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Think outside the bucket



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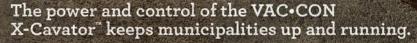
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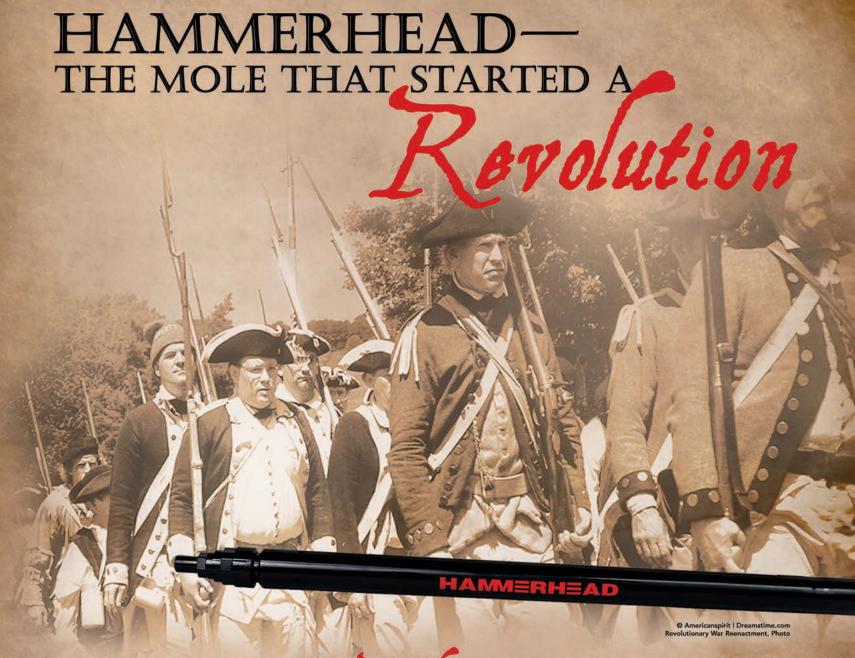


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IF YOU'RE IN THE MARKET FOR NEW EQUIPMENT, THIS IS A GREAT TIME OF YEAR TO START LOOKING AT YOUR OPTIONS.

MAYBE YOU'LL EVEN RUN INTO SOME YEAR-END DEALS AS THE MANUFACTURERS TRY TO OFF-LOAD THE 2015 MODELS.

Making Use of Downtime

WINTER'S SLOWER MONTHS CAN HELP YOU GET SOME OTHER WORK DONE THAT HAS BEEN PUT ASIDE SINCE SUMMER

BY CORY DELLENBACH, EDITOR

inter can bring downtime for contractors, especially those in Canada and the northern United States where snow is probably covering the ground.

While some construction contractors keep trucks busy plowing snow, trenchers or directional drills may sit idle all winter. So what do you do? How about performing general maintenance on your equipment?

Equipment maintenance is important. You want that truck, directional drill, trencher or other tool to last a long time. This time of year can give you and your crew ample time to go through that equipment, clean it out and get it ready for spring when things will kick up again.

If you're in the market for new equipment, this is a great time of year to start looking at your options. Maybe you'll even run into some year-end deals as the manufacturers try to off-load the 2015 models.

SHOPPING AROUND

In this issue of *Dig Different* you'll find our annual Buyer's Guide to help you in your search for new equipment. It includes a comprehensive list of manufacturers and their contact information.

We've broken the Buyer's Guide down into category listings to simplify your search.

MONEY MANAGER

This time of the year also gives you the chance to go through those invoices — make sure customers are staying current on what they owe and make sure you are current on any outstanding bills.

Our Money Manager column gives you advice to help your income stay ahead of your outgoing cash. The column looks at issues like tracking where your money is coming in from and where it's going, whether you should pay your bills as soon as you get the invoice or wait 30 days, and how to make sure your customers pay their bills.

LET'S HEAR FROM YOU

What do you do during these slow months of winter? Either email me at editor@digdifferent.com or visit our online forums at www.digdifferent.com and share.

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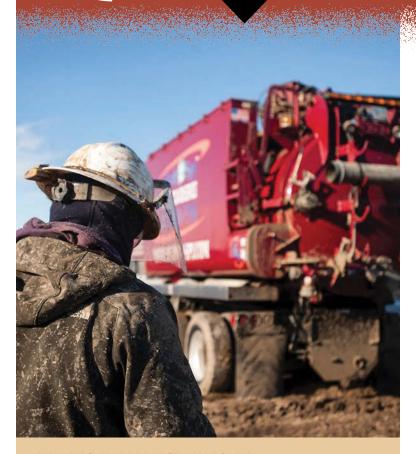
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FINDING THE PERFECT EMPLOYEE

Training The Right Crew Can Take Time

When it comes to training rookie operators, it doesn't only take time, it can also be a risk. Not everyone is cut out to be an operator. It takes a special type of person to choose the lifestyle and master the skills. When a contractor is ready to bring on a new operator, they have to trust their gut, provide ample training opportunities, and not get overly confident until they are absolutely sure they can rely on the new operator's skills and reactions.

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We want to hear your voice too. Take part in our forum discussions found on our home page at www.digdifferent.com. Here is a question for you on our forum: Does your company ever get asked to do



charity work like helping a local church or school group with a construction project? How do you handle those requests?



DRILLING IN MICHIGAN

From Employee To Owner

Directional drill contractor John Clugston turned a job search into small business success when he founded JLC Underground and maintained steady growth over the course of the last decade. The Michigan-based contractor credits his former employer for starting him on the path of owning his own business.

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Maximum Effort

PIPE BURSTING ENABLES A LOUISIANA CONTRACTOR TO REPLACE A BLOCKED SEWER LATERAL AFTER A FAILED DIRECTIONAL BORING ATTEMPT

BY SCOTTIE DAYTON

or more than 25 years, blockages and backups were a way of life for the owners of a two-story pier-and-beam house in Shreveport, Louisiana. In 2011, local service provider Pioneer Comfort Systems began responding to emergencies.

"Service calls took two to three hours because the blockages were so difficult to remove, even when using our RIDGID K-60 cable machine," says Operations Manager Michael Smith. "Massive root intrusion in the 4-inch clay tile lateral caused bathroom tissue stoppages. We removed tons of it."

The lateral ran through a concrete stormwater vault in the neighbor's driveway, then 15 feet across her yard to an abandoned 12-inch clay sewer discharging to a manhole in the street in front of the property. As the only lateral tied to the capped sewer, and with no flow from upstream to help wash away the client's solids, blockages occurred when solids built up in the sewer and dammed the lateral.

On Smith's last service call only six months after a previous visit — he used a RIDGID SeeSnake to inspect all 230 feet of the clogged line, then cleaned it with a Cam Spray cartmounted jetter. The amount of the bill, with no guarantee of how long the lateral would remain open, convinced the owners to replace the pipe.



GOOD NEIGHBORS

The home, built more than 50 years ago at the bottom of a hill, has two laterals. One runs from the front of the house and connects with the second lateral from the laundry room and full bath. The pipe passes through the 30-inch-deep vault, then turns 45 degrees shortly before a wye connects it to the sewer. Both fittings are under the neighbor's flower beds. Developers would never obtain building permits for the site today.

"Our initial plan was to directional drill a replacement lateral from the customer's backyard under the square vault with two 36-inch concrete storm

drains and straight out to the manhole," says Smith. "The boring contractor said the grade was going to be close, but he saw no problems. Boy, was he wrong."

When Smith's crew excavated beside the manhole, they uncovered a water main crossing the path where the bore bit would enter the structure. Their alternative solution was to excavate upstream from the manhole to expose the old sewer, then bore to it and cap the downstream end of the main. With the city's approval, the team trenched 15 feet back from the manhole following the sewer, then dug the bore pit. (continued)





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that the bursting head looks a little strange as it emerges through the resistance plate. A 4-inch cast iron check valve is wrapped around the head. LEFT: The check valve is pulled through a 4-inch clay tile lateral with a 45-degree elbow and a wye, then 60 feet to the pit.

Both sewer excavations were in the neighbor's front yard. At some point the deteriorating main had created a large void under her house, causing the city to abandon the line and reroute it alongside her driveway.

"She understood what our customer was going through and cooperated fully," says Smith. "We are indebted to her."

THREE STRIKES AND OUT

The boring contractor arrived the next morning. On his first attempt, the bit deflected off a 12- to 18-inch-thick concrete mass beneath the vault and dove straight down. The operator changed the machine's location three times to find a route under the obstruction, but there wasn't enough distance for the bit to regain sufficient fall before reaching the exposed sewer.

"We fought the problem for six hours, then the operator packed up and went home," says Smith. "That left pipe bursting and the possibility of destroying the rest of the neighbor's front lawn. I talked to her again and she gave us permission to continue."

On the third day the crew burst the laterals. Smith's major concern was lodging the 6-inch O.D. bursting head in the vault or downstream fittings. To avoid problems in the vault, they cut out the section of lateral running through it, then enlarged the entry and exit holes with a hammer drill.

Workers dug a 6- by 6- by 5-foot-deep entry pit 6 feet upstream from the vault and enlarged the sewer excavation to create a 6-foot-wide by 8-foot-deep pulling pit. Wishing to use the main as a sleeve for the 4-inch HDPE pipe, Smith set the C20 pipe bursting system (TRIC Tools) as low as possible, enabling the lateral to rest on the bottom of the pipe. The ram is rated for 8,000 psi or 19.24 tons of pull.

It took 60 minutes to send the rodder through the lateral and pull back the 3/4-inch swage cable attached to the bursting head, erect shoring and the



The 6- by 6- by 5-foot-deep entry pit was 6 feet upstream from the sauare stormwater vault with two 36-inch concrete drains.

resistance plate, and set the pulley and ram. Meanwhile, other workers fused two 40-foot sticks of HDPE pipe in the customer's backyard, then snaked it through a gate to the entry pit.

"We painted a green mark on the HDPE pipe to indicate when the bursting head had passed through the wye," says Smith. "Once the mark disappeared into the pit, we knew we'd be home free."

HITCHIN' A RIDE

The first pull was 80 feet from the entry pit to the pulling pit. Smith stationed himself at the stormwater vault to make sure the head passed through it uneventfully, then he controlled the ram and monitored the hydraulic pressure. Pressures for a normal pipe burst on this machine run 2,000 to 3,000 psi (5 to 7 tons of pulling force) and sometimes reach 3,500 psi (8.5 tons of pull). They will hit 6,000 psi (14 to 15 tons of pull) when going through a 45-degree elbow.

As soon as the head entered the vault's downstream side, the pressure jumped to 6,500 psi, then hovered between 6,800 to 7,200 psi (17 tons of pull) for 30 minutes. Twice the needle hit 7,800 psi (19 tons of pull). "I was a nervous wreck," says Smith. "We'd never pushed the machine that hard before

and had no idea how the equipment would react." Once the head entered the sewer, the pressure returned to

When workers extracted the head, they found a 4-inch cast iron check valve wrapped around it. "We were amazed," says Smith. "The ram had pulled that valve 20 feet through the lateral, then through the two fittings and 60 feet to the exit pit."

"THE BORING **CONTRACTOR SAID** THE GRADE WAS GOING TO BE CLOSE, **BUT HE SAW NO** PROBLEMS. BOY, WAS HE WRONG." Michael Smith

While two laborers moved the

ram to a hand-dug 4- by 4- by 2.5-foot-deep pit in the customer's backyard, another person butt-fused a 20-foot stick of HDPE pipe to connect the new lateral to the manhole, then sealed the sewer opening.

BUBBLE TROUBLE

The second pull, 130 feet from the entry pit to the backyard, replaced the house lateral. It was uneventful. The crew backfilled on the fourth day and spent a few hours laying sod on the fifth. When Smith returned a few days later to check on the sod, the customer's wife ran out to meet him.

"On a service call, I'd noticed water and soap suds around the floor drain in the laundry room," says Smith. "The owner assured me the drain had always worked that way. His wife was as excited as she could be because the wash water was no longer bubbling out."



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CONCEPT TO COMPLETION

DIVERSE ENVIRONMENTAL SERVICES COMPANY OFFERS A HYDROEXCAVATION SERVICE ARM THAT'S PROVIDING THE COMPANY WITH SIGNIFICANT GROWTH OPPORTUNITIES

STORY: PETER KENTER PHOTOS: JEFF BROWN





Environmental services company TPM Group was founded in 1991 on the business of excavating and removing underground storage tanks. Today, hydroexcavation is becoming an increasingly important component of a diverse business that prides itself on delivering service from project concept to completion.

TPM President Eddie Hanks was introduced to the fine art of excavation at age 14.

