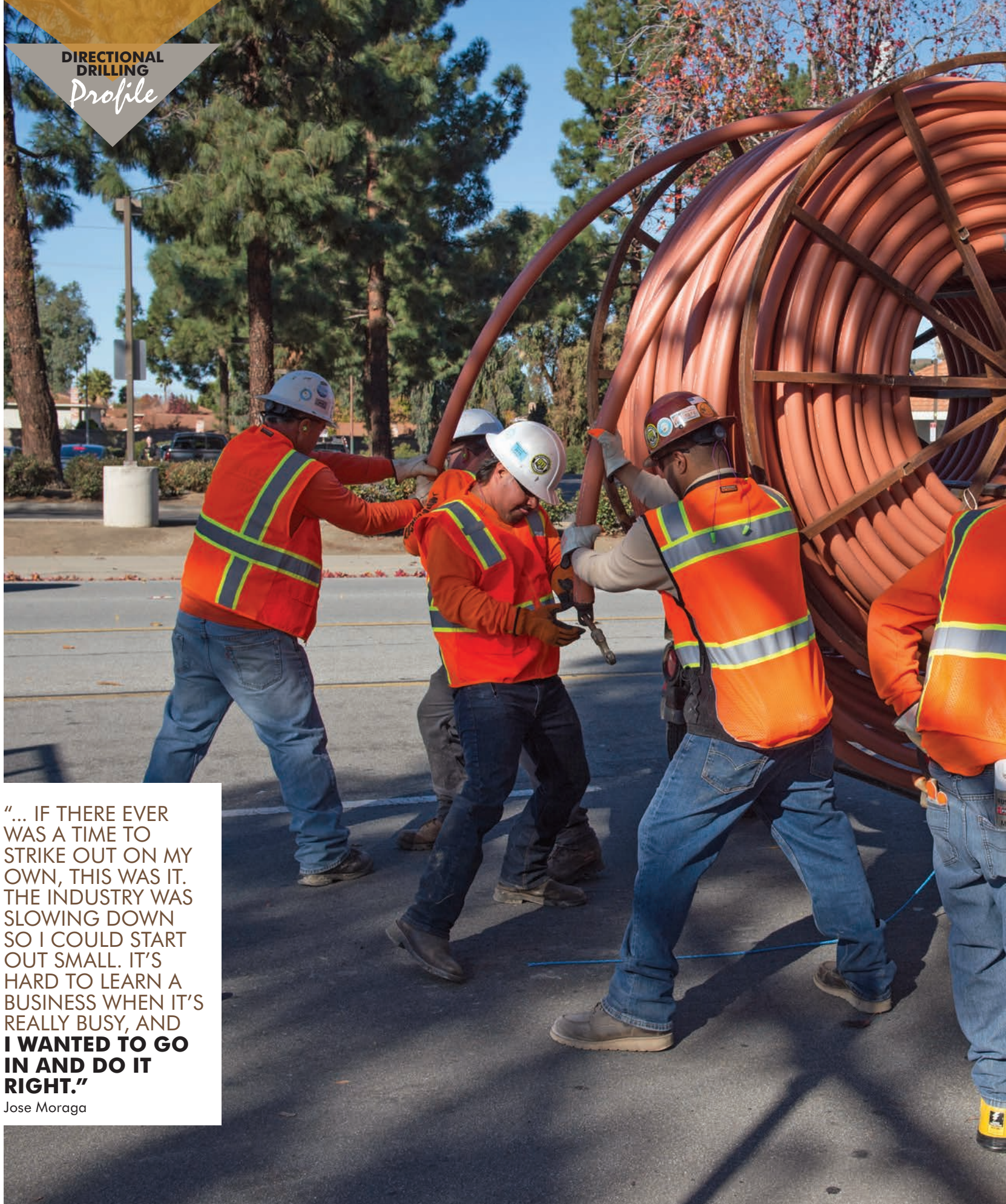
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DIRECTIONAL
DRILLING
Profile



"... IF THERE EVER WAS A TIME TO STRIKE OUT ON MY OWN, THIS WAS IT. THE INDUSTRY WAS SLOWING DOWN SO I COULD START OUT SMALL. IT'S HARD TO LEARN A BUSINESS WHEN IT'S REALLY BUSY, AND **I WANTED TO GO IN AND DO IT RIGHT.**"

Jose Moraga



A crew from J. Moraga Construction prepare for a job in San Jose, California, where they will be directional drilling to install new utilities. While three of the crew get the utility lines ready, another crew member gets the locator set up.

WILD RIDE

COMBINATION OF HARD WORK, EMPLOYEE-TRAINING PROTOCOLS AND INVESTMENTS IN EQUIPMENT BRING GROWTH FOR CALIFORNIA'S J. MORAGA CONSTRUCTION

STORY: **KEN WYSOCKY** PHOTOS: **LEZLIE STERLING**

Jose Moraga has traveled far since he started his underground-construction and excavating business, J. Moraga Construction, in 2006 with just one truck and one employee: himself.

Yet despite operating as a one-man band, Moraga still managed to generate revenue of \$1 million in his first year in business. And in 2017, after years of carving out a profitable niche by focusing on small- to medium-size directional-drilling projects, the company — based in Merced, California — reached nearly \$9 million in sales. Moreover, it now employs 27 people and owns a fleet of equipment worth approximately \$3.5 million.

“It’s pretty wild when you stop and think about it,” says Moraga, 46. His secret sauce? A strong emphasis on safety and customer service. Stringent employee-training protocols. Investments in productivity-enhancing technology — particularly Ditch Witch horizontal directional drilling (HDD) and hydroexcavating units. A willingness to tackle tough jobs. And a bit of a motivational chip on his shoulder from being teased as a young immigrant to America.

“My family moved to America from Mexico in 1980,” Moraga recalls. “I went straight to work in the fields picking apricots. I got teased a lot by other kids because I didn’t speak a lick of English when we moved here. It wasn’t easy, but you get up every morning and go at it. Now, I look back and I thank them for it. They drove me to achieve this.”



A Ditch Witch JT25 directional drill is used on a job site in San Jose, California. The company has used Ditch Witch directional drills from the start.

Power, durability spur contractor to invest in Ditch Witch machines

Ask Jose Moraga, the owner of J. Moraga Construction, to pick his MYMs — Most Valuable Machines — and he answers without hesitation: the company's three horizontal directional drilling machines built by Ditch Witch.

The units range in size from a smaller JT922 (with thrust and pullback force of 9,000 pounds and carriage thrust and pullback speeds of 188 fpm) up to a larger JT25 (27,000 pounds of thrust and pullback force and carriage thrust speed of 182 fpm and carriage pullback speed of 190 fpm).

"With those machines, we can cover everything, from little shots to bigger shots," Moraga explains. "We can drill anything from 4-inch-diameter holes to 24-inch-diameter holes."

Moraga already was familiar with Ditch Witch equipment from his prior job as both a project manager and director of underground operations for a large underground-construction company in Southern California. He also had established a strong business relationship with Ditch Witch executives, having already purchased numerous machines. As such, he was completely sold on Ditch Witch equipment, primarily for one reason: durability.

"You want something that lasts, not just gets the job done," he says. "I love the fact that they don't break down very often and they're very easy to use. The newer technology is great — like the automatic rod installation, which is so much safer because you're not installing the rods by hand."

"And with the new displays, the operator can see right where the rod is going — left or right, up or down — on a display," he continues. "For example, you know that you're 300 feet out and 10 feet deep and at a 2 percent grade. Before that, we used hand signals and walkie-talkies. Now, you can punch in GPS coordinates and the machine goes by itself."

The machines' onboard software also keeps a meticulous record of each bore that's drilled and compiles a full report for customers. "A lot of people now want to have a record of what you did," he explains. "The report will show an actual track of your line underground, where you went up and down and what utilities you crossed and where it exited."



Jose Moraga, owner, J. Moraga Construction

AN UNDERGROUND CAREER

"This" turned out to be a 24-year career in the underground-construction industry. Moraga's foray into the industry began in 1994 at age 22 when he responded to a want ad for construction workers at Can-Am Construction in California. He started as a laborer and followed a classic field worker-to-foreman-to-supervisor-to-project manager career path before being named a director, responsible for 900 employees.

J. Moraga Construction Inc. Merced, California

FOUNDED: 2006

OWNER: Jose Moraga

EMPLOYEES: 27

SPECIALTIES: Underground construction, including directional drilling and general excavation

SERVICE AREA: San Francisco Bay area

WEBSITE: www.jmoragaconstruction.com



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Moraga uses a compact excavator (Bobcat) to dig an exit pit for the directional drill bit.

"SOMEONE TOLD ME YEARS AGO THAT IF YOU OPERATE A SAFE COMPANY, YOU HAVE A SUCCESSFUL COMPANY. I DON'T SHORTCUT ANYTHING — THERE'S TOO MUCH AT STAKE."

Jose Moraga

But in a totally counterintuitive move, he left Can-Am Construction in 2006 to start his own business, even though he knew construction work was slowing down — a precursor to one of the worst economic downturns in American history. "My wife thought I was crazy," he says. "I was making good money. But I always wanted to own my own company and wanted to do it while I was still young enough to rock 'n' roll.

"I figured things would be more manageable if I started out during a slowdown and figured I could always get another job if things didn't work out," he adds. "I told myself that if there ever was a time to strike out on my own, this was it. The industry was slowing down so I could start out small. It's hard to learn a business when it's really busy, and I wanted to go in and do it right. If you go into an industry that's booming, you get thrown into the fire very fast. Still, taking that first step and putting all my eggs in one basket was tough," he notes.