"My older brother, CK, was an entrepreneur from birth," says Hanks. "He was a good mentor. He was mowing lawns, raising chickens and selling the eggs in the fifth grade. In 1978, Kentucky was making a huge infrastructure commitment to supplying rural water. The government was putting in water mains, but installing the service lines was

OPPOSITE: TPM Group operators control the hydroexcavator boom and nozzle water pressure with a remote. an attractive price for my labor and my brother then subcontracted the trenching work to me."

Hanks established Hanks Construction of Bowling Green in 1986 and operated it while completing a degree specializing in business organization and communication at Western Kentucky University (WKU). "I was doing small commercial and industrial projects including demolition, concrete removal and installing sewer and other utilities. I offered packages to take care of everything from the foundation down. I had two employees but still had more work than I could handle, so I would sometimes get up at 6 a.m., work until 8 a.m. and then take a break for a 9:15 a.m. class."

Classes concluded in 1989, but Hanks couldn't collect his bachelor's degree without finishing his internship. "I couldn't put the business on hold and go back to school," he says. "So in 1991 I bid on the steam tunnel replacement contract at WKU and wrote my internship on that."

Hanks recalls talking to his father about "ivory tower" consultants who design a project and then bring in the technical know-how to perform the actual work. "My dad advised me that I needed to bring more value to my service by becoming the consultant and also delivering a service," he recalls. "That would also maximize the value of my construction equipment assets to allow for a better return on investment."

BUSINESS OPPORTUNITY

Hanks saw a business opportunity following the establishment of the Environmental Protection Agency's Regulations Pertaining To Underground Storage Tanks in 1988, which required owners to either upgrade or replace their tanks over the next 10 years.

"I became state certified to work on underground tanks, hired a geologist and a hydrologist



FOUNDED: 1991 OWNER: Eddie Hanks **EMPLOYEES: 42**

SPECIALTY SERVICES: Hydroexcavation; emergency environmental response; industrial cleaning; underground storage tank removal; plant maintenance; demolition; aviation fuel tank fabrication, installation and service; environmental consulting and services; industrial water treatment; waste management

SERVICE AREA: Kentucky, Tennessee WEBSITE: www.tpm-group.com

to handle contaminated soil remediation and groundwater issues, and established TPM Environmental Services in 1991, alongside Hanks Construction, to provide a more precise technical service," says Hanks. "From that point on I realized that I needed to provide a full range of offerings to my customers, from concept to completion."

The company's first hydroexcavator was purchased in 1994 — an Aquatech Jet/Vac.

"We didn't realize its importance when we bought it," says Hanks. "We were using it for clean-outs of publicly owned treatment works, vacuuming out clarifiers, cleaning lift stations and jetting. It wasn't officially a hydroexcavator until we purchased a hydroexcavation reel attachment. That allowed us to perform hydroexcavation for all of the fiber optic lines that were being installed for companies, such as Level 3 Communications for which we took on a six-month potholing contract."

TPM opened a second office in Nashville in 1995, about an hour's drive south of Bowling Green, and a third office in Louisville earlier this year.

The team at TPM Group includes, front row, from left: Jimmy Gardner, Gene Langston, Hugo Ardon, Tyrone Scoggins, Justin Lewis and Boddie Swords; back row: Aaron Bagley, Roy Phillips, Scotty Dukes, Pablo Davilla, Robert Turner and Fransisco Lugunas.

Today, the company has consolidated all of its operations under the TPM brand and employs 42 people. Its diverse offerings include hydroexcavation, emergency environmental response, environmental consulting and services, industrial cleaning, underground storage tank removal, plant maintenance, demolition, drilling, aviation fuel tank fabrication, industrial water treatment, and waste management. The expansion was anything but random — each business helps to complete a full project cycle using in-house resources.

The basic service area covers Kentucky and Tennessee, but contracts have taken the company as far afield as Virginia, Arizona, Florida, Alabama, New Jersey, Michigan and Louisiana.

TPM operates five vacuum rigs: a Cusco liquid/dry unit with a 3,000-gallon steel tank and Fruitland Manufacturing pump mounted on a Freightliner body; a 1985 Peterbilt semi-tractor matched with a 5,508-gallon steel tanker and Fruitland Manufacturing pump; a 2004 Guzzler with a 3,000-gallon steel tank and air knife attachment mounted on a 1998 Ford LT9501 chassis; a 2014 Vacall combo unit with 2,000-gallon debris and 1,500-gallon freshwater galvanized steel tanks and hydroexcavation package mounted on a Peterbilt Model 365; and a 2004 Vactor 2110 combo unit with a 1,600-gallon stainless steel tank, a pair of 1,000-gallon aluminum water tanks and a pair of hydroexcavation packages. Hanks has attended the Water & Wastewater Equipment, Treatment & Transport (WWETT) Show for the past five years and purchased the Peterbilt there last year.

TPM keeps hydroexcavators and other vehicles in top shape at its Bowling Green maintenance shop, overseen by a dedicated fleet manager. The shop will handle anything from routine maintenance to major rebuilds.

The company employs four dedicated hydroexcavator operators. "They claim these units, are proud to operate them and take good care of them," says Hanks. "We have a total pool of 10 drivers who are hydroexcavator trained."

The company is committed to certification and training. Not only do workers receive regular safety training updates, TPM provides third-party training to outside workers, including hazardous waste operations, confined-space entry, lockout and tagout procedure training and first aid/CPR. Some employees also attend dedicated training programs offered by hydroexcavator manufacturers.

VARIETY OF JOBS

"We generally go out to poten-

tial clients with a live demon-

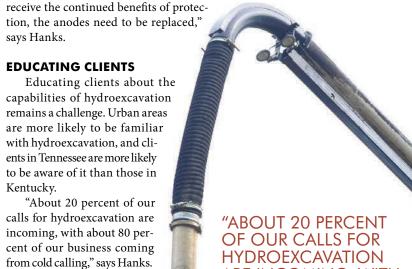
stration about once a month, but we recently shot a video

"Hydroexcavation currently forms about 10 percent of our business, but it's a growing segment of what we do," says Hanks. "A particularly strong growth area for us is working at power plants that are converting from coal-fired power to natural gas. There's a lot of conversion and plant expansion planned, and the power utilities are going to drive hydroexcavation growth over the next 10 years."

One of TPM's largest contracts was completed last year at the Paradise Fossil Plant, a coal-fired power plant operated by the Tennessee Valley Authority. "We were performing geotechnical excavation for confirmation of utility locates and footing and load-bearing capacity for the purposes of replacing the existing infrastructure to run the plant on natural gas," he says.

TPM has also seen interest from natural gas companies who need to uncover lines that are protected by cathodic anodes.

"The magnesium anodes are sacrificial, so in order for the pipeline to



Get that Vette

There may be only one thing more disheartening for a fan of classic Corvettes than seeing museum-quality cars lying on the bottom of a sinkhole — that's NOT seeing them on the bottom of that sinkhole because they're covered in dirt and rubble.

That's just what happened on Feb. 12, 2014, at the National Corvette Museum in Bowling Green, Kentucky, when the floor of the museum's Skydome and eight Corvettes disappeared in a sinkhole 40 feet wide and 40 feet deep. Local general contractor Scott, Murphy & Daniel was retained to respond and recover the most easily accessible cars by crane following the removal of several building roof panels. The museum is located less than 2 miles from hydroexcavation service specialist TPM Group.

"While the first five cars were visible, three were buried and lost," says TPM President Eddie Hanks. "I called Mike Murphy, the construction manager, and told him that we could uncover the missing cars with our hydroexcavator. I even demonstrated our hydroexcavation capability by bringing in my own 1984 Corvette, dumping a pile of dirt on it with a front-end loader and safely removing it with the hydroexcavator. They said that they had tried hiring a hydroexcavation contractor and that the machines wouldn't be effective at 40 feet. I told them we could do it."

TPM crews prepared by fitting their Guzzler with a vertical, hard, smooth-walled pipe, secured to the side of the sinkhole to help overcome the static resistance of a 40-foot pull. Crews used hydraulic man lifts available on site to direct the vacuum pipe.

"We were able to pull out enough soil to find two of the missing cars so that a mechanical long stick excavator could be used to dig around them," Hanks says. "They were then lifted to safety by a crane."

The story also ended well for the museum. "All of the cars were recovered, and we received amazing worldwide publicity from the sinkhole," says museum communications manager Katie Frassinelli. "We had record attendance in 2014."





that will be posted on our website that we hope will replace those trips."

However, some repeat customers have become particularly savvy about hydroexcavation. "They know, for example, to ask for a hydroexcavator that has certain options and capabilities, such as greater capacity for product removal," says Hanks.

As with many businesses, the company website and social media are prime advertising vehicles. TPM also advertises with industry associations, such as the Associated General Contractors of Kentucky. However, Hanks also likes the personal touch, frequently setting up booths at trade shows, primarily in Kentucky and Tennessee.

TPM is a preferred environmental contractor and national partner with Servpro Industries. As a result, some contracts take the company out of its traditional footprint — for example, pumping water and sand in New Jersey and New York during Hurricane Sandy in 2012.

THE MERITS OF PRE-QUALIFYING

This year, TPM was also pre-qualified by ISNetworld, a resource for connecting clients with safe and reliable contractors.

"For us, pre-qualification is allowing us into places that we couldn't otherwise go," says Hanks. "General Motors, for example, requires contractors to have this pre-qualification. Being certified actually has a double benefit — we find ourselves wanting to live up to the level of certification and really performing to a different level."

Planning for the future, Hanks says he's set to buy another hydroexcavator to expand the company's offerings. "Right now I'm debating between a dedicated hydroexcavator and the versatility of a combo rig with a large blower unit," he says.

For the coming decade, hydroexcavation is set to drive company growth and to expand TPM's reputation as a do-all service provider.

"When one of our customers calls at 5:30 p.m. on a Friday and tells me that my company is the only one that can take on a difficult hydroexcavation job, it's not a problem — it's a compliment," says Hanks. "We like to be known as a company that can make things happen." ▼

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TAKING A CHANCE

WISCONSIN CONTRACTOR MOVES TO HYDROEXCAVATION TO COMPLEMENT ITS LANDFILL CONSTRUCTION FOCUS

STORY AND PHOTOS: CORY DELLENBACH

River View Construction has seen its share of changes, going from milk hauling at its start to environmental services contracting, with specialties in landfill construction and utility work.

The company, based in Wausau, Wisconsin, added its first hydroexcavator in 2006 and now has three in its fleet serving all of northern Wisconsin. "If we know there are utilities on a job site, the hydroexcavator is the first piece of equipment that goes out," says Randy Weinkauf, president and owner. "Our guys won't work without it. You need to know where your gas lines are, where your electric is. You can locate it, but it still isn't the same. We've seen locators off by a foot or two at times."

River View, founded in 1950, has seen a 10 percent growth in sales and labor every year for the past six years, and Weinkauf says it's because the company has solid employees and isn't afraid to take chances on new equipment like the hydroexcavators.

"We're not afraid to get into something if we think it's doable," Weinkauf says. "And I'll put our crews against any crew in the United States."

FROM MILK TO ENVIRONMENT

River View didn't become a well-respected environmental services company overnight. The business started in 1950 when Ewald Weinkauf, Randy's father, founded the company by hauling milk in the central part of Wisconsin, a state that thrives on its dairy background.

"He did that milk route for a while and then he started moving over into operating 5-yard dump trucks," Weinkauf says. "Then he bought a backhoe and a dozer and started doing land-clearing work."

Ewald, who passed away in 2000, began moving around pulp and other material at the local paper mill in the 1960s. By the early 1970s, the company picked up some business with a local electric utility at its central Wisconsin coalfired power plant.

"We worked with the utility with ash handling when they started using coal," Weinkauf says. "They needed a contractor to haul ash from their storage silo to an on-site landfill, and we filled that role."

River View's main focus now is environmental contracting, primarily building landfills. "We operate a landfill in Monroe County, Wisconsin. We also maintain methane gas piping systems at landfills and we build leachate collection systems," says Jesse Turner, vice president of sales.

The company built its first landfill in Vilas County, Wisconsin, in 1989 and has completed many other landfill projects throughout the state ever since.





GPS units a cost and time saver

It's not the bulldozers, the backhoes or even the hydroexcavators that River View Construction couldn't do without. It's the Trimble GPS devices installed in the dozers.

"Our guys would be lost without them," owner Randy Weinkauf says. "It's one of the most important tools we have. We put them in the bulldozers so they know where they are going when working landfills. We don't do staking on our job sites. It's all GPS."

The Trimble GPS systems can calculate exact positions on excavation projects such as boundaries, cross slopes and other land obstacles.

River View was one of the first contractors in Wisconsin to put GPS on its bulldozers (in 2002), according to Weinkauf. With each new bulldozer the company installs a new and updated GPS unit.

"At the time everybody thought we were nuts sticking a \$60,000 GPS unit into a dozer, but we saw the need for them with the stuff we do," Weinkauf says. "It sped everything up and left very little room for human error."

Wausau. "The pads their trucks sat on needed to be vacuumed all the time," Weinkauf says. "If there was any sand or mud on them, we would have to keep them clean, and the hydrovac trucks helped with that a lot."

The pads had to be cleaned off so that the utility's equipment could sit perfectly level while work was being done. River View found the hydroexcavators useful on that job because hose attachments could be added for longer reach.

The company bought its second hydroexcavator, a Premier CV-100 built on a CAT660 chassis, in 2012, and another Vactor HXX built on a Kenworth chassis in summer 2015. "We needed another one because we had so much work in March and April," Weinkauf says. "We were just going to rent, but Vactor said they had a brand-new machine in Minnesota and they made us a good deal on it."

Before buying the newest truck in summer, the company had been testing it through the spring months on sites where it was installing new lines at cellphone tower substations in the northern part of the state.

All three trucks have 12-cubicyard debris tanks and vary in water pressure capability. The biggest is the Premier truck (6,200 psi), followed by the new Vactor (5,200 psi) and the original Vactor (3,500 psi).

"Each truck has advantages depending on the application," Weinkauf says. "One might work better with slurries than the others, and one might dump better than the others. Everyone of them has its good points."

The Premier truck has a heated compartment that is popular with operators, while the new Vactor has the water hose on the back so that operators don't have to drag the hose through mud.

WAVE OF THE FUTURE

While landfills remain the core, company officials knew they needed to diversify.

In the mid-2000s, Weinkauf's project manager approached him with the idea of purchasing a new type of equipment — a hydroexcavator. The hydroexcavation market was in its early stages in the U.S. at that time, and very few contractors had the machines in Wisconsin.

"Gerard Skrzypchak had a talk with me back in 2006 and told me that these hydrovac trucks would be the wave of the future," Weinkauf says. "He's the one who talked me into getting them."

Skrzypchak knew about hydroexcavation from his time working for the local electric utility where he created the excavating permitting process in which it became mandatory for the utility to use hydroexcavators. The utility uses a hydroexcavator to first identify where utilities are and whether there is enough space between them to continue excavation with backhoes. If there isn't enough space, the job is finished with hydroexcavators.

"You have a menagerie of things underground," Skrzypchak says. "It's like a spaghetti bowl underground of high-voltage lines, natural gas lines, chlorine lines, hydrogen lines and fiber optics. It's all intertwined."

River View purchased its first hydroexcavator, a Vactor HXX built on an International chassis, in 2006 and immediately picked up more work from the electric utility. The company also landed a job for a transmission line company on construction of a new electric transmission line from Green Bay to

WORKING STATEWIDE

River View has the market locked up in northern Wisconsin — few other contractors offer hydroexcavation services from about midstate and up. "We go all over the northern part of the state, and we'll do utility work, gas line work and water main break repairs too," Weinkauf says.

The company takes pride in being available whenever needed, as in 2014 when Weinkauf got a call late Christmas Eve about a water main break at a paper mill in Mosinee, near River View headquarters. "They were going to have to shut down the mill if we weren't able to get the fire protection line cleaned up," Weinkauf says. "It had split wide open."

Weinkauf, Dewey Lannigan (vice president of operations) and another hydroexcavator operator took on the challenge. "They originally wanted a backhoe there, but we brought the hydrovac," Weinkauf says. "They used the backhoe for the first two scoops and then we used the hydrovac after that because there was a substation right next to us and we didn't know how much was under us. We located the break and sucked all the sand and water out of there. The mill repaired the break and stayed in operation."

Being in Wisconsin has also meant taking on jobs when the weather isn't



the best. Crews were called to Wisconsin Rapids, about an hour south of Wausau, in the middle of winter 2013 when a plow truck driver ran into a gas meter at a mobile home park. The utility servicing the area needed it dug up to replace. "Our driver was only able to go about 10 mph in certain areas because of the snow and ice on the highway, so it took him two hours," Weinkauf says. "He made it down there and was able to open it right up, and they capped the leak."

About 70 percent of the company's hydroexcavation work is done in the winter when it's harder to break up the ground with traditional excavation equipment.

KEEPING EMPLOYEES HAPPY, SAFE

With 65 employees, it can be tough to keep everyone happy, but River View has a stable workforce in an industry that sometimes faces high turnover rates.

"I have an open-door policy," Weinkauf says. "If somebody has a problem or if they know of a way of improving something, I listen to them. Most of the time I'll take their suggestions."

Weinkauf adds that his crews give him reports on whether new employees are fitting in well. "Every year we make our crews better," Weinkauf says. "We have a very low turnover rate, usually losing one or two a year."

A big part of keeping the current employees is paying them well: Operators earn a living wage. "For good labor you have to pay well," Weinkauf says. "We treat them like humans and not like numbers."

Crews receive annual required training. Every January the company brings in representatives from the local electric utility and several other customers to go over their company safety programs. River View selects a training day

The team at River View Construction includes, from left, Dewey Lannigan, vice president of operations; Jesse Turner, vice president of sales; Randy Weinkauf, president and owner; Andy Hafenbreadl, teamster; and Gerard Skrzypchak, project manager.

and calls off all field operations for that day. "We shut down every job we are doing and we bring everyone in for it," says Turner. "Everyone gets certified for hazmat and receives other refreshers."

The company also holds job site meetings every morning for the crews. "They have the tool safety talk in the mornings to see if there are any concerns or what the truck traffic might be that day or if there will be visitors or inspectors coming. They'll go through everything," Turner says.

Safety is important to the company, as it can lead to or take away jobs and clients.

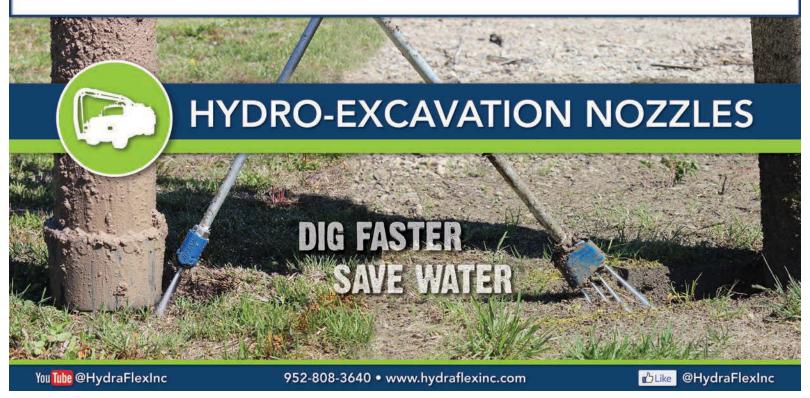
"With a bunch of our clients, if you have a serious accident, your name can be wiped off their vendor list," Weinkauf says. "If you are an unsafe company, you won't be working for them. We want to be one of the top contractors. To be one of the top, you have to be safe, and there is no getting around it."

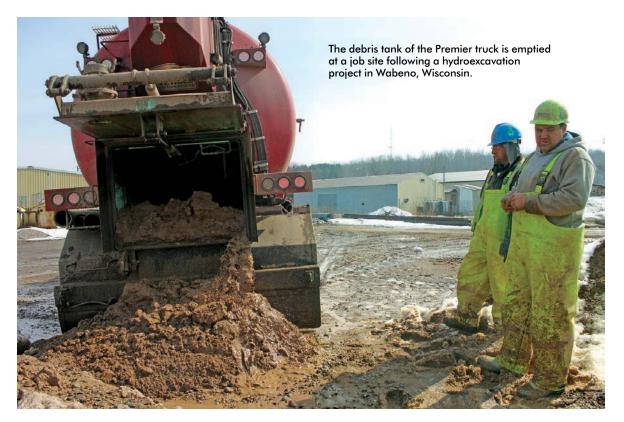
CARRYING ON THE TORCH

While Weinkauf plans to run the business until it's not fun anymore, he admits some days can be tough. "It gets challenging some days, believe me. But as long as you have good people behind you, you'll be OK."

Weinkauf, like his father, would like to hand off the company to the next generation eventually. His daughter, Heidi Dehnel, handles payroll. Turner, a stepson, leads the sales team, while another son, Riley Weinkauf, unloads ash at the WPS coal-powered power plant with a front loader. Another son, Wes-







ley Weinkauf, runs the company's long-reach backhoe at landfills the company is building. Chris Spychalla, a nephew, heads operations for jobs near Green Bay.

"It's going really well, so we'll be passing it on to a third generation when

that time comes," Weinkauf says. "We want the kids to carry it on and teach them about maintenance and safety and new technology." ▼

TO BE ONE OF THE TOP, YOU HAVE TO BE SAFE, AND THERE IS NO GETTING AROUND IT." Randy Weinkauf

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Knowing When to Dig Differently

TRENCHLESS TECHNOLOGIES SUCH AS CIPP AND VACUUM EXCAVATION CAN SAVE MUNICIPALITIES AND UTILITIES MONEY

BY MATT TIMBERLAKE

ometimes the best way to dig differently is to not dig at all. Trenchless technologies, as the name implies, is a family of means, methods and materials that can be used to install new pipes or rehabilitate and renew existing pipes. As the nation's aging infrastructure continues to deteriorate and fail, technologies must be employed that can provide longterm life renewal to existing assets but also lower cost and impact.

CIPP, or cured-in-place pipe, has been the leading trenchless rehabilitation method throughout the world for more than 40 years. However, many in underground construction are unfamiliar with a spin on traditional CIPP, which installs a new liner pipe formed inside of the existing pipe in only a localized section of the pipe. This provides a sectional repair that can extend the usable life of that asset and its value to its owner.

In most cases the most valuable asset a utility owner owns is the conduit, or "hole through the ground" — not the pipe itself. By eliminating the need to excavate a trench, haul material in and out of the project site, and lay a new pipe, cost can be reduced and the impacts to residents, business and commerce, and the environment are greatly reduced.

Sectional point repairs can structurally rehabilitate sanitary and storm sewer pipes and culverts ranging from 4 inches to 54 inches and larger. A municipal sewer collections system operator called on me to evaluate a broken segment of VCP sewer line that fed directly into a sanitary sewer pumping station. The pipe was broken with a large hole, and soil was visible to the

To further complicate the scenario, the pipe was over 15 feet deep and ran parallel to a 48-inch storm drain and a 20-inch water main. Digging would prove costly and present significant risk to the owner, general contractor and other utility owners.

A sectional point repair consisting of a fiberglass and felt composite mixed with a resin system — which is wrapped on an inflatable rubber bladder — is pulled to the point of the defect and cured by ambient temperature in approximately 90 minutes. The repair was done from a manhole, providing a new structural "pipe within a pipe," bridging the broken section of pipe and restoring the system back to its original design without the need to excavate.

Repairs of various lengths and diameters can be customized for the actual pipe conditions, and it is common to span a defect as well as the adjacent pipe joints. If the defect is near a service lateral, a sectional point repair that includes a mainline to lateral seal can be installed, which will structurally wrap the main and insert it into the lateral on a customized bladder.

A keyhole sectional point repair technique, using vacuum and hydroexcavation equipment, can be used in some instances to repair a section of pipe that has collapsed and cannot receive a CIPP sectional point repair. The vacuum excavation equipment can be used to remove enough of the soil and damaged pipe to allow the bladder and repair materials to be pulled in place and cured. This will prevent the need to perform a full excavation, install trench shoring and manually enter the trench to make repairs.

This technique can only be accomplished if the soils surrounding the pipe are consolidated and can remain in place while the vacuum excavation takes place. Although this technique will require excavation including asphalt removal, this truly is a differ-



Matt Timberlake

AS THE NATION'S AGING INFRASTRUCTURE CONTINUES TO DETERIORATE AND FAIL, TECHNOLOGIES MUST BE EMPLOYED THAT CAN PROVIDE LONG-TERM LIFE RENEWAL TO EXISTING ASSETS BUT ALSO LOWER COST AND IMPACT.

ent way to dig and can solve a complex challenge by utilizing the advantages of various technologies to provide a long-term solution.

Although the above project is a great example of a niche use for sectional point repair technology, many utility owners are building them into their longterm capital improvement plans. Most asset management plans (AMP) include an evaluation of buried sewer and storm drain infrastructure by robotic CCTV and defect coding using NASSCO PACP structural defect codes.

By evaluating and integrating these defect codes into a GIS system, many pipes need only segments rehabilitated to provide long-term service life. When compared to traditional lining from each manhole to the next, funds can often be stretched, only critical defects repaired and the new asset value and life expectancy updated in the AMP.

As stewards of the underground industry, it is our responsibility to use the technologies available to us to solve the problems of municipal and industrial utility owners, as well as to evaluate combining technologies to create hybrid solutions while managing risk and maximizing long-term benefits.