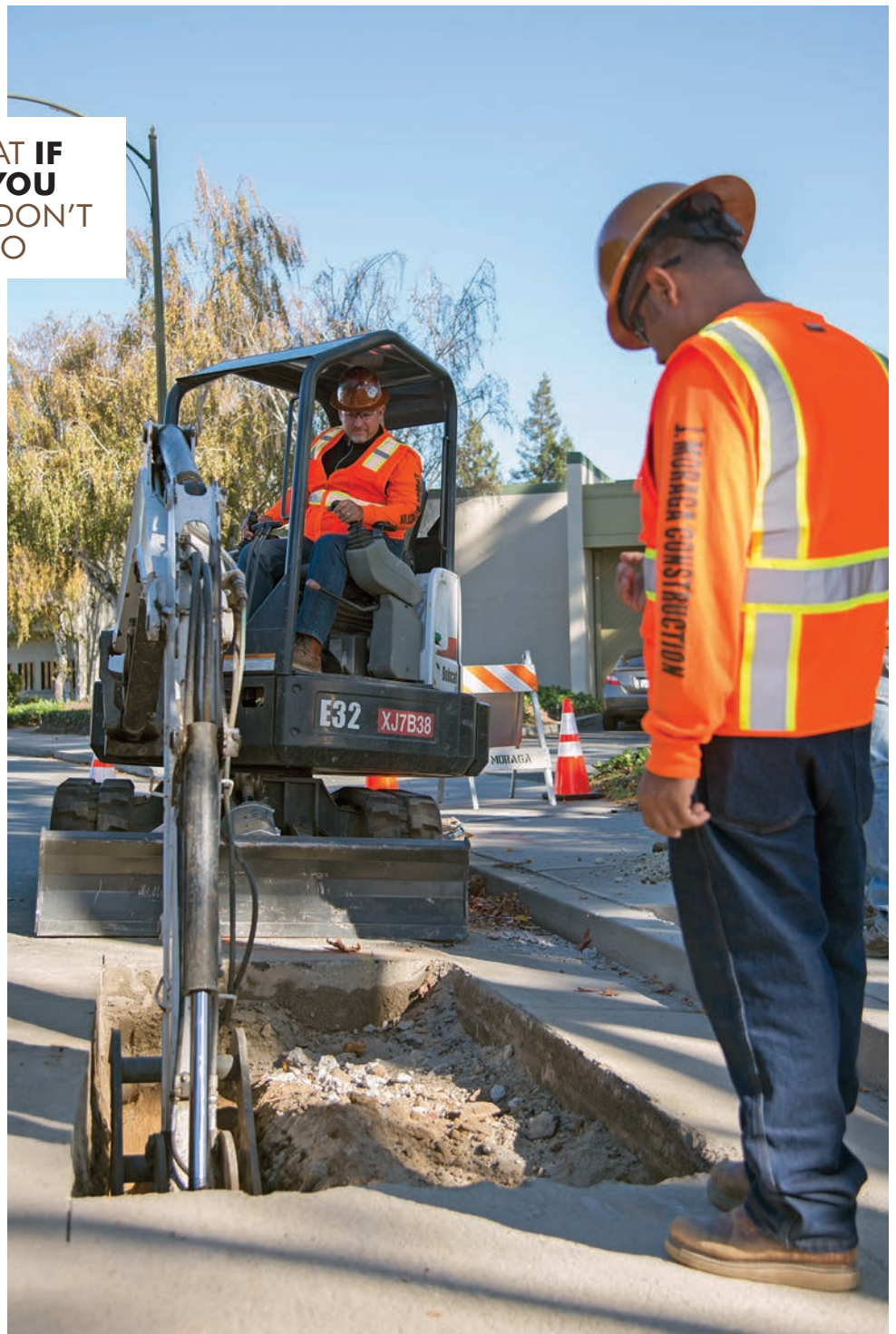
Moraga's bold move was aided by the many business contacts he'd developed after years in the industry. And he knew he'd made the right decision when his former employer went through a major reorganization in 2006, laying off many employees and selling numerous assets. In fact, while driving through Southern California, Moraga saw and purchased one of the company's bright-orange trucks from a used-equipment outfit he passed along a highway. "They actually had three of my old company's trucks, and I bought them all, one at a time," Moraga says.

A key turning point occurred about two months after Moraga incorporated his business in 2006. A Southern California construction company heard he was "the rock-saw king," cutting street pavement and then digging narrow trenches. The firm hired Moraga to do trenching for a couple miles of communication lines for a telecommunications company. "That marked my turnaround," he says. "This was a big company. I had to go out and hire 30 guys for that job and ended up working as a subcontractor. It helped us get stable as far as consistent work goes. For the next five years, that company just kept feeding me work, every day."

GRADUATED TO COMPLEX JOBS

Today, excavating trenches for large telecommunications companies generates about 60 percent of the company's revenue, while directional drilling accounts for the remainder. Most drilling jobs are between 500 to 800 feet long, on average.

Part of the company's growth stemmed from its ability to complete difficult projects. One such job, completed in 2016, required drilling a 730-foot long 22-inch-diameter bore under Interstate 880 in Oakland. The bore was needed to carry four 6-inch-diameter steel conduits for telecommunications lines, Moraga says.



Not only was the bore long, it also had to go as deep as 52 feet and travel in an S-shaped curve to get around deeply sunk columns required to support an overpass. "We're very proud of that job," Moraga says. "You only get one chance on a bore like that. The easement was only 50 feet wide, so if we did it wrong, there wouldn't be enough room to do it again without violating the easement."

The job required more than two months of planning and "walking out," he says. The actual drilling took about two weeks. Plotting the bore's path required extreme precisions because the steel conduit can only bend so far before the welds holding it together snap. "Those welds had to be pretty dang good," he notes. In addition, the project required blocking a road that had to remain open at night, so crews could only work from 9 a.m. to 4 p.m.

"I didn't sleep very good for a while there," Moraga says. "We had to hit that bore on the money — and we did. Mark one down for J. Moraga, baby."

(continued)

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GETTING THE JOB DONE

Of course, complex jobs require good equipment. The heart of the company's fleet of machines is three horizontal directional boring machines made by Ditch Witch. The company also owns four FX60 trailer-mounted vacuum/hydroexcavating machines made by Ditch Witch, each equipped with an 800-gallon debris tank and a 300-gallon water tank.

Moraga says Mike Anderson, president of Ditch Witch, provided lenient purchasing terms for Ditch Witch machines — arrangements that helped J. Moraga Construction grow. "He told me go make some money and then pay me back," Moraga recalls. "I paid the first one off in six months."

"I DIDN'T SLEEP VERY GOOD FOR A WHILE THERE. WE HAD TO HIT THAT BORE ON THE MONEY — AND WE DID. MARK ONE DOWN FOR J. MORAGA, BABY."

Jose Moraga

The company also owns four mini-excavators and two skid-steers, all built by Bobcat; a John Deere backhoe; 11 Ford flatbed trucks (F-350s, F-450s and F-550s); four dump trucks featuring Ford F-650 chassis and 5-cubic-yard dump bodies made by Royal Truck Body; six tilt-bed trailers made by PJ Trailers; jackhammers made by Ingersoll Rand; locating machines manufactured by Subsite Electronics; and an asphalt-rolling machine made by BOMAG Americas. "We're a turnkey company," he says of the asphalt-rolling machine. "We do everything from start to finish."

SAFETY IS EVERYTHING

One of the biggest keys to success is the company's emphasis on safety. "Someone told me years ago that if you operate a safe company, you have a successful company," Moraga explains. "I don't shortcut anything — there's too much at stake."

"There are a lot of J. Moragas out there (companies the same size) that do things on a funky basis — do what they need to do in order to get jobs done — but I'm not going to put myself out there," he continues. "It's just not going to happen. No matter how much money someone offers to pay me, it's not worth the risk."

Moraga also says that a very structured and deliberate process for handling customers and projects has been critical to the company's growth. "If the office operates correctly, the field operates correctly," he explains. "It's all about putting the right people in place here in the office."

The company handles all jobs in a very systematic fashion, from first receiving a job and building files for it to arranging and tracking all preconstruction meetings, filing completed paperwork on time, and prompt invoicing. The bottom line: It's too easy for details such as meetings with city inspectors to fall through the cracks. But they're critical to completing projects on time, so a comprehensive and methodical system is essential, he notes.

"They have to look at the plans to make sure there aren't any conflicts ... requires any parking or road closures," Moraga says. "You'd be surprised at how many construction companies don't set up a meeting to check on those things. They'd rather risk getting a slap on the hand. But we're very methodical. The whole wheel has to happen. Then guess what — you get paid."

PUTTING THE BRAKES ON GROWTH

For the time being, Moraga says he's comfortable with the company's cur-



Francisco Ramirez tracks the path of the directional drill on a job site using a Ditch Witch locator.

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rent size. He points out that the company was slightly larger a couple of years ago in terms of work volume, but that made it difficult to find the right personnel to get jobs completed smoothly. The upshot? "We'd rather stay this size and be sure we can be successful," he says. "We'll go with what we've got — won't stick our necks out too far."

That may sound like an odd stance, given that the underground construction industry is booming right now, especially in San Francisco, San Jose, and Oakland where the company does most of its business. But Moraga says his experience with being responsible for 900 employees, coupled with his concern for customer relationships, keeps his ambitions in check.

"Sure, there's a lot of work out there," he acknowledges. "But it's OK (to not go after all of it). We just want to do things right and keep things moving, just like when I first started out. My concept is a little different for us. Success is keeping our customers satisfied and our employees safe every day. More is not always better." ▼

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Internal joint seal used to stop potable water leak

PROBLEM

Due to a leaky pipe, a major metropolitan city was losing 12,000 gallons of treated, drinkable water every single day. A fix was needed, and fast.

SOLUTION

Miller Pipeline was called in by the city to rectify the problem using its **WEKO-SEAL internal joint seal**. “Dewatering the pipe to make repairs was not an option. The demand was too high,” says Ryan Cooper, WEKO-SEAL specialist. Whatever the fix was, it had to be installed underwater and under pressure. Cooper spent time training divers on how to properly install the seal and monitored the divers’ activity via CCTV on land. Over the hole in the pipe, divers layered 6-inch, 18-gauge stainless steel backing plates to provide strength underneath where the WEKO-SEAL would be applied. Then, they took two double-wide seals and staggered them over the hole, providing maximum protection against future leaks.

RESULT

The fix was made in a fraction of the time that shutting services down would have taken and with immediate results. “It was beautiful: You could watch the geyser go down in a matter of minutes,” Cooper says. **800-428-3742; www.wekoseal.com**



Pipe bursting system saves time and money

PROBLEM

A customer called LBA Air Conditioning, Heating & Plumbing in Mission, Kansas, with drainage problems. Upon arrival, LBA found a slab-on-grade residence with deteriorating cast-iron pipe and no accessible window. They were looking at having to wet cut the concrete floors to replace the customer’s seriously deteriorated trunk line.

SOLUTION

Using video of the **Spartan Tool UnderTaker’s bursting head** breaking open clay and cast-iron pipe as the head is passing through, LBA was able to show the customer how trenchless pipe replacement works. That video helped LBA sell a lateral replacement to the customer. LBA was able to access the pipe from outside of the house and use the UnderTaker to reverse the pull and replace the line.

RESULT

LBA saved the customer the trauma, cost, and mess associated with cutting 60 feet of concrete flooring. A conventional repair could have meant a loss of service for the customer and one to two nights in a hotel, plus the large cost associated with the concrete restoration. Using the UnderTaker, the job was completed more quickly than a conventional repair, and the customer saved the cost of repairing the concrete floor. **800-435-3866; www.spartantool.com tpo**

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LOUISIANA CONTRACTOR BUILDS COMPANY BASED ON STRONG CUSTOMER RELATIONSHIPS AND QUALITY WORK

STORY: KEN WYSOCKY PHOTOS: JOHN BALANCE

When Ronnie Baron Sr. decided to establish his own business in 1997, he wanted the company name to accurately reflect his ambitions. He came up with something simple and direct: Pro Serve, shorthand for professional service.

Since then, the company — based in Prairieville, Louisiana, just southeast of Baton Rouge — has evolved into a roughly \$10 million-a-year company and a regional player in the industry. It primarily serves pipeline, chemical, and petrochemical customers in Louisiana, Alabama, Mississippi, and Texas, but it has worked for customers as far away as California and Utah. Along the way, the company also expanded its services from just industrial vacuuming to hydroblasting and hydroexcavating.