Remember: Sometimes you have to dig, sometimes you don't have to dig, and sometimes you simply need to dig differently.

ABOUT THE AUTHOR

Matt Timberlake is president of Ted Berry Company in Livermore, Maine. ▼







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10 Maintenance Tips for Trailer-Mounted Vacuum Excavators

MANUFACTURERS GIVE ADVICE ON KEEPING YOUR UNIT RUNNING SMOOTHLY

BY KYLE ROGERS

acuum excavation is a valuable tool in today's digging world. And if you find yourself working a lot of jobs that need that vacuum power in a more compact package, a trailer-mounted unit is likely a part of your fleet. Keep the following manufacturer advice in mind to ensure problem-free operation.

DO A THOROUGH PREJOB INSPECTION

A good maintenance routine for any equipment begins with a prejob inspection. On trailer-mounted vacuum excavation units, Jerry Hatfield, training and warranty manager for Sewer Equipment Co. of America, suggests starting from the ground up.

"Check the tires. Are they properly inflated? When you're pulling these trailers down the road, many of them are very heavy whether they have a load or not. They're carrying a lot of equipment so proper inflation is important for both the operator and the safety of the motoring public. Check the wheel lug nuts. It's such a simple thing to do and yet I would be willing to bet there are a lot of operators who don't even keep a wrench that fits the trailer lug nuts with the rest of their equipment."

Other items to check on a trailer unit include turn signal lights and any reflective markings to make sure they're clean, intact and clearly visible. From there, operators should move on to the vacuum excavation machine itself and check items such as oil levels.

"What they do in the yard before even going to a job site is going to set the tone for either a really good day or a really bad day," Hatfield says.

TRAILER HITCH TIPS

An important aspect of the prejob inspection that doesn't come into play for full-size truck-mounted vacuum excavators is the trailer hitch. "The hitch system is probably the one point that doesn't get enough attention on a trailer unit because you don't have that on a truck," Hatfield says. "But it's critical because that's what is pulling the unit down the road."

"THE HITCH SYSTEM IS PROBABLY **THE** ONE POINT THAT **DOESN'T GET**

ENOUGH ATTENTION

ON A TRAILER UNIT **BECAUSE YOU** DON'T HAVE THAT ON A TRUCK."

Jerry Hatfield

Before leaving for a job site, check the hitch for any signs of wear.

"If it's a ball hitch, you need to check the condition of the ball itself. Are there edges ground off of it, or does it have a crack? If it's a pintle hitch, it's a little different, but those should be looked at as well because they will crack from fatigue after awhile," Hatfield says.

To prevent damage to the hitch system, Hatfield recommends not overloading the trailer and making sure it's attached to the truck in a way

that doesn't overstress the hitch. "Make sure the trailer is running relatively level so the tires are all carrying the load the same way," he says. "Say the hitch on the trailer is high. If it's a dual-axle trailer — and most units are — now you're carrying a lot of weight on the rear axle that should be running on the front axle and that puts a lot of additional strain on the hitch."

DON'T NEGLECT REGULAR FLUID CHECKS

Engine oil and other fluids should be checked on a daily basis, Hatfield says.

"It's really easy to do, but a lot of times it gets ignored," he says. "A few quarts of oil is a lot cheaper than replacing an engine. Sometimes you get a person complaining about an engine failure. Well, did anyone bother to check anything in that unit before taking off to the job site?"

OTHER FLUID-RELATED TIPS

If it's a hydroexcavation unit and you have water on board, Hatfield recommends keeping an eye on the condition of the water pump oil. "Make sure it's not cloudy like there's water in it because that degrades the lubrication of the oil," he says. "That can cause the water pump to wear out very quickly."

For the blower, check to make sure the oil is at the proper level as you would with other components but also be leery of adding too much oil.

"It can actually over-pressurize the oil chambers on some blowers out there and be just as bad as not having enough oil. The blower can fail because of that," Hatfield says.

SERVICE INTERVALS

Follow manufacturer guidelines to gauge when to change out the fluids on your machine. Hatfield says a good rule of thumb is every 500 hours of operation.

"You might have a break-in period of 100 to 200 hours on a lot of your lubrication," says Hatfield. "It depends on the component, but for engine oil, pump oil, blower oil and hydraulic oil, after that break-in period, many manufacturers will probably recommend about a 500-hour service interval to go through the entire unit."

ADJUST BASED ON OPERATING CONDITIONS

Of course, you might have to tweak your service schedule based on the type of environment you're working in. Operators who live and work in a region that sees a cold winter will want to be mindful of water condensation affecting oils.

"That's when it's nice to change out the oil," Hatfield says. "Some operators will change it in the spring and in the fall. That way they're ready with new oil for winter and new oil for the summer. It's a personal preference thing, but 500 hours is still a nice rule of thumb."

In warmer climates, operators may not have to worry about condensation buildup as much, but running the unit too hard for too long can be an issue.

TAKE A BREAK TO AVOID A BREAKDOWN

That's a scenario in which the best maintenance can be as simple as not overworking the vacuum excavator. "In high-heat situ-



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ations, hydraulic oils get pretty warm and engines run pretty hot," Hatfield says.

The blower in particular is something to keep an eye on. Hatfield says operators should closely follow the manufacturer's blower usage guidelines.

"Those guidelines will say something along the lines of run the blower at up to 75 percent of its max capacity for only this length of time before raising the boom to let

some ambient air in to cool it down. Blowers will generate a lot of heat, and you don't want a premature blower failure just because you were running it a bit too hard."



OTHER THINGS TO WATCH FOR **DURING OPERATION**

Hatfield says it's a good practice to continue to monitor oil levels during the course of operation.

"It's easy enough most of the time to keep an eye on it through things like sight glasses," he says. "Even if you stop and break for lunch, it's not a bad idea to go around and check oil levels before starting back up again. Oil is really the lifeblood that is keeping the unit going."

Also get out the grease gun and apply grease to any areas as needed, such

"A lot of it has to do with how intensely they're operating," Hatfield says. "An operator who does a couple of potholes and is maybe using the unit for an hour a day is a little different than a person who is out in the oilfields running it hard all day long."



GREASE LIBERALLY

Regularly greasing components is one of the top maintenance items that is overlooked, Hatfield says.

"I've had many customers with component failures in which it

"EVEN IF YOU STOP AND BREAK FOR LUNCH, IT'S NOT A BAD IDEA TO GO AROUND AND CHECK OIL LEVELS BEFORE STARTING BACK UP AGAIN. OIL IS REALLY THE LIFEBLOOD THAT IS KEEPING THE UNIT GOING."

Jerry Hatfield

turned out just to be a lack of lubrication on a drive shaft," he says. "A little bit of grease on a daily basis would fix a lot of problems."

He recommends applying at least a quarter tube of grease per day on bearing surfaces. "The vacuum may actually pull some of the grease out past the seals," he notes. "I've yet to see anyone overgrease a piece of equipment."



BOOM MAINTENANCE

Hatfield says out of all the components on a vacuum excavator, the boom rotation drive system may be the one that is especially important to grease regularly.

"Not only are you carrying the weight of the boom, you're also carrying the weight of the vacuum — whatever material you're pulling up into the debris tank is also creating weight. So it's already under a lot of strain, plus it's operating in a dirty environment. Invariably they'll fail because of a lack of grease."

When greasing the boom, it's critical to rotate it as well.

"Many manufacturers will say grease, rotate it, grease, rotate it some more," Hatfield says. "If you don't do that, you'll only get grease in one spot and it could very well fail on the opposite side of where the grease was applied." ▼

Read more tips on maintainina trailer-mounted vacuum excavators online at digdifferent.com



The Cash Flow Conundrum

DEVELOP SOUND STRATEGIES TO HELP YOUR INCOME STAY AHEAD OF YOUR OUTGO

BY ERIK GUNN

ere's a one-question quiz: When it comes to money, what do you need to ensure business success? Sales? That's where it all starts. Profits? Without something left after you've paid for what you're selling, you won't be able to go the distance.

But don't forget one other component of the sales-and-profits relationship: cash flow.

Your business will fail quickly without sales. It will fail in the long run if you can't someday turn a profit. But without good cash flow, you will get choked off from sales and profits.

Cash flow is, very simply, how fast money comes in so you can pay your bills and invest in your business for the long term. The faster it comes in, the sooner you can pay what you owe and, better still, build up a cushion for slow periods. The slower your customers pay, the harder it can be to keep up with suppliers — and before you know it, you're circling the drain to bankruptcy or business collapse.

TRACK IT

So how do you improve cash flow? First, you have to know what's really

Tiffany C. Wright operates the business-consulting firm, The Resourceful CEO, based in Atlanta. She recommends a spreadsheet that projects cash flow three months out.

Each week track the cash coming in (paid accounts receivable, cash and credit card sales) and going out (payments against your own accounts payable, utilities, rent, maintenance costs and installment payments, such as your quarterly income tax payments), and each week update the information and total each side of the ledger: money in, money out.

"Below the weekly sum, I run a cumulative running total of all the weeks," Wright says. "If the running total is negative, that's a huge problem that needs to be addressed."

Even if you're in good shape, though, the practice of closely projecting your income and expenses can give you a heads-up to potential speed bumps: a looming shortfall when there's a seasonal downturn or a big bill due in coming weeks.

HOLD ON TO BILLS?

To address an immediate crunch, look at your own bills. "Companies can push out payables in weeks where cash flow is tight," Wright says. Do you pay a bill as soon as it arrives, even though it has a net-30-day term? "Wait until the 27th day to put the check in the mail."

Assuming your own credit card bills are under control, look at paying a bill with your credit card, she adds. "That provides another 30 days to generate the cash to cover the charge."

Both are valuable tips, but these are emergency strategies to be deployed sparingly. Poor cash flow is one of those problems that will be made worse if you use stopgap solutions carelessly. Consistent early payments may qualify

you for money-saving discounts (and consistently late ones are likely to draw penalties). And if you have to borrow against future profits to pay past debts — well, it should be easy to see where that leads.

> So when kicking a problem down the road, make a point of picking it back up and solving it with a more sustainable remedy ASAP.

GET PAID

For the other side of the balance sheet — income — your solutions will demand

foresight and require you to "train" your customers. Put

time limits on the bills you send and enforce them. Consider a discount for especially prompt payment.

For longer-running projects, you might require a deposit or partial prepayment. You could set those as general rules for all customers or implement them only for chronically late payers.

Enabling customers to pay by credit card puts cash in your hands a lot faster than waiting for the customer to send you a check. Wright points out that you can offer your business customers that option, not just residential consumers.

Cash flow that shifts with the season can be at least somewhat predictable. Use that knowledge to help yourself.

"A contractor needs to generate enough profits during 'good months' to carry the operation annually," says Jim Herst, CEO of Perceptive Selling Initiative Inc. in Highland Park, Illinois. And don't stop there. If you can, Herst

THE SLOWER YOUR CUSTOMERS PAY, THE HARDER IT CAN BE TO KEEP UP WITH SUPPLIERS — AND BEFORE YOU KNOW IT, YOU'RE CIRCLING THE DRAIN TO BANKRUPTCY OR BUSINESS COLLAPSE.

says, schedule your work over time so you can invoice more consistently. Develop alternative services — even a second business — for the slow months to keep money coming in. (Think of the lawn-mowing and landscaping guy who plows snow in the winter.)

If your business allows for it, make sales calls during downtime and get contracts for future work with a prepayment discount. "It can be a godsend," says Herst.

TALK IT OVER

Another approach to cash flow troubles is negotiation. That doesn't mean just calling up your creditors and begging them to spread out your payment. Cash flow is really about timing, and sometimes outside eyes can help you see the possibilities more easily.

"A negotiation consultant can help the business owner find the best opportunities to improve their cash flow and create strategies that will be efficient so they can take action even under time constraints," says Devon Smiley, a negotiation consultant in Montreal, Canada.

Smiley identifies several points in the cycle of jobs-revenues-bills-profits in which you can work out timing arrangements to serve your needs better.

- Seek payment schedules with your suppliers that mesh with your cash flow patterns: early payment incentives, terms of 60 days or longer, or other safety valves against the seasonal slump.
- Help customers smooth their own payments so some of that cash reaches you during your own slow times, Smiley says. You'll help your customer as well as yourself.
- Rethink inventory management. Too much money tied up in inventory when business is slow "can be a trigger for cash flow woes," says Smiley. Look at last year's drawdown and approach your purchasing more conservatively for next year. Arrange with suppliers to be able to return unused materials at the end of a season for "a cash flow boost as business gets quiet," she adds.
- Seek a line of credit from your financial institution, where interest is charged only when a withdrawal is made. The rates will be cheaper than a credit card, and, used carefully, can be a good safety net.