Many things have changed over the past 20 years, but one thing has remained constant: an emphasis on professional service that helps build

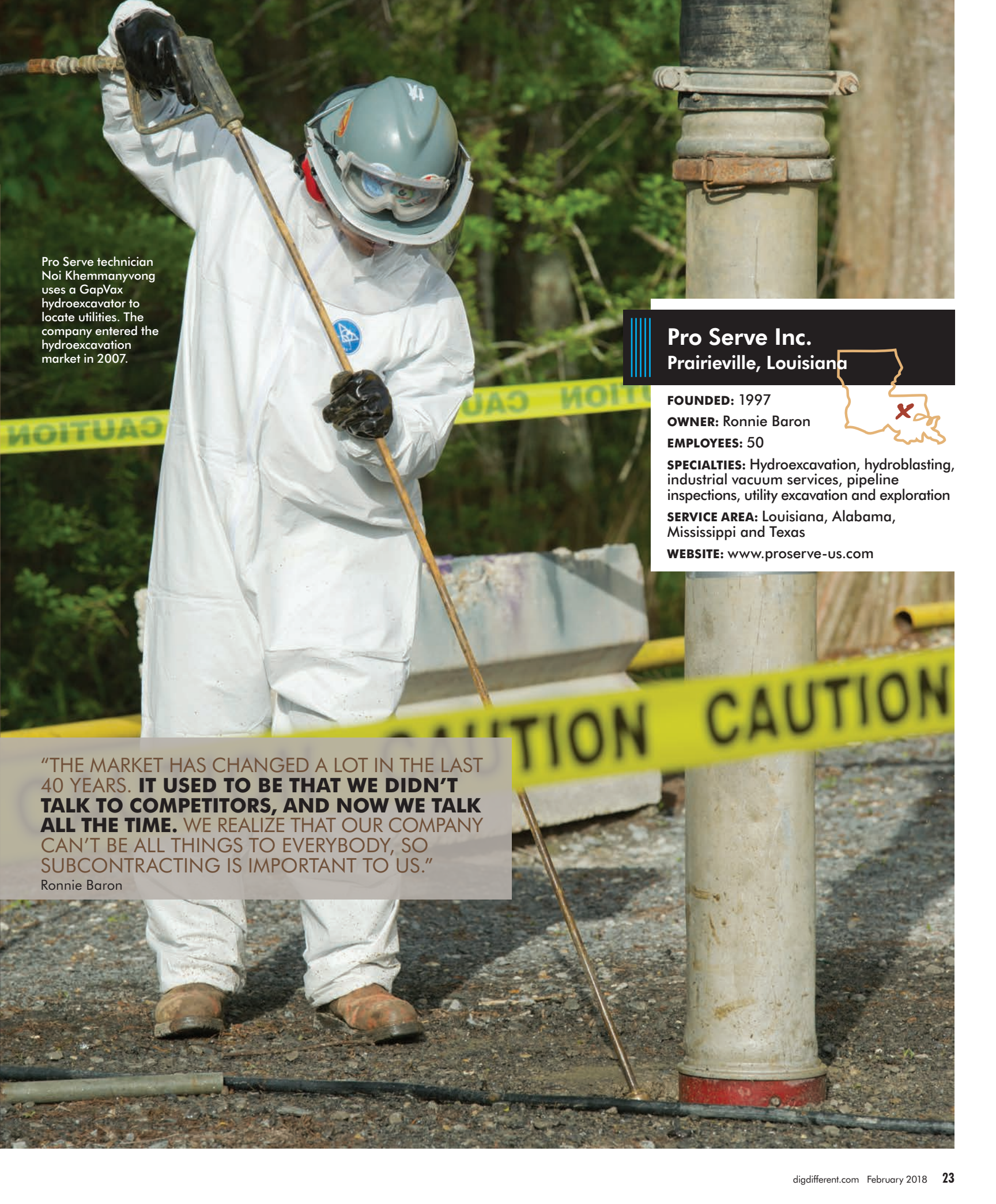
customer relationships and generate word-of-mouth referrals.

PRIMARY GOALS

Professionalism takes many forms at Pro Serve. For starters, consider its fleet of technologically advanced equipment, including 14 vacuum trucks and 14 hydroblasting units. Then there's a wide array of service offerings, aimed at fulfilling customers' various needs. In addition, the company emphasizes employee safety, which is critical to serving the markets in which Pro Serve operates. And last but not least, a sharp focus on quality service.

"Our main goal is to provide safe, quality service — go in and get out and do a job safely," Baron says. "We always want to prove to our customers that they were justified in hiring us."

But for Baron, being a professional also



Pro Serve technician Noi Khemmanyong uses a GapVax hydroexcavator to locate utilities. The company entered the hydroexcavation market in 2007.

Pro Serve Inc.
Prairieville, Louisiana

FOUNDED: 1997

OWNER: Ronnie Baron

EMPLOYEES: 50

SPECIALTIES: Hydroexcavation, hydroblasting, industrial vacuum services, pipeline inspections, utility excavation and exploration

SERVICE AREA: Louisiana, Alabama, Mississippi and Texas

WEBSITE: www.proserve-us.com



"THE MARKET HAS CHANGED A LOT IN THE LAST 40 YEARS. **IT USED TO BE THAT WE DIDN'T TALK TO COMPETITORS, AND NOW WE TALK ALL THE TIME.** WE REALIZE THAT OUR COMPANY CAN'T BE ALL THINGS TO EVERYBODY, SO SUBCONTRACTING IS IMPORTANT TO US."

Ronnie Baron



Thirteen of Pro Serve's fleet of 14 vacuum trucks are equipped with hydroexcavating packages, including 10 GapVax units and four Guzzler units. INSET: Hydroexcavation efforts expose a pipe.

"WE KNOW WHAT WE HAVE TO CHARGE TO STAY IN BUSINESS. YOU'VE GOT TO PICK AND CHOOSE YOUR BATTLES. MOST GUYS BECOME LOW BIDDERS JUST TO GET THEIR FOOT IN THE DOOR, BUT WE'D RATHER GO IN AND EXPLAIN WHY OUR PRICES ARE WHAT THEY ARE."

Ronnie Baron

means knowing his own limitations. As such, he says he's always hired people whose skills shore up his deficiencies. "I know my capabilities and my limitations, so I surround myself with people whose strengths outweigh my weaknesses," he notes. Moreover, he doesn't hesitate to subcontract work to supplement the company's services when needed — a philosophy that requires maintaining good relationships with competitors.

"The market has changed a lot in the last 40 years," he points out. "It used to be that we didn't talk to competitors, and now we talk all the time. We realize that our company can't be all things to everybody, so subcontracting is important to us." It's also more cost-effective to periodically hire subcontractors for services that Pro Serve doesn't offer, rather than investing in new machines that could very well sit idle after a project concludes.

DRIVEN TO SUCCEED

After selling hydroblasting and vacuum services for two different companies for more than 10 years, Baron was positioned for success. "I pretty much knew I could run my own company. It was just a matter of getting financing. I saw that people were making good money (serving) the chemical and petrochemical industries, so I knew that was the market I wanted to get into."

Baron's motivation was simple. "I knew I was never going to get wealthy working for other people," he says.

In the early years, the company's main market was industrial vacuuming for petrochemical customers. But around 2003, the company diversified by entering the hydroblasting industry after Baron hired Curtis Lonidier, an experienced hydroblasting operations manager who now runs that end of the company. The motivation: a much larger market.

"If you took all the air-moving (vacuum cleaning) work on the Gulf Coast

versus hydroblasting, the latter offered five times more volume," he explains. "It presented a much bigger market and more opportunities." On the other hand, profit margins weren't as good because of rampant lowballing on contract bids, especially on projects that used reverse auctions for bidding.

"We lost a lot of business in reverse auctions," he recalls. "We know what we have to charge to stay in business. You've got to pick and choose your battles. Most guys become low bidders just to get their foot in the door, but we'd rather go in and explain why our prices are what they are."

Low-bid companies can't afford to invest in good equipment or pay employees enough to minimize turnover, Baron explains. "Those kinds of companies are going to do five or 10 times the business I do but at 50 percent less profit margins than I do, and I don't understand that mentality. You just hope that customers understand it's no bargain to go with the low bid and get low-quality work."

ENTER HYDROEXCAVATING

In 2007, Pro Serve continued to diversify its services by entering the market for hydroexcavating. Baron's son, Ronnie Jr., urged him to make the move, sensing that the hydroexcavating market was about to explode — especially after the federal government said contractors could no longer use backhoes for excavating on government-funded projects.

"We were there at the beginning and really took advantage of that," he says. "We got a lot of crossover work by leveraging our existing customer base. Our hydroexcavating work has grown and grown and grown. It probably generates about 75 percent of our total gross revenue."

Offering an array of services has benefited the company. Baron points out that if customers like the service you provide and ask you to do something else for them, they'll go somewhere else if you don't provide that service. In

Tough job required a deft hydroexcavating touch

The hydroexcavating division at Pro Serve in Prairieville, Louisiana, mostly exposes underground lines and other infrastructure for pipeline companies. But that doesn't mean it can't handle jobs in other fields, as evidenced by an unusual project the company tackled in 2010.

The problem: failing drainlines under four roughly 300-foot-long 90-foot-wide barracks at a U.S. Air Force base in San Antonio. "Toilets and drains in the showers were falling out the bottom of each building," says Ronnie Barron Sr., the company's founder and owner.

The task at hand: hydroexcavate channels under each drainline, and each building had nine or 10 drainlines running across the width of the structures. But to make it really interesting, each channel required walls angled at 45 degrees to protect workers — both Pro Serve hydroexcavators and contractors replacing the lines — if the walls happened to collapse.

To understand the scope of the challenge, envision an 8-foot-deep channel shaped like a V, with the arms of the V sloped at 45-degree

angles. The bottom of the channel was about 5 feet wide and the top was roughly 30 feet wide. And if that wasn't daunting enough, the closest Pro Serve could get its vacuum trucks was about 85 feet from the barracks.

One contractor had already failed to get the job done, which is why Pro Serve got the call. And when the U.S. Army Corps of Engineers, which had jurisdiction over the project, mandated 45-degree walls, that meant exactly 45 degrees, not 40 or 50, Baron points out.

"They checked the angle about every 10 feet," he says, noting there was no margin for error. "And cutting an exact 45-degree angle in dirt for 90 feet is not easy. ... It takes a real deft touch to hydroexcavate at an angle. I think we're one of the few companies in the region with the expertise to do that. We're blessed with some really great operators."

The project took several months to complete and required four vacuum/hydroexcavators and about 15 employees. "It was a tough job," Baron notes. "But we got it done."

addition, the work Pro Serve performs in the company's two primary customer bases — pipelines and refineries — peaks at different times of the year. These offsetting cycles provide the company with steadier work and more consistent cash flow.

"Pipeline work occurs mostly in warmer months, while refineries schedule their major turnarounds (scheduled maintenance shutdowns) in winter because it's too hot in summer to do that kind of work," Baron explains. "So it's lucky for us that they don't compete with each other."

On the flip side, Baron only expands into services that fall within the company's realm of expertise, which affords it better quality control. "You can only go so far," he notes. "We've been asked to get into other service lines, but we just can't be everything to everybody. We've stuck primarily with air moving and spinoffs in that base market, like hydroexcavating and hydroblasting."

STRENGTH IN NUMBERS

Since its inception, Pro Serve has amassed a large fleet of equipment. The



Some of the employees from Pro Serve include (from left) Clifton Jones, Paul Bouillion, Darren Scott, Ronnie Barron Sr., Noi Khemmanyong, Curtis Lonidier, A.J. Perentin, Ronnie Barron Jr., Preston Williams, and Daniel Vicknair.

company owns 14 vacuum trucks, and 13 of them are equipped with hydroexcavating packages to maximize utility. The fleet includes 10 GapVax units and four Guzzlers made by Vactor. The trucks feature 10- to 16-cubic-yard debris tanks, 800- to 1,000-gallon water tanks, water pumps manufactured by Cat Pumps and Giant Industries (1,500 to 2,500 psi at 5 to 20 gpm), and Hibon (a division of Ingersoll Rand) blowers (2,000 to 5,800 cfm). They're used mostly at chemical plants and to do hydroexcavating (line exposure) for pipeline companies.

Pro Serve has also invested in 14 hydro blasters built by NLB, Jetstream of Houston and StoneAge with water pump specifications from 10,000 to 40,000 psi at 30 to 100 gpm. The units are primarily used to lance and clean tube bundles at refineries and chemical plants. The company also owns a Vermeer air excavation machine for smaller jobs. It features a 1-cubic-yard debris tank and a 1,000 cfm blower.

The company relies on a Myers trailer jetter for cleaning small-diameter sewer lines, a pipeline inspection camera system made by Sewer Equipment, four cart-mounted pressure washers made by Hydro-Quip Manufacturing & Supply, and a multitube lancer built by NLB.

Safe operation of all this equipment also played a key role in the company's growth. "In 20 years, we've never had any issues with our safety record," Baron says. "That's probably the hardest thing to maintain for a small company like us."

Larger companies with hundreds of employees, for example, can suffer on-the-job accidents and still maintain a sufficient experience modification ratio (or EMR, a number used by insurance companies to gauge the past cost of injuries as well as the chances for future accidents). But smaller companies are at a disadvantage because just one accident results in a dramatically larger EMR ratio because the pool of employees is significantly smaller.

"You can go in a plant and do unbelievable work, but you're out the door if you have one or two accidents because the EMR ratio goes up faster proportionately," Baron explains.

SHORTAGE OF SKILLED LABOR

Finding skilled, quality employees to operate the company's expansive roster of equipment is one of the biggest business challenges Pro Serve faces. Baron says he read one study that shows it takes about five years to learn all the intricacies and nuances and become a highly qualified hydroexcavation equipment operator. That makes it critical to hire the right employees, as well as retain them for more than just a year or so, he says.

But that's not an easy task. Baron says he's lucky to find one qualified employee out of 100 interviews. "It's that bad out there," he notes. "That's why we do everything we can to hold onto as many employees as we can. We pay them well, pay for most of their health insurance and give year-end bonuses." Moreover, Baron says he gives \$100 to any employee who refers a potential employee who gets hired and stays with the company for at least 90 days.

Lack of qualified employees is the No. 1 inhibitor to future growth, Baron says. "We've been 100 percent tapped out this whole year. Every piece of equipment and all our people are working. We've probably turned down 20 or 25 jobs."

Nonetheless, he's still optimistic about future growth. One of the company's primary customer bases — oil-related businesses — is expected to boom again for the next three to five years.

"So things look great for us, provided we can hire enough people. I'm more optimistic today than I've been in a long time." ▼



"OUR MAIN GOAL IS TO PROVIDE SAFE, QUALITY SERVICE — GO IN AND GET OUT AND DO A JOB SAFELY. WE ALWAYS WANT TO PROVE TO OUR CUSTOMERS THAT THEY WERE JUSTIFIED IN HIRING US."

Ronnie Baron

Ronnie Baron Jr. and his dad, Ronnie Baron Sr., with their GapVax hydroexcavator, one of the newest for the company. The pair is optimistic about continued future growth for their company.

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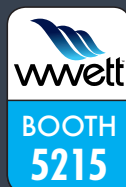
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Show Stopper

CONTRACTORS OFFER TIPS TO HELP BETTER MANAGE YOUR TIME AT A TRADE SHOW AS TWO OF THE INDUSTRY'S BIGGEST EXPOS APPROACH

BY JOAN KOEHNE

Attending a trade show can provide a welcome break from the daily routine, but anyone who mistakes a trade show for a vacation isn't reaping its full benefits. Trade shows offer a wide range of resources, from new products and cutting-edge technology to educational seminars and networking opportunities.

"The trade shows are just an amazing opportunity to network with people in our industry and to be able to find the latest and greatest," says Heather Morehouse, president of Davids Hydro Vac, of Minnesota.

Trade show season is in full swing. The Water & Wastewater Equipment, Treatment & Transport (WWETT) Show for wastewater and environmental service professionals is Feb. 21-24, at the Indiana Convention Center in Indianapolis.

A month later, the North American Society for Trenchless Technology (NASTT) holds its annual No-Dig Show from March 25-29, at the Palm Springs Convention Center in Palm Springs, California.

ROAMING THE FLOOR

Maneuvering through the hundreds of displays and vendor booths of the expo floor can be mind-boggling and exhausting.

"It is overwhelming because there are so many vendors and sometimes they're all spread out," Morehouse says. Determining the best method to hit the trade show floor takes some planning. "It's really just about doing your homework beforehand," Morehouse says.

She starts with a general idea of the products and services she's interested in and a list of vendors exhibiting at the show. With a little online research,

she can narrow down the list to the key vendors she wants to visit and map out her day. "A lot of the shows are so big you've got to have a plan," she says.

Downloading the trade show's app can be helpful, also. "Not only does it have a map, but a really great vendor list," Morehouse says. "You can find what you're

"THE TRADE SHOWS ARE JUST AN AMAZING OPPORTUNITY TO NETWORK WITH PEOPLE IN OUR INDUSTRY AND TO BE ABLE TO FIND THE LATEST AND GREATEST."

Heather Morehouse

looking for. They usually have things categorized, so the app is really easy to use."

Michael Flaherty, 65, says he'll leave the app for the younger generation. The owner of APC in Massachusetts has 42 years' experience in the industry, and he's accustomed to reading through the trade show program and circling the seminars and demos he wants to attend. Each day, he'll find a couple of topics that will help him better understand how to run the business or deal with specific situations.

A look at the shows

WHAT: **WWETT Show**

WHEN: Feb. 21-24

WHERE: Indiana Convention Center, Indianapolis

ABOUT: The Water & Wastewater Equipment, Treatment & Transport Show is the largest annual trade show for wastewater and environmental services professionals, with 600 exhibiting companies, 100-plus conference sessions and live demos. Educational seminars are held Feb. 21-23, while the marketplace (exhibit hall) is open Feb. 22-24.

WEBSITE: www.wwettshow.com

WHAT: **No-Dig Show**

WHEN: March 25-29

WHERE: Palm Springs Convention Center, Palm Springs, California

ABOUT: NASTT's No-Dig Show is the largest trenchless technology conference in North America. The show offers six tracks and 160 peer-reviewed, non-commercial presentations, including case studies. Includes an exhibit hall with over 190 exhibiting companies.

WEBSITE: www.nodigshow.com



A big component of the No-Dig Show is its educational opportunities. There are over 160 presentations scheduled, including case studies, throughout the week-long show.

“I go to see the equipment, but equally, I go to get some new information, like on confined spaces or hauling materials,” he says. He’s always on the lookout for ingenious ideas that will improve operations or solve problems in the field. The formal and informal settings of trade shows are perfect for giving and receiving advice.

NETWORKING OPPORTUNITIES

Flaherty says he always books a hotel close to the convention center, not simply because of the convenience of staying within walking distance. Nearby hotels also are rich in casual networking opportunities.

“People congregate at the hotels closest to the convention center,” Flaherty says. “You might talk to some guy from Oregon who has the same type of trucks as you, and you might find another type of business complementary to your business you’re doing. You learn by talking to people.”

Parties, demos, and events also provide a good environment for networking, Morehouse says.

“We’re such a specialized niche in our industry. It’s a really good opportunity for our employees to network with the people who do the same type of work that they do because there are not a lot of hydroexcavation companies,” she says.

Morehouse loads up on business cards, brochures, and Davids Hydro Vac T-shirts and hats when she hits a trade show to capitalize on the give-and-take atmosphere. In some instances, she’ll ask a vendor to scan her name badge and get in touch with her after the show.

Flaherty recommends picking up brochures and business cards and tucking them into the handy bags provided by vendors.

“Most of the time when I get back to work — it might be a month later — but I’ll look at the information I got,” he says. Flaherty is especially interested in climbing into the latest model vac trucks.

SAVING TIME

“What’s nice about the show is its one-stop shopping,” he says. Manufacturers from the U.S. and Canada are on display, saving him the time and expense of traveling to multiple manufacturing facilities. Along

with trucks and equipment are safety products, technology services, promotional materials, and other industry-specific items.

“We’ve actually found some really good services at trade shows,” Morehouse says. “It isn’t just about the equipment; it’s about being able to find new products that are going to help support your equipment.”

Three days at a trade show save her hours of time on the internet looking for what the company needs, Morehouse says.

“We like going to the trade shows because it’s everything in one spot. They’ve done all the research for the industry, and they put all these people together for us,” she says.

“You might come back with a different approach or a different angle,” Flaherty says. ▼

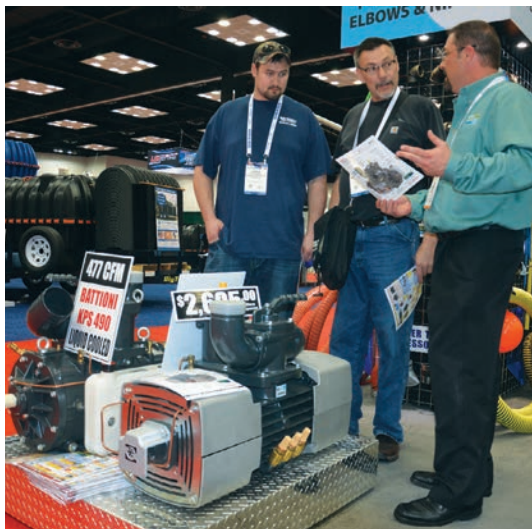


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A staff member from VARC0 (right) explains equipment to two Water & Wastewater Equipment, Treatment & Transport (WWETT) Show attendees at the 2017 WWETT Show in Indianapolis. Trade shows are a great way to see new equipment and to talk with the manufacturers face-to-face.

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5 Steps for Better Routine Equipment Maintenance

FOLLOW KEY SERVICE INTERVALS, INVESTIGATE AND CORRECT MINOR PROBLEMS BEFORE THEY BECOME MAJOR HEADACHES

BY BRENDA SILVA

In the daily management of construction equipment and job site priorities, busy installing contractors risk having preventative maintenance of vehicles and equipment fall by the wayside. To reduce those risks, contractors are encouraged to establish a preventative maintenance program and educate staff on how to follow it. When maintenance becomes everyone's responsibility, there is less chance for routine maintenance to be neglected.

Aside from routine oil changes and tire checks, several additional maintenance tasks should be at the top of every to-do list. This includes many items that have the potential to decrease productivity and increase costs, ultimately affecting much more than just your vehicle fleet.

Well-maintained vehicles and equipment will help your machines last longer, provide more reliable service, and pay you back when it's time to sell. And more importantly, properly functioning equipment will protect your crew, according to Leighann Follis, marketing specialist at Geneva Equipment of LaSalle, Illinois.

"Vehicles in good operating condition also reduce the likelihood of operator injuries due to faulty equipment," she says. "On the other hand, poor maintenance results in employee downtime, untimely project completion, lost wages, and increased operating costs."