"A NEGOTIATION **CONSULTANT CAN** HELP THE BUSINESS OWNER FIND THE **BEST OPPORTUNITIES** TO IMPROVE THEIR **CASH FLOW AND** CREATE STRATEGIES THAT WILL BE EFFICIENT SO THEY CAN TAKE **ACTION EVEN UNDER** TIME CONSTRAINTS." **Devon Smiley**

Each of those points requires negotiation to accomplish, but they allow you to do more than just react — you can plan ahead.

"Ahead of the quiet season, you can negotiate payment terms with vendors and include them in your contracts," Smiley says. "This allows both you and them stability and confidence throughout the year." If you know certain months will be good cash flow months, perhaps you can get a specific payment deadline date that matches your own cash flow instead of just accepting 15- or 30-day terms.

Client terms are another opportunity to plan ahead. Create discounts

for early payments to boost slow-season revenue. Devise installment plans.

"A great example of this is signing a contract at the end of one season to complete work at the beginning of the next season and accepting installment payments during the months in between," Smiley says.

SHARPEN YOUR SKILLS

Negotiation is a skill at which some of us excel more readily than others. If you're not so good at it, a coach may be able to teach you more effective approaches to ask for what you need.

"Saving on the time, energy and frustration of negotiation helps the smallbusiness owner focus on what they do best — helping their customers," Smi-

If you manage the cash flow conundrum, think how much more you'll be able to do for your clients — and improve your cash flow in the process.

ABOUT THE AUTHOR

Erik Gunn is a magazine writer and editor in Racine, Wisconsin.











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Education Day Sessions

Wednesday, February 17, 2016

NAWT

National Association of Wastewater Technicians

Rooms 234-236

8 a.m. 9:30 a.m. 11 a.m. 1:30 p.m. 3 p.m. 4:30 p.m.

Basics of Septic System Control Panels Using Septic Control Panels to Troubleshoot Systems Inspecting Concrete Sewage Tanks An Exercise in Septic System Troubleshooting

The Basics of Inspecting Drip Systems NAWT Ask the Experts Panel Discussion

SSPMA

Sump and Sewage Pump Manufacturers Association Rooms 133-135

8 a.m. 9:30 a.m. 11 a.m.

1:30 p.m.

4:30 p.m.

Understanding Pumps and Common Pumping Issues Evaluation and Installation of Backup Pump Systems Best Installation Practices for Trouble-Free Pump Controls Troubleshooting Pumps, Panels and Switches with Digital Multimeters

3 p.m.

Sizing Guidelines for Sump, Sewage and Grinder Pumps SSPMA Ask the Experts Panel Discussion

Business Strategies Rooms 140-142

8 a.m. 9:30 a.m.

11 a.m.

8 a.m.

How Much Should I Charge? Business Game Changers: Top 5 Secret Strategies for Massive Growth in Your Service Business The Un-Business Plan — Making Your Business

Less Complicated But More Profitable 1:30 p.m. How to Use Superior Customer Service to Increase Sales

3 p.m. Reward the Right Stuff: Finding, Training and Keeping Great Team Members

4:30 p.m. Is Your Business Prepared for a Crisis?

Industry Safety Track Rooms 237-239

Pre-Engineered Shoring Systems for Cross-Trench Utility Challenges

Excavation Safety 9:30 a.m.

11 a.m. Fall Protection Explained

OSHA Confined Space, Air Monitoring and

SSCSC

Southern Section Collection Systems Committee Rooms 231-233

8 a.m. 9:30 a.m. Positioning Yourself for Promotion and Succession Planning Step Up Your Game! Taking Current CCTV Inspection Technology to the Next Level

11 a.m. 1:30 p.m. 3 p.m. 4:30 p.m. Trailer Jetting — Getting the Most Out of Your Equipment Vacuuming: the Other Half of the Combination Unit Sewer System Maintenance — Challenges and Solutions SSCSC Ask the Experts Panel Discussion

NOWRA

National Onsite Wastewater Recycling Association Rooms 240-242

8 a.m. 9:30 a.m. 11 a.m.

Introduction to Soils Onsite Septic System Loading Rates and Site Layout

Making Infiltration Decisions — Understanding Soil Surface Design

1:30 p.m. Soil Dispersal Comparison

3 p.m. Introduction to the Elements of Onsite System Design and Regulations

4:30 p.m. Onsite Septic System Hydraulics and Pump Design

Portable Sanitation Track

Rooms 136-138

1:30 p.m.

Marketing Basics: How to Effectively and Efficiently Grow Your Portable Sanitation Sales

3 p.m.

Portable Sanitation Forum: Current and Future Critical Issues Affecting the Industry Discussion

4:30 p.m.

Trust — How to Build it and Use it to Grow Your Portable Sanitation Business

NASSCO

National Association of Sewer Service Companies

Rooms 130-132

8 a.m. 9:30 a.m. 11 a.m.

Cleanina Nozzle Technology Large vs. Small-Diameter Pipe Cleaning

The Lower Lateral — The New Frontier in Sewer Rehab

1:30 p.m. **Chemical Grouting Technologies** The Growth of the UV Cured CIPP Process 3 p.m. 4:30 p.m. NASSCO Ask the Experts Discussion Panel

Treatment Plant Operator Track

Rooms 243-245

8 a.m. 9:30 a.m. 11 a.m. 1:30 p.m.

Effective Strategies for Collections System Management Sustainable Innovation in Biosolids Management Pretreatment and Wastewater Lagoon Management Septage Collection and Treatment

Large Scale FOG/Septage Receiving Station — 3 p.m. Lantern Environmental Project Case History

4:30 p.m. Progress in Electrochemical Water Treatment in Last Century

WITA-IMCA

Water Jet Technology Assoc. - Industrial Municipal Cleaning Assoc.

Rooms 237-239

1:30 p.m.

Proper Industrial Truck Maintenance Can More Than Pay for Itself in Productivity and Safety

3 p.m. 4:30 p.m.

Air Conveyance Through an Industrial Vacuum Truck Vacuum Excavation Applications and Opportunities

Women in Business

Rooms 136-138

8 a.m.

Marketing to Women

Women of Wastewater: Building a Community of Allies 9:30 a.m.

Women in Wastewater Roundtable 11 a.m.

Vacuum Truck Equipment and Operation Training

presented by NAWT National Association of Wastewater Technicians

Rooms 109-110 8 a.m. - 5 p.m.

This day-long session will discuss in detail the equipment on vacuum trucks and how to operate them. Pumping terms will be covered, as will safety principles, materials often encountered on the job and government regulations.





WWETT Education Sessions

Thursday, February 18, 2016

Liquid Waste Treatment & Disposal

Rooms 130-132

8 a.m. 9:30 a.m. Analysis of Drainfield Failures and Restoration Methods Cash In on Community System Operations and

Maintenance

11 a.m.

Ultra-Efficient Inspection Technique to Locate Leaks on Septic Systems

Sewer & Drain Cleaning, Inspection & Repair

Rooms 133-135

8 a.m. 9:30 a.m. Using the Clean Water Act to Grow Profits Winning Trench Warfare — Finding Profitability

in Sewer/Septic Work

11 a.m.

Your Best Shot at Sewer Success — How to Get the Most From Inspection Technology

NOWRA Design Course

Staving in Front of Your Customer

How Self-Employed People Can Make More Money Growing Your Business in a Tough Economy

Business Strategies

Rooms 240-242

Rooms 136-138

8 a.m. 9:30 a.m.

8 a.m.

9:30 a.m.

11 a.m.

Mound and At-Grade Design Low-Pressure Pipe in Drainfield Distribution

11 a.m. Subsurface Drip Irrigation

SSCSC Sewer & Drain Cleaning Course

Rooms 231-233

8 a.m. 10 a.m. Hands-On Nozzle Technology Hands-On Jetter Hose Maintenance — Care and Repair

Onsite Septic Installation, Repair & Design

Rooms 237-239

8 a.m.

9:30 a.m.

11 a.m.

Overview of Application, Design, Installation and Operation of Drip Dispersal Systems Onsite System Pump Design Made Easy The Onsite Wastewater Industry and Our Carbon Footprint

Municipal Sewer & Water

Rooms 140-142

8 a.m. 9:30 a.m. How to Recover Non-Revenue Water Phased Assessment Strategy for Sewers - Understanding Sewer Condition Quicker with Fewer Resources

11 a.m.

Sewer Condition Quicker with Fewer Resources
The Science of Pipe Cleaning — Flow and Pressure

Sewer & Pipe Rehabilitation, Relining & Repair

Rooms 234-236

8 a.m. 9:30 a.m. 11 a.m. Take Control of Inflow and Infiltration in Manholes When Things Go Wrong on a Lining Job Taking Small-Diameter Drain Lining Inside Infrastructure

Treatment Plant Operator

Rooms 243-245

8 a.m. 9:30 a.m.

11 a.m.

Smart Water Technology in Theory and Practice Dissolved Ozone in Municipal Collection, Treatment and Disposal

Municipal Biological Waste Treatment



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Friday, February 19, 2016

Liquid Waste Treatment & Disposal

Rooms 130-132

8 a.m. Fact vs. Fiction: The Top Ten Septic Myths

9:30 a.m. All About Facultative Bacteria

11 a.m. Brown Grease Recovery From Grease Trap Waste: Science

and Economics

Industry Safety

Rooms 140-142

8 a.m. Identifying and Managing Risk

in a Septic or Sewer Business

9:30 a.m. How Well Do You Know Your Cleaning Hose?
11 a.m. Pathogen Exposures to Workers in the Onsite Industry

Business Strategies

Rooms 240-242

8 a.m.
9:30 a.m.

Creating a Data-Driven Strategic Marketing Plan
What Every Sewer and Drain Contractor Needs to Know
About Asset Protection, Tax Reduction and Estate

Municipal Sewer & Water

Rooms 240-242

11 a.m. | GIS:

GIS: Empowering Water, Wastewater and Waste Removal Organizations

Sewer & Drain Cleaning, Inspection & Repair

Rooms 133-135

8 a.m. 9:30 a.m.

11 a.m.

Advanced Pipe Bursting Low-Latency, High-Definition Video Over

Coaxial Cable for Remote Inspection
Plumbers vs. Technicians: The Slow Decline of the

Tradesman

Municipal Sewer & Water

Rooms 231-233

8 a.m. 9:30 a.m. 11 a.m. Using Acoustic Inspection to Prioritize Sewer Cleaning
Evaluation of Automatic Filters for Nozzle Protection in
Flow Monitoring — How to Make Your Program Successful

Treatment Plant Operator

Rooms 243-245

8 a.m. 9:30 a.m. 11 a.m. Insights into Ozone Water Treatment Plants Wastewater Microbiology How to Ensure Gold is the Result — Choosing the Right Dewatering Equipment



Business Software & Technology

Rooms 136-138

8 a.m.

Know the State of Your Business Using Business Charts and Reports

9:30 a.m. Usir

Using Software to Save Time and Increase Profits

11 a.m. Using Mobile Devices for Business

Sewer & Pipe Rehabilitation, Relining & Repair

Rooms 234-236

8 a.m. 9:30 a.m. Buying Back Capacity
Successful Reduction of I&I Using the Holistic

Approach to Sewer Rehabilitation

11 a.m.

Large Scale Centrifugally Cast Concrete Pipe Culvert Rehab in CO Dept. of Transportation Region 1

COLE Publishing's Onsite Installer Course

Rooms 237-239 8 a.m. - 5 p.m.

This day-long session will walk professionals through an introduction to proper installation practices for the sustainable use of onsite treatment systems

Detailed session information available at: www.wwettshow.com







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info@vaxteel.com

www.vaxteel.com

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Milwaukee Rubber Products, Inc.

Menomonee Falls, WI

800-325-3730 • 262-781-7888 • 262-781-1742

dennis@milwaukeerubber.com

www.milwaukeerubber.com

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Presvac Systems

Burlington, ON

Canada

800-387-7763 • 905-637-2353 • 905-681-0411

sales@presvac.com

www.presvac.com

R.A. Ross & Associates NE, Inc.

Brecksville, OH

800-678-4581 • 440-546-1190 • Fax: 440-546-1188

danw@rarossne.com

www.rgrossne.com

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SchellVac Equipment Inc.

Winnipeg, MB

Canada

877-336-0081 • 204-336-0081 • Fax: 204-336-0090

alex@schellvacequipment.com

www.schellvaceauipment.com

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Sonetics

Portland, OR

888-887-1272 • Fax: 503-620-2943

dig@soneticscorp.com

www2.soneticscorp.com/dig

Transway Systems Inc.

Hamilton, ON

Canada

800-263-4508 • 905-578-1000 • Fax: 905-561-9176

gary@transwaysystems.com

www.transwaysystems.com

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Boring Machines

BOR-IT Mfg. Co., Inc.