According to industry professionals, the following five tips can keep contractors moving in the right direction:

1 CREATE AND FOLLOW A PREVENTATIVE MAINTENANCE PROGRAM

By creating a preventative maintenance program for your support vehicles and having all employees adhere to it, performing maintenance quickly becomes second nature to everyone. Maintenance program templates are available online for contractors to download, copy, or duplicate; however, some contractors prefer to make their own. With a clearly defined and explained program, there's no reason support vehicles can't receive the same attention as job-specific heavy machinery. Getting into a new habit can play a crucial role in increasing the life of the vehicles and the project bottom line.

2 TRAIN YOUR EMPLOYEES TO HELP SPOT POTENTIAL PROBLEMS

All employees should be trained to spot the signs of trouble long before they occur and

become much more costly to the job duration and profits. Follis points out the importance of a five-point inspection for all support vehicles and equipment.

"Our staff thoroughly examines the interior and exterior of all vehicles and equipment, specifically looking for signs of damage," Follis says. "This includes checking for any bare wires that may be exposed and that all connec-

"VEHICLES IN GOOD OPERATING CONDITION ALSO REDUCE THE LIKELIHOOD OF OPERATOR INJURIES DUE TO FAULTY EQUIPMENT."

Leighann Follis

tors are intact and not corroded or damaged. We also inspect all brakes, belts, hoses and shifters to ensure they are in good working order. It's also important to check for any front-end maintenance, transmission flushes and to check all fluid levels."



PHOTOGRAPHY BY JOHN BALLANCE

Pro Serve's Daniel Vicknair performs maintenance on a truck in the company's fleet in Prairieville, Louisiana. As a vital part of machine operation, fluids should be checked and sampled regularly as part of a scheduled preventative maintenance program.

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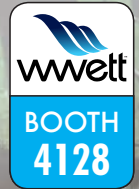


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REM Directional workers perform maintenance on a fleet truck. Beyond the routine oil changes and tire checks, there are several additional maintenance items that should be at the top of every to-do list.

Protect electrical wiring from pooled rainwater and melting snow and ice that can end up inside machinery during long periods of field operation. Ongoing exposure can ultimately shorten the life of the equipment.

3

PAY CLOSE ATTENTION TO FLUID LEVELS

Ensure vehicles and equipment have the proper fluid levels and lubrication to guarantee high performance. While contractors realize fluid levels are vital to machine life, this is a commonly overlooked aspect of regular maintenance. Noticed too late, improper or inad-

equate fluid levels can lead to faster wear and damage along with a shortened equipment life span. Fluids should be checked and sampled regularly as part of a scheduled preventative maintenance program — adjusted whenever necessary and documented — for optimal operation.

4

FOLLOW FACTORY-RECOMMENDED MAINTENANCE SCHEDULING

Follis urges contractors to pay close attention to maintenance scheduling and says, “It is always advisable to follow all manufacturer recommendations because they are put in place by those who know the vehicle and/or equipment best.” It’s a good idea to place stickers on equipment that need maintenance at certain intervals as a constant reminder to schedule service. In addition, contractors should keep original owner’s manuals for equipment as a reference of service-related conditions that can void a warranty.

5

KEEP DETAILED RECORDS FROM THE TIME OF PURCHASE

Keeping detailed service records cannot be stressed enough. These records serve as the vehicle or equipment’s personal history after purchase and provide new employees or second owners with important information about what is due for service at any given time. Good record keeping can add value at resale and is key to maintaining and extending the life of your vehicles and equipment. ▼

HAVING MAINTENANCE ISSUES?

Do you have a question about maintenance on a piece of equipment? Dig Different can track down the answer for you in our Machine Shop feature. Send your question to editor@digdifferent.com or call 800-257-7222.

PHOTO BY MEGGAN HALLER

Seeing Below the Surface

UNDERSTANDING HOW HIGH-TECH UTILITY LOCATORS WORK IS THE FIRST STEP IN PROTECTING THE UNDERGROUND ASSETS

BY KEN WYSOCKY

A utility locating technician is a magician of sorts, slowly waving a wand through the air to determine the precise location and depth of a buried utility line — all while enhancing job site safety and productivity. Pretty neat trick, right?

Of course, these are technicians, not magicians, and they're wielding some impressive technology. But to the uninitiated, understanding and using these high-tech instruments can seem daunting. Transmitters, receivers, grounding stakes, milliamps, as well as hertz (Hz) and kilohertz (kHz) frequencies — how does it all work?

THE BASICS

As confusing as it may appear, it all boils down to one simple thing: magnetic fields. If you think back to middle school science, you'll no doubt remember that electricity produces magnetic fields; and that forms the basis for utility locating.

"It all works off magnetics," says Matt Lumbers, product manager for Sub-site Electronics. "Anytime electric current flows, it produces a magnetic field."

To understand how locators work in concert with these magnetic fields, let's start from the beginning. The most commonly used locating systems use two basic components: a transmitter and a receiver (a hand-held wand). Both are battery-powered. The transmitter sends current through a line, and the receiver detects the resulting electromagnetic waves, or frequencies, produced by that current. The receiver is capable of picking up a wide range of frequencies, typically ranging from a low end of 256 Hz to a high end of 83 kHz (or 8,300 Hz).

There are two different kinds of locating methods: active and passive. In active detection, you create current by connecting a transmitter directly to a cable or pipe. With passive detection, you're tapping into pipelines (typically metallic power lines) that create their own magnetic fields or currents. Other types of pipes, such as plastic gas lines, are installed with jacketed lines called tracer wires that conduct electric current.

If tracer wires weren't installed, other options exist. For instance, you could send a signal-generating device called a sonde through a pipeline via a cable. The wand detects the sonde's location. "If this is not possible, then you can use ground-penetrating radar (GPR), which can see nonmetallic objects underground," Lumbers says. "But this technology is very soil dependent and expensive, which is why it is not used very often."

GETTING CONNECTED

The most common form of utility locating — known as conductive mode — is done with direct-connect cables that resemble jumper cables, with a red

The most commonly used locating systems use two basic components: a transmitter and a receiver (a hand-held wand). The transmitter sends current through a line, and the receiver detects the resulting electromagnetic waves, or frequencies, produced by that current.



PHOTOS COURTESY OF McLAUGHLIN

lead and a black lead. To begin, plug the direct-connect cable into the transmitter, and then connect the black lead to a ground stake and the red lead to the pipe you're trying to locate, or perhaps a meter to which it's attached. In other instances, you might connect the red lead to a pedestal in a utility right-of-way, Lumbers says.

Proper grounding is important: The better the ground, the stronger the signal. As such, it's best to locate the ground stake as far as possible from the expected trace path. Placing the ground stake at a 90-degree angle from the trace path is your best option.

"JUST BECAUSE SOMEONE PUTS PAINT ON OR FLAGS IN THE GROUND DOESN'T MEAN THEY'RE ACCURATE."

Matt Lumbers

Next, turn on the transmitter and choose a low frequency for starters, and then set the wand to the same frequency. Look at the wand's milliamp reading to verify good continuity; the higher the milliamp reading, the better the connection.

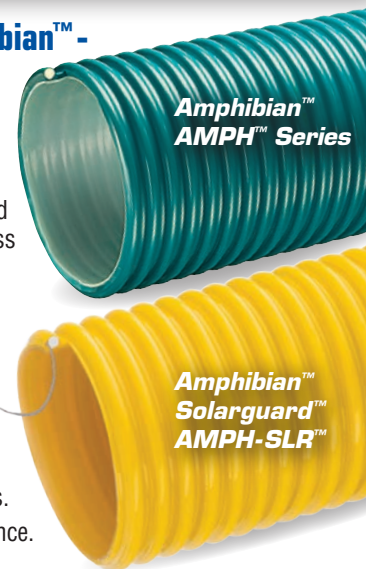
Why start at a low frequency? A lower frequency is not as prone to "bleeding off" onto other nearby lines, which is critical in an area congested with underground infrastructure. To locate gas pipes, for example, start around 815 or 870 Hz, Lumbers suggests.

After choosing a frequency, move about 25 feet away from the transmitter and walk in a circle. As you do so, look for a peak response on the wand, which is indicated both numerically and by a change in a tone emitted by the wand. The pitch goes higher when you're directly above the line you're seeking, he says.

After you find a peak signal spot, follow the expected trace path. Every 5 feet or so, move the wand from side to side to ensure you're following the peak signal path. Do this for as long of a distance as needed. If the signal suddenly

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Poor ground connections or bad ground placement are two of the most common rookie errors in utility locating.

weakens, the pipeline probably changed direction. Arrows on the wand's display panel will guide you back, Lumbers says.

If no pipe is located at the initial frequency setting, then work your way up the range of frequencies. "Think of the frequency range as a target where you're starting at the center ring, which is 256 Hz, and moving outward," Lumbers explains.

"The next stage is midrange frequencies, which typically range from 8 to 33 kHz. And if that doesn't work, try going up to 44 kHz."

Soil conditions can also affect utility detection. For example, drier soils make it more difficult to ground a detection system. The workaround? Pour a saline solution around the ground stake or moisten it with water, Lumbers advises. "Wetter soil is always better."

COMMON ERRORS

Poor ground connections or bad ground placement are two of the most common rookie errors in utility locating. "If you're working in an area with multiple utility lines and place a ground stake over a telecom line, the wand may recognize both that line and the gas line you're looking for," Lumbers says. "That will result in bleeding off — you won't isolate the line you're trying to find."

Incorrect frequency selection — starting on the high end, for example — is another common mistake. "If I can successfully locate that utility using a lower frequency, then I don't have to change to a higher frequency that's more likely to bleed off," he says.

You can expect to spend anywhere from around \$2,500 to \$8,000 for a utility locating system, depending on features and accessories. To get a good return on investment, consider brands that offer features such as longer battery life, remote control operation for changing frequencies, and dual-output units that allow you to locate two lines simultaneously. All these features improve productivity and efficiency, Lumbers notes.

Given the complexity of the technology, are these locator systems difficult to operate? Not with proper training, he says. "It's not difficult for me, and I'm not an engineer. If I can do it, anyone can."

TRUST, BUT VERIFY

When utility workers use locators, they're typically verifying the work already performed by contracted utility locating services. Isn't that just wasteful duplication of services? Not really, explains Lumbers.

"Just because someone puts paint on or flags in the ground doesn't mean they're accurate," he says, referring to the color-coded paint marks or flags used to mark utilities. (Red indicates electric power lines, green refers to sewer lines, yellow marks gas lines, blue indicates waterlines and orange points out communications lines.) "Plus, they have a margin of error that ranges from 18 to 24 inches on each side (of the markings or flags). Moreover, their markings don't tell you the exact depth of the lines.

"One issue we have in the field is that contract locators get paid by the ticket," he continues. "The more tickets they get done, the more they get paid, so it's all about speed. So if I pull up on a job site, the first thing I want to do is verify the utility location and its depth."

Then, it's up to you to safely expose the utilities. ▼

BY CRAIG MANDLI

Air Excavation

VACMASTERS SYSTEM 6000

The VACMASTERS SYSTEM 6000 is the first air-vacuum excavation system with the power to trench as well as pothole. It is designed from the ground up to lower costs, reduce injuries and eliminate damage claims. The system uses supersonic air to penetrate, expand and explode the soil from within while keeping it dry for easy vacuuming and quick backfilling. In turn, this will also increase revenues and profitability by doing more work in less time.