Ashland, OH

800-289-6639 • 419-289-6639 • Fax: 419-289-6352

sales@bor-it.com

www.bor-it.com

Ditch Witch

Perry, OK

800-654-6481 • Fax: 580-336-3458

info@ditchwitch.com

www.ditchwitch.com

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Pow-R Mole Sales LLC Lancaster, NY

800-334-6653 • Fax: 716-683-6372

brian@powrmole.com

www.powrmole.com

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Bucket Machines

Sewer Equipment

Dixon, IL

877-735-4640 • 815-835-5566 • Fax: 815-284-0452

sales@sewerequipment.com

www.sewerequipment.com

Cable Reels

Source One Environmental

Davison, MI

877-412-4740 • 810-412-4740

skerby@s1eonline.com

www.sleonline.com

Casing/Piping/Tubing

Advance Products & Systems

Lafayette, LA

800-315-6009 • 337-233-6116 • Fax: 337-233-6996

marketing@apsonline.com

www.apsonline.com

Cellar Covers

Fibergrate Composite Structures

Dallas, TX

800-527-4043 • 972-250-1633 • Fax: 972-250-1530

info@fibergrate.com

www.fibergrate.com

CIPP

HammerHead Trenchless Equipment

800-331-6653 • 920-648-4848 • Fax: 920-648-1781

info@hammerheadmole.com

www.hammerheadtrenchless.com

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Pipeline Renewal Technologies

Randolph, NJ 866-936-8476 • 973-252-6700 • Fax: 973-252-1176 mail@pipelinert.com www.pipelinert.com

RS Technik

Cary, NC 919-481-1977 • Fax: 919-651-1384 contact@rstechnik.us www.rstechnik.us

Source One Environmental

Davison, MI 877-412-4740 • 810-412-4740 skerby@s1eonline.com www.sleonline.com

Clothing/Workwear

Milwaukee Rubber Products, Inc.

Menomonee Falls, WI 800-325-3730 • 262-781-7888 • 262-781-1742 dennis@milwaukeeruhher.com www.milwaukeerubher.com Ad on page 67



Pro-Line Safety Products Co.

West Chicago, IL 800-554-3424 • 630-876-1050 • Fax: 630-876-1038 dan@prolinesafetv.com www.prolinesafety.com

Coatings/Linings/ **Sealants**

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Davison, MI 877-412-4740 • 810-412-4740 skerby@s1eonline.com www.sleonline.com

Communication **Equipment**

Sonetics

Portland, OR 888-887-1272 • Fax: 503-620-2943 dig@soneticscorp.com www2.soneticscorp.com/dig

Construction Equipment

A & E Construction Supply

Mankato, MN 800-736-3413 • 507-345-3252 • Fax: 507-345-5195 office@plowandtrencher.com www.plowandtrencher.com

BOR-IT Mfg. Co., Inc.

Ashland, OH 800-289-6639 • 419-289-6639 • Fax: 419-289-6352 sales@bor-it.com www.bor-it.com

Ditch Witch

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Perry, OK 800-654-6481 • Fax: 580-336-3458 info@ditchwitch.com www.ditchwitch.com

Fiberarate Composite Structures

Dallas, TX 800-527-4043 • 972-250-1633 • Fax: 972-250-1530 info@fibergrate.com www.fiberarate.com

Vanair Manufacturina

Michigan City, IN 800-526-8817 • Fax: 219-879-5800 marketina@vanair.com www.vanair.com Ad on page 51

Consulting/ **Engineering/ Design Services**

Source One Environmental

Davison, MI 877-412-4740 • 810-412-4740 skerby@s1eonline.com www.sleonline.com

Corrosion Protection

Advance Products & Systems

Lafavette, LA 800-315-6009 • 337-233-6116 • Fax: 337-233-6996 marketina@apsonline.com www.apsonline.com

Dealer/Distributor

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Mankato, MN 800-736-3413 • 507-345-3252 • Fax: 507-345-5195 office@plowandtrencher.com www.plowandtrencher.com

Decals/Magnets/ Signage/Labels/Tags



Tech Products, Inc.

800-221-1311 • 718-442-4900 • Fax: 718-442-2124 thomas@techproducts.com www.techproducts.com Ad on page 61

Dozers



ExcaVision, Inc.

Orlando, FL 800-344-4700 • 407-721-2416 info@ocalainstruments.com www.ExcaVision.com Ad on page 67

Drain Tile

Advanced Drainage Systems, Inc.

Hilliard, OH 800-821-6710 • 614-658-0050 • Fax: 614-658-0204 info@ads-pipe.com www.ads-pipe.com

Drill Bits

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Pow-R Mole Sales LLC

Lancaster, NY 800-334-6653 • Fax: 716-683-6372 brian@powrmole.com www.powrmole.com Ad on page 33

Drilling Fluids

Pow-R Mole Sales LLC

Lancaster, NY 800-334-6653 • Fax: 716-683-6372 brian@powrmole.com www.powrmole.com Ad on page 33

Drills

Ditch Witch

Perry, OK 800-654-6481 • Fax: 580-336-3458 info@ditchwitch.com www.ditchwitch.com Ad on page 68

Vanair Manufacturing

Michigan City, IN 800-526-8817 • Fax: 219-879-5800 marketina@vanair.com www.vanair.com Ad on page 51

Easement Machine

Sewer Equipment

Dixon, IL 877-735-4640 • 815-835-5566 • Fax: 815-284-0452 sales@sewerequipment.com www.sewerequipment.com

Education/Training

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Davison, MI 877-412-4740 • 810-412-4740 skerby@s1eonline.com www.sleonline.com

Equipment Attachments



LaValley Industries

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Bemidii, MN 218-444-3030 infocenter@lavallevindustries.com www.lavalleyindustries.com

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Fibergrate Composite Structures

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Ring-O-Matic, Inc.

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Super Products LLC

New Berlin, WI 800-837-9711 • 262-784-7100 • Fax: 262-784-9561 info@superproductsllc.com www.superproductsllc.com

Erosion Control

Advanced Drainage Systems, Inc.

800-821-6710 • 614-658-0050 • Fax: 614-658-0204 info@ads-pipe.com www.ads-pipe.com

Water Cannon, Inc. - MWBE

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Excavating Equipment

Fast-Vac/Multi-Vac

Union Grove, WI 800-558-2280 • 262-878-0756 • Fax: 262-878-4019 sales@fast-vac.com www.fast-vac.com

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Premier

Fort Morgan, CO 970-542-1975 sales@poequip.com www.poequipment.com

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Soil Surgeon, Inc.

Laguna Niguel, CA 949-363-1401 • Fax: 714-434-9998 bbain@calhaz.com www.soilsurgeoninc.com

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Vac-Tron Equipment LLC

Okahumpka. FL 888-VAC-TRON • 352-728-2222 • 352-728-2850 brian@vac-tron.com www.vac-tron.com

Excavators



ExcaVision, Inc.

Orlando, FL 800-344-4700 • 407-721-2416 info@ocalainstruments.com www.ExcaVision.com Ad on page 67

Super Products LLC

New Berlin, WI 800-837-9711 • 262-784-7100 • Fax: 262-784-9561 info@superproductsllc.com www.superproductsllc.com

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SchellVac Equipment Inc.

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Fire Protection

Advance Products & Systems

Lafayette, LA 800-315-6009 • 337-233-6116 • Fax: 337-233-6996 marketing@apsonline.com www.apsonline.com

Flags/Markers

Milwaukee Rubber Products, Inc.

Menomonee Falls, WI 800-325-3730 • 262-781-7888 • 262-781-1742 dennis@milwaukeerubber.com www.milwaukeerubber.com Ad on page 67



Pro-Line Safety Products Co.

West Chicago, IL 800-554-3424 • 630-876-1050 • Fax: 630-876-1038 dan@prolinesafety.com www.prolinesafety.com



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Staten Island, NY 800-221-1311 • 718-442-4900 • Fax: 718-442-2124 thomas@techproducts.com www.techproducts.com Ad on page 61

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Subsite Electronics

Perry, OK 800-846-2713 • 580-572-3700 info@subsite.com www.subsite.com Ad on page 11

Hand Tools

RIDGID

800-769-7743 • 440-323-5581 • Fax: 440-329-4862 RIDGIDinfo@emerson.com www.RIDGID.com

Screenco Systems LLC

Genesee, ID 208-790-8770 sales@screencosystems.com www.screencosystems.com Ad on page 67

Hazardous Vacuum/ Cleaning

Presvac Systems

Burlington, ON Canada

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sales@presvac.com www.presvac.com

Ring-O-Matic, Inc.

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Super Products LLC

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Vac-Tron Equipment LLC

Okahumpka, FL 888-VAC-TRON • 352-728-2222 • 352-728-2850 hrian@vac-tron.com www.vac-tron.com

Horizontal Directional Drilling

Ditch Witch

Perry, OK 800-654-6481 • Fax: 580-336-3458 info@ditchwitch.com www.ditchwitch.com Ad on page 68

McLaughlin Group, Inc.

Greenville, SC 800-435-9661 • 864-277-5870 mmole@mightymole.com www.mclaughlinunderground.com



Pow-R Mole Sales LLC

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Hose & Accessories



Kuriyama of America, Inc.

Schaumbura, IL 847-755-0360 • Fax: 847-885-0996 sales@kuriyama.com www.kuriyama.com

Milwaukee Rubber Products, Inc.

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NozzTea. Inc. Clearwater, FL

866-620-5915 • 603-413-6583 • Fax: 603-413-6744 info@nozzteq.com www.nozztea.com

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Burlington, ON Canada 800-387-7763 • 905-637-2353 • 905-681-0411 sales@presvac.com www.presvac.com

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Screenco Systems LLC

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Sewer Equipment

Dixon, IL 877-735-4640 • 815-835-5566 • Fax: 815-284-0452 sales@sewerequipment.com www.sewerequipment.com

Super Products LLC

New Berlin, WI 800-837-9711 • 262-784-7100 • Fax: 262-784-9561 info@superproductsllc.com www.superproductsllc.com

Transway Systems Inc.

Hamilton, ON Canada

800-263-4508 • 905-578-1000 • Fax: 905-561-9176 gary@transwaysystems.com www.transwaysystems.com

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Vactor Manufacturing

Streator, IL

800-627-3171 • 815-672-3171 • Fax: 815-672-2779 sales@vactor.com www.vactor.com

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Hose - High Pressure

Water Cannon, Inc. - MWBE

Lake Marv. FL 800-333-9274 • Fax: 888-928-9274 sales@watercannon.com www.watercannon.com/catalogrequest.aspx Ad on page 67



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Hose - Vacuum

Fast-Vac/Multi-Vac

Union Grove, WI 800-558-2280 • 262-878-0756 • Fax: 262-878-4019 sales@fast-vac.com www.fast-vac.com

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LMT Inc.

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Water Cannon, Inc. - MWBE

Lake Marv. FL 800-333-9274 • Fax: 888-928-9274 sales@watercannon.com www.watercannon.com/catalogrequest.aspx Ad on page 67

Hose Reels

Water Cannon, Inc. - MWBE

Lake Mary, FL 800-333-9274 • Fax: 888-928-9274 sales@watercannon.com www.watercannon.com/catalogrequest.aspx Ad on page 67

Hydraulic Parts and Components

Pow-R Mole Sales LLC

Lancaster, NY 800-334-6653 • Fax: 716-683-6372 brian@powrmole.com www.powrmole.com Ad on page 33

R.A. Ross & Associates NE, Inc.

800-678-4581 • 440-546-1190 • Fax: 440-546-1188 danw@rarossne.com www.rgrossne.com Ad on page 41

Hydroexcavating

Fast-Vac/Multi-Vac

Union Grove, WI 800-558-2280 • 262-878-0756 • Fax: 262-878-4019 sales@fast-vac.com www.fast-vac.com Ad on page 61

Hydroexcavation Equipment

Ditch Witch

Perry, OK 800-654-6481 • Fax: 580-336-3458 info@ditchwitch.com www.ditchwitch.com Ad on page 68

Fast-Vac/Multi-Vac

Union Grove, WI 800-558-2280 • 262-878-0756 • Fax: 262-878-4019 sales@fast-vac.com www.fast-vac.com

GapVax, Inc.

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Johnstown, PA 888-442-7829 • 814-535-6766 • Fax: 814-539-3617 inquiry@gapvax.com www.qapvax.com

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Great Lakes Equipment Sales, Inc.

Crestwood, IL

888-432-9070 • 815-412-5270 • Fax: 888-432-9070 info@usedvacuumtrucks.com www.usedvacuumtrucks.com

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Hi-Vac Corporation (X-Vac)

Marietta, OH 800-752-2400 • 740-374-2306 • Fax: 740-374-5447 sales@x-vac com www x-vac com



Hot Jet USA

Riverton, UT 800-213-3272 • Fax: 801-545-9132 sales@powerlineindustries.com www.hotjetusa.com

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Hydra-Flex, Inc.