800-466-7825; www.vacmasters.com



Backhoe

John Deere L-Series

The John Deere L-Series backhoe includes precision mode, enhanced pilot controllers, two new rear quick coupler offerings, and a redesigned hydraulic thumb. As a new standard feature on the 310SL/HL, 410L and 710L, precision mode allows reduced-speed hydraulic functions while operating the backhoe end of the machine, all with the push of a button on the Sealed Switch Module. The mode allows accurate, detailed work to be performed easily in tight areas, around utilities, or while craning; and it helps new operators become comfortable with the backhoe as they master their



operating skills. The pilot controller has an increased metering range, enhancing operator feel at the control helm. Enhanced consistency between functions (acceleration and deceleration) allows for smoother operation and reduced system oscillation.

800-503-3373; www.johndeere.com

Fiber Blowing

General Machine Products (GMP) JetStream Cable Blowing Machine

The JetStream Cable Blowing Machine from GMP can be used for microfiber to traditional backbone cable installation, as it is adjustable to place .23- to .79-inch cable diameters into .75- to 1.50-inch SDR diameter ducts. It offers a single 32 cc hydraulic motor, with a double belt drive concept powered by a supplied power pack with oil cooler. It provides a secure cable grip with precise torque and speed control to propel cable safely and securely through the duct in either forward or reverse direction. The pushing force can also be adjusted to suit the cable stiffness. With easy-to-use, ergonomic controls for one-person operation, its electronic monitoring system provides readouts of speed and distance — plus includes the security of an emergency stop capability.

215-357-5500; www.gmptools.com



Hydroexcavation Equipment

Ditch Witch Prospector Nozzle

To help keep operators safe and productive on the job site, the Ditch Witch Prospector Nozzle boosts performance on hydroexcavation jobs. Operating at 3,000 psi, the nozzle efficiently cuts through a variety of soils while using less water for operation. Its rotating, 18-degree conical design provides optimal coverage and a cone-shaped cut, reducing damage to underground utility lines. Constructed with durable stainless steel housings and tungsten carbide wear surfaces, the nozzle is able to withstand harsh excavating environments while providing a long life. It is compatible with all Ditch Witch vacuum excavators and others on the market.

800-654-6481; www.ditchwitch.com



Foremost 2000

The noncode Foremost 2000 is mounted on a tridem or quad-axle chassis with 2,000-gallon water tanks; 13-yard debris bodies; and a 70-inch aluminum, heated, lit and insulated van body. It is available with a standard Robuschi RBDV125 blower or Robuschi RBDV145, providing 6,400 cfm and full vacuum. All working components are housed in the van body. The water system is comprised of a Cat 3560 wash pump, 740,000 Btu boiler and full winterization features. The 26-foot, rear-mounted extendable boom is operated by a wireless Omnex controller, which also allows for control of the off-loading, vacuum, wash and vehicle revolutions per minute functions. This boom is stored on the rear fender with the dig tube attached for convenient digging to 18 feet prior to adding any extension pipe.

403-295-5800; www.foremost.ca



GapVax HV33 HydroVax

The HV33 HydroVax from GapVax is 30 feet long overall on a medium-duty chassis and includes a 600-gallon water tank, 6-cubic-yard debris body, 14- to 17-foot 6-inch boom in 8 or 6 inches, 4,000 cfm and an inverted fully opening tailgate.

888-442-7829; www.gapvax.com



Hi-Vac X-Vac X-13

The X-Vac X-13 hydroexcavator from Hi-Vac has a 27-inch Hg, high-capacity vacuum system; a 10 gpm at 2,500 psi triplex water pump; a top-loading, 360-degree boom; poly-graphite, rust-free water tanks; a power transfer with OMSI heavy-duty transfer case design; and a noise-deadening, heat-retaining enclosure that surrounds both the water system and the vacuum system. It can carry up to 23,000 pounds, and it can transport and dump debris on site.

800-752-2400; www.hi-vac.com



Hydra-Flex Ripsaw

The Ripsaw rotating turbo nozzle from Hydra-Flex blasts a 0-degree water stream at up to 3,200 psi while rotating at a high speed to provide an 18-degree cone of coverage. Its cone-shaped flow pattern is ideal for potholing applications. The heavy-duty, high-impact nozzles are constructed with stainless steel housings and tungsten carbide wear surfaces to withstand harsh environ-



ments and provide long life. Repair kits are available for extended life and lower operating costs. Select from traditional coating (blue) or upgrade to the heavy-duty coating (green), a formulation designed for use in extreme environments. Greater impingement allows users to complete jobs faster or use a smaller nozzle size while getting the same impact as nozzles with higher flow rates. **952-808-3640; www.hydralflexinc.com**

LMT Smart-Dig HX-2100

The Smart-Dig HX-2100 hydro-excavator from LMT is powered by a 59 hp Kubota VT2403 diesel engine that drives a 1,300 cfm Tuthill blower and 2,200 psi Udor U.S.A. water blaster. The compact design includes a 700-gallon debris tank and 300 gallons of freshwater. The trailer has a fully automatic rear-open door with wireless remote control. Filtration is provided by the Smart-Dig dropbox and washable PTFE filters. An antifreeze winterization system is standard, and an optional diesel-powered water heater is available for colder climates and improved digging performance.

309-932-3311; www.vaxteel.com



McLaughlin ECO75

The ECO75 truck-mounted vacuum excavator from McLaughlin has a 74 hp DEUTZ diesel engine that powers a 1,200 high cfm vacuum blower and an 8.0 gpm water pump capable of 3,000 psi operating pressure. It is an ideal choice for compact job sites, production potholing, setting power poles, or fluid management in directional drilling operations. The vacuum excavator also has a large, 5-inch boom that pulls more material and reduces clogging to enhance job site production. Contractors can customize the unit to meet their business needs by choosing either a 500-, 800- or 1,200-gallon-capacity spoil tank as well as the option of adding a sewer jetter or air compressor. By utilizing an auxiliary engine to power the vacuum excavator, contractors will see reduced fuel consumption compared to running the vacuum excavator off a PTO-driven truck engine.

800-435-9340; www.mclaughlinunderground.com



NozzTeq MONRO-JET

The MONRO-JET hydroexcavation nozzle from NozzTeq combines the power of a solid-stream pencil jet with the large coverage of a fan jet. Its circular water jet motion generates tremendous power at modest gallons per minute rates, allowing the operator to move faster whether hydroexcavating, surface cleaning or cleaning sewer lines. It can be used for other types of surface cleaning such as concrete, steel, castings and large surface areas including line removal from runways. It can be modified for internal pipe cleaning of sewers and pipes of all types. An orbital design increases performance at a lower gallons per minute rate and pressures as high as 36,250 psi.

866-620-5915; www.nozzteq.com



Presvac Systems Hydrovac

The versatile Presvac Systems Hydrovac is designed for cold weather operation with optional full compliance with DOT specifications for collection or transportation of hazardous materials. The high-vacuum blower allows extraction of all types of soils, gravel, rock, clay, water and silt material, with knockout features in the debris tank minimizing carryover. Modular filtration configured to blower size provides blower protection and minimal maintenance. It comes with a



heavy-duty, 8-inch boom that extends up to 25 feet, with six-way hydraulic power and wireless controls for all boom functions, soft-start water pump, vacuum breaker and truck engine speed.

800-387-7763; www.presvac.com

Ramvac by Sewer Equipment HX-12

The HX-12 hydroexcavator from Ramvac by Sewer Equipment has a 12-yard debris tank and a temperature-controlled environmental chamber that contains the entire water system, including water tanks. A directional discharge system allows the operator to off-load debris back into the excavation site when finished, without the mess of dumping the tank. This system also allows operators to blow any obstructions out of the dig hose. It includes a long-range wireless remote, NEMA 4 electrical system, a 900,000 Btu water boiler and a three-stage cyclonic filtration system. The standard 4,400 cfm blower delivers fuel economy. It is available with a RamAir air excavation system touting a 185 cfm at 150 psi air compressor for when the operator can't risk adding water to the problem area.

877-735-4640; www.ram-vac.com



Soil Surgeon hydroexcavating tool

The Soil Surgeon hydroexcavating tool fits any sewer combination truck equipped with a telescoping 6- or 8-inch boom. The tool has a 1-inch water connection. The operator controls water pressure and power-through truck controls. It has a 6-foot Tuff Tube with handles to guide the unit down for potholing or side to side for trenching. Six jets boring inward cut the soil, while six boring outward bring the tube down.

949-363-1401; www.soilsurgeoninc.com



StoneAge HXR-300 Rotary Hydro-X

The HXR-300 Rotary Hydro-X nozzle from StoneAge uses an angled rotating jet pattern that's designed to decrease jet dwell time and reduce undercutting for effective work around utilities. Users can save labor hours and heavy-equipment costs, all while avoiding the risk of damage to buried utilities. It is fully rebuildable, allowing the operator to reduce cost of ownership by extending the life of the tool with minimal, low-cost maintenance. There are three jetting options available for a variety of applications: higher flow for harder surfaces, intermediate flow for general use, and lower flow for water savings. It handles pressures up to 5,000 psi and flow rates from 3.5 to 10 gpm.

866-795-1586; www.stoneagetools.com



Super Products Mud Dog 1200

The Mud Dog 1200 12-yard-debris-capacity hydroexcavator from Super Products has a rear-mounted boom capable of a 19- to 27-foot reach, 335-degree rotation, 45-degree upward and 25-degree downward pivot. This range of boom motion allows crews to achieve greater work area access and deeper digging without halting production to reposition the trunk. Easy-to-use ejector plate unloading technology provides fast, thorough and safe debris removal. A tilt-unloading feature ensures liquids in the debris tank are cleared quickly and efficiently, even when unloading in an up-slope/nose-down position. Options include the Acculevel load-sensor system for precise debris tank level measurement.

800-837-9711; www.superproductsllc.com

(continued)



Suttner America static hydroexcavating nozzle

The static hydroexcavating nozzle from Suttner America is available with 1/4- and 1/2-inch inlets and pressure ratings from 3,600 up to 8,700 psi; it can be set up to handle up to 35 gpm at 4,000 psi. It is capable of digging down to a depth of 12 feet from the surface. Constructed of hardened stainless steel and using M5 inserts, this nozzle is ideal for areas that have access issues or require precise digging. It is available without a protective cover, allowing customers to use their own protective cover if desired.

800-831-0660; www.suttner.com



Tornado Global Hydrovacs F4 ECOLITE

The F4 ECOLITE from Tornado Global Hydrovacs has a 12-cubic-yard mud tank and a 1,400-gallon freshwater capacity. It is over 7,000 pounds lighter than the company's older models and has almost triple the payload. The boom has a 342-degree rotation and a 26-foot reach. The F3 ECOLITE is a 10-cubic-yard 1,200-gallon water tandem axle unit that also more than doubles previous payload capacities. With an 8-foot boom and a 3,800 cfm blower, although smaller, it's still robust and powerful enough to do any job.

877-340-8141; www.tornadotrucks.com



Transway Systems Terra-Vex HV38

The Terra-Vex HV38 from Transway Systems has a 12-yard debris tank with onboard scales, allowing the operator to load the tank worry-free with extra capacity for lighter loads, saving time and money. It has a simple one-touch-operated

hydraulic half-door with a 3,800 cfm 27-inch Hg hydraulically driven blower with an 8-inch telescopic boom extending to 26 feet. Water pressure is achieved with a hydraulically driven triplex pump, delivering 10 gpm at 3,600 psi from a 700-gallon HDPE baffled water tank. Water is heated with a 420,000 Btu diesel-fired burner for cold weather operation. The blower and water systems are enclosed in an insulated and heated acoustical enclosure with thermostat-controlled heater, with no winterization required. Many options are available for equipment and chassis specs.

905-578-1000; www.transwaysystems.com



Vac-Con X-Cavator

The X-Cavator from Vac-Con is powerful, durable and easy to operate. It comes fully loaded and features a hydrostatic drive that uses the chassis engine for the vacuum, creating a more efficient system that eliminates the need for PTO, clutch and gearbox operation. It is available with water systems up to 4,000 psi and a mobile, wireless remote-control system that enables the operator to work the chassis engine revolutions per minute, boom, automatic vacuum breaker, dump controls and hydraulic door locks from remote areas up to a 1/2 mile. The boom rotates up to 270 degrees.

904-284-4200; www.vac-con.com



Vacall - Gradall Industries AllExcavate cold weather package

With the approach of winter weather, Vacall - Gradall Industries offers a step-in compartment on its AllExcavate hydroexcavators to provide operators with warmth and protection from inclement weather. The standard heated compartment is roomy, with enough space for an operator to change out of wet and muddy boots and clothing. The compartment has floor drainage, racks to hang dry clothing and another rack to store the high-pressure hand gun and extensions. Even larger compartments with extra room are available. Along with new LED lighting, the cold weather package includes extra insulation, heated cabinets for the hose reel and water pumps, and boilers that can heat water for more effective hydroexcavation in frozen ground.

330-339-2211; www.vacall.com



Vector HXX ParaDIGm

The HXX ParaDIGm vacuum excavator from Vector is designed for utility, municipal and contractor customers involved in the installation, maintenance and repair of underground water, sewer, gas, electric and telecommunications lines.

This compact, multiuse truck can dig holes with water or air; vacuum, contain and dispose of drill mud; power pneumatic, hydraulic or electrical tools; and provide transport and storage of replacement parts, equipment and tools. The truck's Park-n-Dig design minimizes the time between arriving on the job site and excavation, including the ability to dig up to 6 feet in depth without additional pipe and hose. The air compressor is able to power utility tools such as jackhammers and tampers that may be used on the job. The truck offers substantial storage space for these tools, including a long-handle toolbox. It can also tow up to 20,000 pounds.

800-627-3171; www.vector.com



Vector Technologies Mudslinger

The Mudslinger line of powerful, compact trailer-mounted hydroexcavation vacuums from Vac-Con, in cooperation with Vector Technologies, uses a 66.8 hp Kubota diesel engine with a 1,200 cfm at 16 inches Hg positive displacement blower and comes with a 535- or 845-gallon debris tank with 55-degree hydraulic dump hoist and a hydraulic door. The water system is 4 gpm at 4,000 psi with 50 inches of 3/8-inch hose and comes with a 225- or 325-gallon HDPE water tank. A 9-foot boom with 24 inches of hydraulic extension, hydraulic up/down and 270 degrees of manual rotation is also available. It is mounted on a heavy-duty welded tube steel trailer.

800-832-4010; www.vector-vacuums.com



Westech Vac Systems Wolf

The Wolf noncode hydrovac truck from Westech Vac Systems is ideal for oil and gas customers working in extreme conditions. The debris body is positioned on the optimal spot of the chassis to ensure the payload is proportionately distributed across all axles simultaneously, maximizing legal payload for customers and improving operational efficiency. The side-mounted water tanks reduce the weight by more than 40 percent, lowering the overall cost of the truck. The



1,500-gallon capacity ensures ample water storage capacity for large or remote jobs. A top-mounted, no-touch water fill system is easily accessible from the passenger side of the vehicle. The debris body is lifted using a telescoping, dual-acting hydraulic cylinder capable of 36,000 pounds of force. When fully extended, the debris body exceeds a 45-degree dump angle for fast and efficient off-loading. To help the off-loading process, a heavy-duty, hydraulically powered tank vibrator is mounted to the belly of the debris body.

780-955-3030; www.westechvac.com

Pipe Bursting

HammerHead Trenchless HG2200

The 22-ton, radio remote-controlled HydroGuide HG2200 cable winch from HammerHead Trenchless is designed for maximum efficiency and ease-of-use in pipe bursting, sliplining and pipe slitting applications. Radio remote control provides operators maximum visibility when positioning the winch by freeing them from a position at the controls on the back of the unit. Operators simply launch the unit's 23-foot hydraulic boom with the touch of a button and can fine-tune its depth to 20 feet. The boom is adjustable along all three axes for exact positioning. Line speed and pressure for the unit's 2,500 feet of cable are both infinitely adjustable within their parameters. It is available in wheeled or tracked configurations and comes standard with hydraulic leveling jacks.

800-331-6653; www.hammerheadtrenchless.com



RODDIE lateral pipe bursting machine

The lightweight lateral pipe bursting machine from RODDIE slides apart into two components of 50 and 60 pounds that can be lowered and reassembled by hand in the excavated pulling pit. In most cases, this machine is powered and operated by a mini-excavator or bobcat tractor. It is capable of 30 to 50 tons of pulling force and can be used on 4-, 6- and 8-inch sewer laterals, but it can also replace 1- to 4-inch water services.

888-406-3821; www.pipeburstingamerica.com



Pipe Fusion

McElroy Hornet

The Hornet from McElroy is an all-in-one tool for outlet fusion of polypropylene pipe. It helps installers maintain perfect alignment of the pipe and fitting for accurate fusions with less time and strain compared to manual methods. The V-base design allows it to self-align on the center of the main pipe. With a small footprint and weighing just 13 pounds, it is capable of performing outlet fusions in any orientation, making it ideal for overhead and vertical fusions in tight spaces.

918-836-8611; www.mcelroy.com



Pipeline Rehabilitation/Lining

CUES grout rehabilitation system

Truck-mounted grout rehabilitation systems from CUES are available for mainline joint sealing/lateral sealing and can be equipped with CCTV inspection equipment. Applications include joint testing and sealing of mainline and lateral joints, manholes, junction boxes, large-diameter pipes, or any other

low-pressure waterproofing application. Systems can be configured to run urethane, acrylamide and acrylate grouts. With the Easy Grout graphical user interface, the user can operate the grout system from wherever they like because the grout panel is now a computer interface. The system is designed to consolidate all the valves and electrical controls into an instrumentation cabinet that can be mounted in any location.

800-327-7791; www.cuesinc.com



Easy Klean Pressure Systems dry steam generator

Dry steam generators from Easy Klean Pressure Systems are used for a wide variety of applications. They are extensively used for curing municipal pipes and relining systems with excellent results. They run on a 2 hp, 110-volt electric motor putting out up to 2 million Btus and can be plugged into a generator, maximizing portability. They include all-welded, powder-coated frames as well as heavy-duty triplex plunger pumps and oil-fired burners, complete with adjustable thermostats. Safety features include electronic thermostats with deviation control, a safety valve and flow control. There are multiple options available, including complete trailer packages.

800-315-5533; www.easyklean.com



Pipeline Surveying and Mapping

Vermeer Projects +Mapping

Projects +Mapping from Vermeer lets users collect, organize and share important job documentation via the cloud. It can create job site efficiencies, allowing crew leaders the ability to visually capture the job site over a Google Maps image, including intended bore path whiteline, pothole locations, locate positions, marked utilities, and bore path as-built.

641-628-3141; www.vermeer.com



Trenchless Pipe Replacement




Hydra-Tech Pumps S4CSL

The S4CSL submersible, 4-inch, hydraulic-driven sand slurry pump from Hydra-Tech Pumps includes a built-in agitator used for stirring up solids. It has hardened-alloy wear parts and is designed to be used in applications where settled solids must be put into suspension and pumped away with the discharge water. Primary applications include desilting ponds, lakes, and streams; other uses include filling sandbags to prevent beach erosion, performing tank and digester cleaning, or pumping sediment from caissons. It requires hydraulic inputs of up to 17 gpm at 2,800 psi, and when combined with HT20 to HT35 open and sound-attenuated power units, it is capable of output flows of up to 750 gpm.

570-645-3779; www.hydra-tech.com ▼



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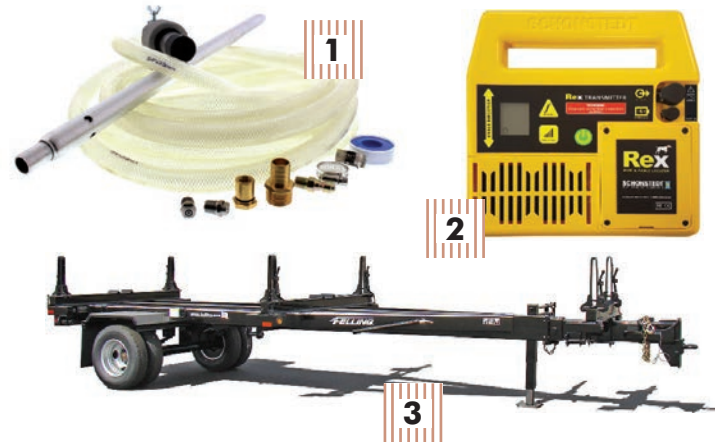
THE LATEST: Products

1. Water Cannon Inc. - MWBE wet sandblasting kit

The wet sandblasting kit from Water Cannon Inc. - MWBE is designed to remove unwanted surface contamination such as rust, scale, loose paint, barnacles and debris. The sand and high-pressure water work together using venturi siphon technology to more safely clean metals, concrete and other similar surfaces. The kit quick-connects to the end of a commercial pressure washer wand and works on 3,000 up to 6,000 psi systems. It automatically draws sand through a 26-foot, reinforced, lightweight feed hose using an engineered self-venting pickup tube. The venturi siphon technology eliminates the need for an air-feed system or other heavy and bulky equipment. **800-333-9274; www.watercannon.com**

2. Schonstedt Instrument Rex pipe and cable locator

The Rex pipe and cable locator from Schonstedt Instrument is a multi-frequency locator for all underground utilities: water and sewer, electric, telecom, and gas. The design is less than 2 inches thick and weighs less than 4 pounds. The pistol-grip receiver extends for greater sensitivity and retracts for easier carrying and storage. Both the receiver and transmitter fit into a custom shoulder bag. A Multi-Purpose Combo Kit is also



available, with a GA-92XTd magnetic locator and a multifrequency pipe and cable locator. **800-999-8280; www.schonstedt.com/rex**

3. Felling Trailers Utility Pole Trailer series

The Utility Pole Trailer series from Felling Trailers offer several payload capacities and can be manufactured with a single- or tandem-axle configuration, both with

This Issue's Feature:

Screen and crush on site

BY CRAIG MANDLI

Construction job sites often present several challenges. One of those typically is determining what to do with unusable rocks and chunks of concrete and asphalt. The **MB-S18 S3 crushing and screening attachment** from **MB Crusher America** tackles that problem head-on.

"When we talk about being more efficient and productive, what we are doing is eliminating traditional steps in the site preparation process for contractors," says Max Ravazzolo, CEO of MB Crusher America. "How great would it be to crush and screen material in one step, and be able to use the material immediately on site? That's where we come in."