Burnsville, MN 952-808-3640 • Fax: 952-808-3650 sales@hvdraflexinc.com www.hydraflexinc.com Ad on page 27

LMT Inc.

800-545-0174 • 309-932-3311 • Fax: 877-471-2564 info@vaxteel.com

www.vaxteel.com

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McLaughlin Group, Inc.

Greenville, SC 800-435-9661 • 864-277-5870 mmole@mightymole.com www.mclaughlinunderground.com

NozzTeg, Inc.

Clearwater, FL 866-620-5915 • 603-413-6583 • Fax: 603-413-6744 info@nozztea.com www.nozzteg.com

Petrofield Industries

Calgary, AB Canada 877-340-8141 • 403-204-6327 mgilkyson@petrofield.com www.tornadotrucks.com Ad on page 45



Premier

Fort Morgan, CO 970-542-1975 sales@poequip.com www.poequipment.com Ad on page 6

Presvac Systems

Burlington, ON Canada

800-387-7763 • 905-637-2353 • 905-681-0411 sales@presvac.com

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Ring-O-Matic, Inc. Pella, IA 800-544-2518 • 641-628-1515 jzylstra@ring-o-matic.com www.ring-o-matic.com

SchellVac Equipment Inc.

Winnipeg, MB Canada 877-336-0081 • 204-336-0081 • Fax: 204-336-0090 alex@schellvacequipment.com www.schellvacequipment.com

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Sewer Equipment

Dixon, IL 877-735-4640 • 815-835-5566 • Fax: 815-284-0452 sales@sewerequipment.com www.sewerequipment.com

Soil Surgeon, Inc.

Laguna Niguel, CA 949-363-1401 • Fax: 714-434-9998 hhain@calhaz com www.soilsurgeoninc.com

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Super Products LLC New Berlin, WI

800-837-9711 • 262-784-7100 • Fax: 262-784-9561 info@superproductsllc.com www.superproductsllc.com

Transway Systems Inc.

Hamilton, ON Canada 800-263-4508 • 905-578-1000 • Fax: 905-561-9176 gary@transwaysystems.com www.transwaysystems.com Ad on page 3



Vac-Con. Inc. Green Cove Springs, FL 904-284-4200 vns@vac-con.com www.vac-con.com Ad on page 5



Vac-Tron Equipment LLC

Okahumpka, FL

888-VAC-TRON • 352-728-2222 • 352-728-2850

brian@vac-tron.com www.vac-tron.com

Vactor Manufacturing

Streator, IL 800-627-3171 • 815-672-3171 • Fax: 815-672-2779 sales@vactor.com

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Water Cannon, Inc. - MWBE

Lake Mary, FL 800-333-9274 • Fax: 888-928-9274 sales@watercannon.com

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Jet/Vac Combination Machines

Fast-Vac/Multi-Vac

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800-558-2280 • 262-878-0756 • Fax: 262-878-4019 sales@fast-vac.com

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GapVax, Inc.

Johnstown, PA 888-442-7829 • 814-535-6766 • Fax: 814-539-3617 inquiry@gapvax.com www.gapvax.com Ad on page 13

Great Lakes Equipment Sales, Inc.

Crestwood II 888-432-9070 • 815-412-5270 • Fax: 888-432-9070 info@usedvacuumtrucks.com www.usedvacuumtrucks.com Ad on page 29



Hot Jet USA

Riverton, UT 800-213-3272 • Fax: 801-545-9132 sales@powerlineindustries.com www.hotjetusa.com Ad on page 67

Galva. IL 800-545-0174 • 309-932-3311 • Fax: 877-471-2564 info@vaxteel.com www.vaxteel.com

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McLaughlin Group, Inc.

Greenville, SC 800-435-9661 • 864-277-5870 mmole@mightymole.com

www.mclaughlinunderground.com

Presvac Systems

Burlington, ON Canada 800-387-7763 • 905-637-2353 • 905-681-0411 sales@presvac.com www.presvac.com

Ring-O-Matic, Inc.

Pella, IA 800-544-2518 • 641-628-1515 izylstra@ring-o-matic.com www.ring-o-matic.com

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VAC-CON

Vac-Con, Inc. Green Cove Springs, FL 904-284-4200 vns@vac-con.com www.vac-con.com Ad on page 5

Vac-Tron Equipment LLC

Okahumpka, FL 888-VAC-TRON • 352-728-2222 • 352-728-2850 brian@vac-tron.com www.vac-tron.com

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Jetters - Portable



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Clearwater, FL 866-620-5915 • 603-413-6583 • Fax: 603-413-6744 info@nozztea.com www.nozzteg.com

RIDGID

RIDGID

Elyria, OH 800-769-7743 • 440-323-5581 • Fax: 440-329-4862 RIDGIDinfo@emerson.com www RIDGID com

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Jetters - Truck & Trailer

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Great Lakes Equipment Sales, Inc.

Crestwood, IL

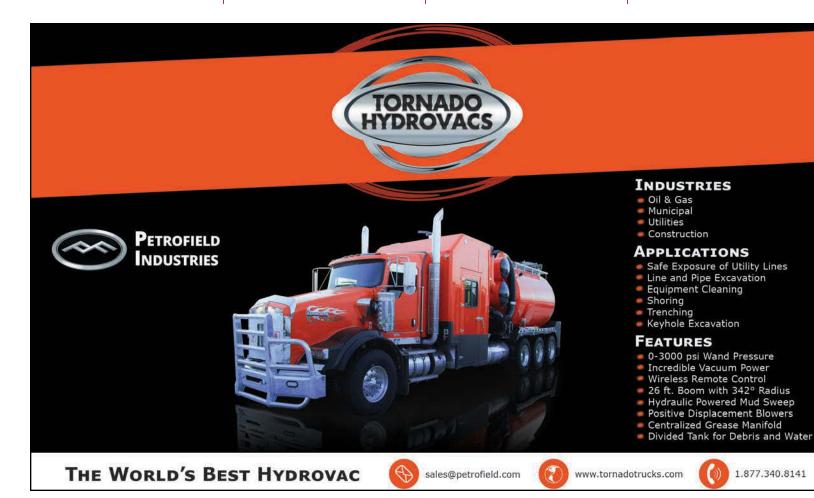
888-432-9070 • 815-412-5270 • Fax: 888-432-9070 info@usedvacuumtrucks.com www.usedvacuumtrucks.com

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sales@presvac.com

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Ring-O-Matic, Inc.

Pella, IA

800-544-2518 • 641-628-1515

jzylstra@ring-o-matic.com

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Sewer Equipment

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877-735-4640 • 815-835-5566 • Fax: 815-284-0452

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Transway Systems Inc.

Hamilton, ON

Canada 800-263-4508 • 905-578-1000 • Fax: 905-561-9176

gary@transwaysystems.com

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Vac-Con, Inc.

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904-284-4200

vns@vac-con.com

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Vac-Tron Equipment LLC

Okahumpka, FL

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Vactor Manufacturing

Streator, IL

800-627-3171 • 815-672-3171 • Fax: 815-672-2779

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Laser Equipment



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Sleepy Workers are Dangerous Workers

SEVERAL OPTIONS OF GETTING THE SLEEP YOU NEED. INCLUDING NAPPING AND GETTING AWAY FROM SHIFT WORK

BY DOUG DAY



Christopher Barnes, Ph.D., assistant professor of management at the Foster School of Business at the University of Washington in Seattle.

leep is a fundamental human need. You can't wish your way out of it, you can't tough your way out of it, you can't beat the system." Those are the words of sleep and fatigue expert Christopher Barnes, Ph.D. The assistant professor of management at the Foster School of Business at the University of Washington in Seattle adds, "People are starting to realize that we're at an unsustainable level of sleep loss. We sleep less every decade."

Barnes says the research, including his own, is clear. "It's very consistent across multiple studies. When people are short on sleep, they're more likely to be involved in workplace accidents. It influences your judgment and actions in a way that increases your hazard of being injured."

His research involved more than a half-million mining injuries over a 25-year period on

one specific day: the Monday after daylight saving time begins. "There is a spike of 5.6 percent in workplace injuries," he says of his findings. "The severity, measured by the number of lost workdays, goes up by more than 50 percent."

In fall, when we gain an hour, there is no significant difference in sleep, number of injuries or severity (Changing to Daylight Saving Time Cuts into Sleep and Increases Workplace Injuries, Christopher M. Barnes and David T. Wagner).

The increased risk applies to both short-term sleep loss, as in Barnes' research, and long-term sleep loss that others have studied. A 2014 analysis of 27 studies (Sleep Problems and Work Injuries: A Systematic Review and Meta-Analysis by Katrin Uehli, et al) showed sleep problems were responsible for a 60 percent increase in injuries and contributed to about 13 percent of all work injuries.

The loss of sleep is called sleep debt and builds up over time. "You may have had eight hours of sleep last night, but if you only had four hours the nights before that, you're carrying some sleep debt that will influence your injury risk today as well as your other cognitive functions," adds Barnes.

SHIFT WORK

Fatigue is related to sleep loss in that it reduces your alertness. "People perform worse over longer and longer shifts," he says. "It seems to be especially bad once you pass somewhere around nine or 10 hours. We're setting them up to make mistakes that can harm them that they wouldn't make if they were better rested."

Barnes comes from a military background where he says the attitude is similar to that of many people. "The assumption is that people should man up, drink some caffeine and you can push through it."

He cites the crab boats made famous on TV as a prime example. "It's easy to rationalize. 'We're in a really sweet crab spot, so let's work a few more hours. I'm a tough guy so I'll just push through it and everything will be just fine.' My research was done on miners; they are tough people and they're vulnerable to the effects of lost sleep. Research with Navy Seals showed the same thing with their cognitive performance on various tasks that we see with normal people."

Rotating shifts, he says, "are a beast" that cause people to suffer from effects similar to jet lag. "If you skip over eight time zones to travel to another country, you're going to really struggle to adapt your sleep pattern. It's the same thing when we rotate people across shifts."

> You can adapt your sleep schedule by about an hour a day, research has found. So if you switch to a different shift, it will take about eight days to get used to the schedule. "For those eight days," Barnes says, "you'll have a hard time being asleep when you want to be asleep and a hard time being awake when you want to be awake. You might doze off while you're working, or at least be highly fatigued and low in alertness."

The more frequently you rotate shifts, the more frequently you have to begin the process. If you rotate shifts every week, you will never get in sync and will always be adapting to a new sleep schedule.

Barnes says there is some disagreement about erasing sleep debt by catching up, such as sleeping in on weekends. Whether it helps or not, it does create other issues. "It's disruptive to your future sleep. If you want to have a nice, strong sleep system, you should have a clear pattern and consistency with what time you go to bed and what time you get up. So when you sleep in on the weekend, you're shifting your entire sleep schedule to be a few hours later. Then, Monday morning, you have to shift again to make everything earlier. It's like putting yourself through jet lag every Monday."

HITTING THE PILLOW

There are obvious signs that you are being affected by the lack of sleep: droopy eyes, difficulty concentrating, grumpiness. "Those are the easy ones," he says. "The one we don't typically think of is how long it takes you to fall asleep."

You might think that getting to sleep right away is a good thing, but it's actually a symptom of sleep deprivation. "It indicates you're carrying a lot of sleep debt and your body is trying to get right into sleep to try to discharge that debt. That should be a clear indicator that you're not getting the sleep that you need." He says it should take around 20 minutes to fall asleep.

NAPS HELP

Several years ago, NASA found that naps of about 30 minutes increased

"WHEN PEOPLE ARE SHORT ON SLEEP, THEY'RE MORE LIKELY TO BE INVOLVED IN WORKPLACE ACCIDENTS. IT INFLUENCES YOUR JUDGMENT AND ACTIONS IN A WAY THAT INCREASES YOUR HAZARD OF BEING INJURED."

Christopher Barnes

cognitive performance by 34 percent and alertness by 54 percent. Google has nap stations, pilots can now take naps on international flights, Huffington Post encourages napping. Ben & Jerry's provides both nap rooms and free ice cream. Other major companies have embraced workday snoozing, including Nike, the New York Times, Pizza Hut, Time Warner and Metronaps, which makes sense since they make chairs designed for napping at work.

"Naps are mostly a good thing," says Barnes. "It's helpful, you get some restoration and you'll perform better for the rest of the day."

But be careful — you can make things worse. "If you're in a deep cycle of sleep when you wake up from your nap, you'll experience sleep inertia. You'll wake up groggy with that zombie-like feeling where you're not all the way awake. For some period of time you'll be at less than optimal levels of effectiveness and have a hard time concentrating and working."