Designed for large excavators between 44,000 and 77,200 pounds, the MB-S18 S3 can be used for screening various kinds of material on both pre- and post-crushing jobs. The screening bucket can reduce crushing time up to 60 percent by screening the material before crushing. It also allows for the screening of natural material (quarry residue, dry soil, and river stone) of any kind and makes it convenient for on-site processing. When contractors can crush and screen on site, they produce reusable material for base or fill, optimize their productivity on the job, and eliminate the need to transport material to a third-party processing facility and buy back processed material.

"When customers ask us about using our screens, we tell them you can get the job done with one scoop and one machine, rather than touching the material several times before it is ready to be used," Ravazzolo says. "It's simple and quick."

The screening bucket can be equipped with a magnet and/or a dust suppression kit. The magnet allows for the separation of iron and the dust suppression kit allows the attachment to be used in inhabited centers. MB Crusher America screening buckets are equipped with baskets formed by



MB-S18 S3 from
MB Crusher America

interchangeable modular panels that are available with holes of different sizes based on requirements.

MB Crusher America offers a range of trommel screening attachments to sift through mixed material and clean superficial powder from natural stones. These attachments are design to work with a range of excavators, skid loaders, loaders, and backhoes, regardless of brand. MB Crusher America also manufactures jaw crushing attachments that will crush down reinforced and nonreinforced concrete, natural stone and asphalt, railway sleepers, and hollow core walls.

"We have a customer who works in the excavation/grading industry. He purchased one of our larger crushers to eliminate transportation and buy-back costs. Later in the year, he was subcontracted for a project to remove 5-inch concrete from an old skating rink," Ravazzolo says. "Our crusher saved the contractor's company 30 percent!"

855-622-7874; www.mbamerica.com



dual wheels. All can be equipped with air brakes if needed. An industrial-grade energy chain houses both the electrical cable and the air lines. There's no operator intervention needed when extending or retracting the trailer tongue, virtually eliminating the possibility of damaging the electrical cord or air lines. From the center bolster back is a 12-gauge steel floor with grouped perforations in each corner for drainage and small debris clean-out. **866-213-2949; www.felling.com**

4. Vermeer S925TX mini skid-steer

The S925TX mini skid-steer from Vermeer has a tip capacity of 2,643 pounds, a rated operating capacity of 925 pounds, and maximum hinge pin height reach of 84.5 inches, making it ideal for lifting and dumping heavy loads. It features a dual-auxiliary system that allows for switching



between high flow for ground-engaging attachments and low flow for maximum control. It is also equipped with a universal mounting plate that fits a broad range of Vermeer-approved attachments. The S925TX is offered in three high-torque, four-cylinder engine options, including a 24.8 hp Kubota V1505 diesel engine, a 40 hp Kubota WG1605 gas engine, and a 35.1 hp Kubota V1505 diesel engine, offered only for international markets. **641-628-3141; www.vermeer.com**

5. CUES Pullback Inspection Camera System borehole inspection camera

The CUES PICS 2- to 4-inch borehole inspection camera helps eliminate cross bores in directional drilling operations. The PICS is compatible with the entire CUES cross-bore inspection platform that includes GraniteNet Gas software, sewer main and lateral inspection, and robotic lateral launch for pre- and post-inspection of sanitary and storm laterals. In addition, it features sonde and line locating, digital video and picture recording, and wireless integration with GraniteNet asset management software. **800-327-7791; www.cuesinc.com**

6. Petersen Products Multi-Flex CIPP Packer/Carriers

The Multi-Flex CIPP Packer/Carriers from Petersen Products are available for virtually any diameter and length using ambient, hot water and steam cure. There are standard items; and the company also makes many custom configurations. They are available with or without a flow-through bypass. A fixed, inflated diameter — independent of the pipeline — bridges across broken sections of pipe, allowing for a continuous, smooth repair. The small-deflated diameter, light weight, and flexibility makes for easier installation and removal through a small opening and confined or man-hole spaces. **800-769-4973; www.petersenproducts.com ▼**

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Safety Under Pressure

WATERJETTING BRINGS DANGER TO OPERATORS' DAY-TO-DAY ROUTINES, BUT SIMPLE PRECAUTIONS CAN PREVENT INJURY

BY JARED RANEY



You wouldn't expect latex gloves to protect you from a gunshot. They won't protect you from waterjetting accidents either.

An OSHA article describing the dangers of high-pressure jetting notes, "High pressures can cause injuries similar to gunshot wounds, but have the added health hazard of involving contaminated water."

In pipeline-related industries, dangers are plentiful. Trenches, excavation and confined spaces are often touted as the main concerns in risk management, but operators face another underestimated risk on a daily basis — cleaning with water under pressure.

"Injection injuries can happen much lower than the pressures that are in use in drain and sewer applications. And that carries the risk of infection and tissue damage as well. ... Water injection injuries can appear minor but can cause serious health complications, even at pressures in the range of a consumer pressure washer or drain cleaner," says Peter Wright, association manager with the WaterJet Technology Association and Industrial & Municipal Cleaning Association.

CUSTOMARY WORK

Despite being generally overlooked in terms of safety across the industry — due in part to a relatively low rate of injury when compared to working in trenches and the like — jetting is a concern simply because of how common it is.

Lines are jetted for daily cleaning operations, inspections, rehabilitation: With just about any work involving pipes, water jets are in play.

"Trying to get people to understand that you can get injured by a water jet strike is probably the most difficult bit to get across to people," says Nick Woodhead, president of US Jetting. "We've got to start promoting safety.

"I think people assume that hoses are not going to burst, and therefore, they are sort of immune. Or they've never seen a hose burst, or they've never seen a jet injury, so it doesn't really register. People get complacent."

And it's not just equipment malfunction that operators need to worry about.

Case in point: Chad Unverzagt, the Indiana operator who was killed in 2012 during a routine sewer blockage.

Unverzagt wasn't killed by an exploding pipe or other malfunction — his hose got loose while the system was pressurized as he was attempting to retrieve it from the pipe. A momentary lapse in a job he'd done a thousand times before and for more than 30 years in the industry.

With no protective gear, he didn't stand a chance against the high-pressure water, which lacerated his neck, killing him before help could arrive.

"That's more of an isolated incident, but it's worth reminding people," Woodhead says. "That's why you've got to know what you're working in."

NO EXCUSES

Medium-pressure gear hadn't reached enough awareness at the time to help Unverzagt, today operators and their employers have fewer and fewer excuses for ignoring proper safety.

"The safety gear is essential when you're running a machine. So many people don't wear anything," Woodhead says. "We've got to try and get it across to people, it is worth investing in the kit to protect yourself. Even if you're the operator and maybe the boss doesn't want to spend the money; it's worth investing in it, just as a precaution."

US Jetting has made it their practice to supply a pair of protective gloves to customers with purchase of a jetting system, and it has encouraged other manufacturers to do the same.

Other products like semiautomated jetting systems give even more options for mitigating risk to operators.

"OSHA says if there is safety gear available, the owners of the company are bound to supply it," Woodhead says. "Rather than have government regulation, we'd rather be self-regulated and have people understand (the dangers)."

Beyond planning for the worst, simple common sense and following standard operating procedure goes a long way to ensuring safety. That includes

"I THINK PEOPLE ASSUME THAT HOSES ARE NOT GOING TO BURST, AND THEREFORE, THEY ARE SORT OF IMMUNE. OR THEY'VE NEVER SEEN A HOSE BURST, OR THEY'VE NEVER SEEN A JET INJURY, SO IT DOESN'T REALLY REGISTER. PEOPLE GET COMPLACENT."

Nick Woodhead

checking the equipment before each job, performing the necessary maintenance, and assessing each job site before beginning any work.

"It doesn't take more than a couple of minutes to do the cursory checks," Woodhead says. "Once you've gotten to your location, you've got to do your due diligence. ... Just scope out the job for 15 or 20 minutes while your tank is filling up."

WaterJet Technology Association and Industrial & Municipal Cleaning Association offers several manuals covering many aspects of pressure cleaning, including best practice for waterjetting and industrial vacuum. US Jetting has its own video and PowerPoint presentation covering the basics of jetter operation and safety, and the National Association of Sewer Service Companies — NASSCO for short — has videos on jetting as well as a Jetter Code of Practice, which are available for a fee.

QUICK TIPS

To get you started, Wright offers a few quick tips to keep in mind:

"Mark the end of the hose a distance from the nozzle to help indicate the location of the jets within the pipe. Ensure the system is depressurized before conducting maintenance or repairs. Ensure the nozzle is well inside the pipe before bringing system up to pressure," Wright says.

It's easy to oversimplify pipe cleaning, but when the pressure is on, there's a lot operators can do to prevent accidents — it's just a matter of knowing how and promoting safety whenever possible.

"It's definitely important to have respect for the power and the force of the high-pressure water streams," Wright says. ▼

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THE LATEST:
News

John Deere rolls out new website

John Deere announced it has completed its global rollout of a new company website. The site is mobile-responsive and works on a variety of screen sizes, from smartphones and tablets to traditional desktop computers. The launch included 33 John Deere sites in 16 languages and approximately 2,300 product pages.

StraightLine HDD announces addition of multiple pipe sizes

StraightLine HDD announced the addition of multiple pipe sizes to its offering of in-stock drill pipe. The product expansion more than doubles the number of available Vermeer-compatible pipe and adds three common Ditch Witch-compatible pipe sizes. All StraightLine HDD pipe sizes and types feature forged, one-piece construction.

New National Electrical Manufacturers Association conduit guide

The NEMA published its new *Guidelines for the Selection and Installation of Smooth-Wall Coilable High-Density Polyethylene Conduit*. Developed and written with the participation of the Plastics Pipe Institute, it provides recommendations for the selection, handling, and installation of underground HDPE conduit or raceway for power, lighting, signaling and communications applications. ▼

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Happenings

CALENDAR

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Water & Wastewater Equipment, Treatment & Transport (WWETT) Show, Indiana Convention Center, Indianapolis. Visit www.wwettshow.com

Feb. 22-23

Horizontal Directional Drilling Academy: Mastering Crossing Applications, Sheraton Phoenix Airport Hotel, Tempe, Arizona. Visit www.hddacademy.com

March 6-8

Common Ground Alliance (CGA) Excavation Safety Conference & Expo, Phoenix Convention Center, Phoenix. Visit www.cgaconference.com

March 6-9

National Utility Contractors Association (NUCA) Annual Convention, Wyndham San Antonio Riverwalk, San Antonio. Visit www.nuca.com/convention

March 20-23

Association of Equipment Management Professionals 36th Annual Conference, Rosen Plaza Hotel, Orlando, Florida. Visit www.aemp.org

March 22-24

Mid-America Trucking Show, Kentucky Exposition Center, Louisville, Kentucky. Visit www.truckingshow.com

March 25-29

North American Society for Trenchless Technology No-Dig Show, Palm Springs Convention Center, Palm Springs, California. Visit www.nastt.org

April 21-26

World Tunnel Congress (WTC), Dubai World Trade Centre, Dubai, United Arab Emirates. Visit www.wtc2018.ae

May 22-24

National Utility Contractors Association (NUCA) Washington Summit, Holiday Inn Capitol, Washington, D.C. Visit www.nuca.com/summit

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