A nap can also disrupt your sleep rhythm. "Some people have a hard time getting to sleep at night after they've taken a nap during the day. For some people, a nap is just stealing sleep from the future."

Barnes says naps can be very valuable if they are around 20 or 30 minutes. "The longer the nap, the more restoration that will occur. But the longer your nap, the more likely you'll enter one of those deeper phases of sleep and risk sleep inertia."

While a nap is one way to make your life safer, Barnes says he would prefer that people just get enough sleep in the first place.

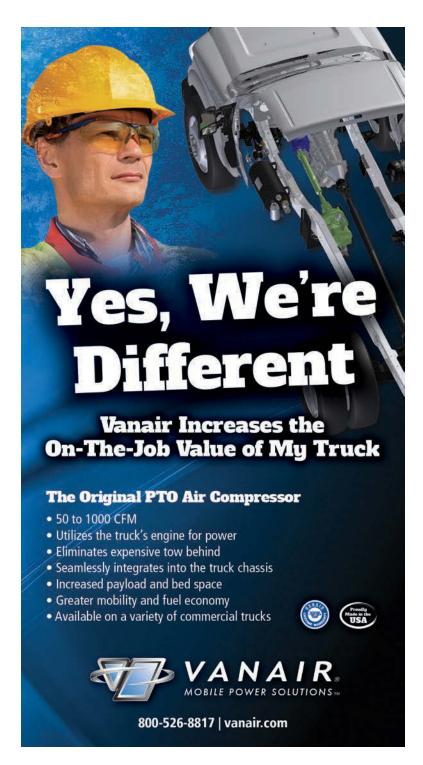


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Great Expectations

TECHNOLOGY ALLOWS EXCAVATION CONTRACTORS TO KEEP EMPLOYEES SAFE BY KEEPING THEM OUT OF THE EQUIPMENT

BY MARYBETH MATZEK

ohn Skierka knows his company's customers work in tenuous, remote areas that can take as much work to reach as it does to get the job done. So Skierka and his team at Great Excavations of Lethbridge, Alberta, developed technology that allows workers to remotely control their equipment, easing the burden of preparing a site and moving several pieces of equipment there.

"We use existing equipment and make them work unmanned," says Skierka, general manager for Great Excavations. "By using the unmanned equipment, we remove a lot of risks."

For example, if a traditional amphibious excavator needed to enter a toxic environment, such as a sewage lagoon, employees would need to wear hazmat suits and the company would need to have emergency crews and equipment standing by. "With the unmanned equipment, you don't need that," Skierka says. "It takes all human life out of the picture, reducing overall risk. You're keeping people on the shore and out of danger."

Sewage lagoons are just one example where the unmanned equipment can be used. Other sites include sulfur pits, ponds or other terrain with H₂S, methane gas or other toxic elements present — anything that has the possibility to

"WE TOOK A LOOK

AT HOW THE **INDUSTRY WAS WORKING IN SOME** OF THESE TOXIC **ENVIRONMENTS**

AND HOW TO REDUCE THE COST OF HAZMAT SUITS, SUPPLIED AIR, **EXTRA STAFFING** AND SO ON."

John Skierka

cause damage to the human body. Great Excavations' machines are used in numerous industries including gas, oil, mining and municipal services.

HOW THE MACHINES WORK

The unmanned vehicles and the operators communicate via transmitters and receivers placed at each site. Skierka says a remote module is turned on, which allows the operators to connect to the machine. The command units are equipped with a hand-held joystick or a virtual cockpit that drivers can use to operate the vehicle.

Another important component

is a video uplink for when the operators can't see the vehicle — in other words, they can see it and what they're doing when there's no clear line of sight. "These remote control capabilities allow Great Excavations to offer unique solutions for operating amphibious equipment that breaks down barriers for working on difficult terrain in remote locations," Skierka says. "You can send these machines in anywhere you would send in a manned machine."



An amphibious excavator from Great Excavations, at the site where an ice road will be located.

The remote-controlled excavator can reach up to 1,200 feet with zero latency. Onboard cameras also help operators see the work being done. "If you're down 30 feet and digging up a leaky pipeline, you can easily see what's going on," Skierka says.

Besides improving safety for all those involved, the unmanned vehicles also have a smaller carbon footprint than traditional equipment since ice roads or swamp mats aren't needed.

"One machine is doing all the work. You don't need the machine and then all the other equipment to get that machine to where it needs to be," Skierka says. "With an ice road or swamp mat, a lot of money is spent on logistics. You spend money to do the work, and then you spend money to get there and back. With our method, the time frame is shorter and the environmental impact is

There is a learning curve with using unmanned technology, but Skierka says employees have quickly adjusted.

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"We're gaining experience all the time, but traditional equipment has its challenges too. Our winters aren't as long as they used to be, so it's getting harder to have enough time to build an ice road and then use it," he says. "The unmanned amphibious equipment does everything a standard piece of equipment does. It allows you to get the work done."

GOING UNMANNED

Great Excavations became involved with unmanned vehicles when a customer asked for help cleaning out a sewage lagoon that didn't expose employees to any risk. From there, Skierka says the idea for a remote-controlled device was born.

"We took a look at how the industry was working in some of these toxic

"IT TAKES ALL HUMAN LIFE OUT OF THE PICTURE, REDUCING OVERALL RISK. YOU'RE KEEPING PEOPLE ON THE SHORE AND OUT OF DANGER."

John Skierka

one wanted to fish in the middle of the lake, he could either build a floating dock out to the site or take a boat out to where they want to fish. "Of course it's better to take the boat, and that's what our equipment is like," Skierka says. "You're taking a boat out to where you want to go and you don't need the other infrastructure to get there."



An amphibious pipe carrier removes large pipe from a work site. It can be run remotely from shore, keeping operators out of danger.



This Great Excavations remote control workstation allows operators to safely run their excavators and other heavy equipment from a remote location.

environments and how to reduce the cost of hazmat suits, supplied air, extra staffing and so on," Skierka says. "That's when we realized it would be easier and better to use a remote-controlled system so we could sit in the nice comfortable chair on the side and run the machine. The remote control aspects of it really allow these companies, when they're doing their risk assessments, to reduce the risk of human life when scheduling work in extremely difficult conditions. It's another tool for managing risk and building in safety protocols."

Skierka sometimes uses a fishing analogy in explaining how remote-controlled vehicles are a better option than traditional equipment. He says if some-

Unmanned vehicle technology is in its infancy, and Skierka expects usage to increase in the future with unmanned carrier trucks and other vehicles next on the horizon: "It's an exciting industry to be involved with." ▼

THE LATEST: **Products** 5

1. Komatsu hydraulic excavator

The PC78US-10 hydraulic excavator from Komatsu America Corp. has a 55 hp Tier 4 Final engine that does not require a diesel particulate filter (DPF) or diesel exhaust fluid (DEF). The excavator features a tight tailswing radius for confined spaces, offset boom and contoured cab design. **847/437-5800**; www.komatsuamerica.com.

2. Water Cannon soft sprayer system

The 14C12 chlorine-resistant soft sprayer system from Water Cannon, powered by a Honda GX200 engine, features a 10 gpm at 300 psi Udor Zeta Series diaphragm pump, gear drive and 200-gallon polyurethane tank. The 65- by 49- by 40-inch-tall sprayer has a lightweight and rust-proof skid-mounted frame, aluminum and stainless steel hose reel, adjustable spray gun, 400-foot by 3/8-inch chemical application hose, and tankless Clean-N-Flush valve.

800/333-9274; www.watercannon.com.

3. Vactor Manufacturing HXXpose nozzle

The HXXpose nozzle from Vactor Manufacturing is designed for hydroexcavation applications and is compatible with the company's line of vacuum excavators as well as other makes and models. It produces a zero-degree stream of water and is rated for pressures up to 3,200 psi, providing an 18-degree cone of coverage. It features tungsten carbide internals and a 1/2-inch, corrosion-resistant FNPT stainless steel casing and urethane outer coating to protect the operator from electrical shock. 800/627-3171; www.vactor.com.

4. Norstar Manufacturing shop floor drainage

The U-Drain shop floor drain from Norstar Manufacturing is a single-slot, non-grated, pre-engineered floor drain designed to withstand heavy-traffic applications. The sloped, self-cleaning system is available in 10-foot, 30-foot and 150-foot sections. Surface water passes through the 1-inch drain slot and into the pre-sloped trench that brings the water to the drain sump. The drain has a galvanized finish (stainless steel available) and connects to the rebar grid in new construction (retrofits possible). 855/746-8200; www.u-drain.ca.

5. Trimble pocket-sized GNSS receiver

The R1 pocket-sized global navigation satellite system (GNSS) receiver from Trimble provides submeter precision to any Bluetooth-connected mobile device, including smartphones, tablets and a Trimble hand-held computer. The receiver supports multiple GNSS constellations (GPS, GLONASS, Galileo, QZSS, BeiDou) and can utilize satellite-based augmentation services (SBAS), Trimble ViewPoint RTX or virtual reference station (VRS) correction sources.

800/234-3458; www.trimble.com.

6. Hippo auxiliary power units for trucks

The Power Pack, Power Plant and Hurricane auxiliary power units from Hippo Multipower Systems are designed for the work and service truck market. The base-model Power Pack delivers electric/welding power and compressed air simultaneously. The Power Plant produces hydraulic, compressed air, electric and welding power from a diesel engine unit. The Hurricane delivers the power and flexibility of the Power Plant plus 100 cfm at 100 psi of compressed air.

800/844-0624; multipower.us.

7. Perma-Liner one-size manhole liner

The one-piece cured-in-place manhole liner from Perma-Liner Industries is made to fit all manholes, including barrel sections, eccentric and concentric cones constructed of brick and mortar, precast or block. The

liner is engineered to resist freeze-thaw cycles and creates a watertight, corrosion-resistant lining.

866/336-2568; www.perma-liner.com.

8. Hyundai Tier 4 Final excavators

The HX Series of Tier 4 Final hydraulic excavators from Hyundai Construction Equipment Americas includes models HX220L, HX260L, HX300L and HX380L, powered by Cummins engines, and models HX480L and HX520L, powered by Scania engines. Features include an 8-inch interactive, adjustable touch-screen cluster monitor with haptic remote control for all major functions, easier operator accessibility and improved ergonomics.

877/509-2254; www.hceamericas.com.

9. Kenworth vehicle diagnostics

TruckTech+ vehicle diagnostics from Kenworth provides data and recommended solutions on PACCAR MX-13 engine health to fleet managers and dealers. Notifications may include "Keep driving, no action required"; "Keep driving and have the fault addressed during the next service interval"; "Head to a dealer for service"; or "Pull over to prevent damage." The system also maps locations of the three closest repair facilities. Data is sent to a secure Web portal where the fleet manager can review the truck's location, status, identified issue and recommended solution. 425/828-5551; www.kenworth.com.

10. EzRig portable crane

The portable crane from EzRig Crane is designed to lift heavy loads from unique positions and hard-to-get-at locations. It can raise or lower 2,400 pounds, has a vertical reach of 19 feet, delivers 130 feet of cable for lowering equipment three to four stories, and moves on 8-inch locking caster wheels. The mini-crane can go through 3-foot doors and standard elevator openings.

844/395-4387; www.ezrigcrane.com.

11. Ultrasonic environmentally friendly parts cleaner

The Ultra 2400FA 24-gallon cleaning system from Ultrasonic cleans parts without solvents. The 120- and 240-volt models feature an agitation table, dual filtration, 6-gallon weir tank, sparge bar and insulated tank lid. The V-bottom design allows for easy cleaning. Side-mounted transducers eliminate cleaning dead spots. The 45-inch-long by 28.5-inch-wide by 33-inch-tall unit has a basket capacity 22 inches long, 11 inches wide and 5.5 inches deep.

513/502-9746; www.ultrasonicllc.com.

(continued)

This Month's Feature:

Vermeer walk-beside service plow designed to maneuver in congested areas

BY ED WODALSKI

The PTX40 walk-beside plow/trencher from Vermeer features an optional forward-mounted trencher and boring attachment designed for irrigation and utility installations.

"Fiber-to-the-premise is a booming industry right now as businesses demand and transfer larger quantities of data, and consumers are demanding more bandwidth and speed to watch videos, sporting events and TV shows and transfer data on their mobile devices," says Jon Kuyers, senior global product manager, underground, Vermeer.

"The PTX40 offers the industry a compact, walk-beside machine that has the versatility to plow or trench in fiber lines and is a great fit for contractors working in congested commercial and residential areas."

The service plow is 84.8 inches long and has a minimum width of 40.2 inches. Center-articulated, it oscillates at the point of articulation for maneuverability and performance on uneven terrain and narrow spaces. It has a 9-gallon hydraulic tank, 11-gallon hydraulic system and 1.3-gallon cooling system.

Powered by a 46.8 hp Kubota WG 1605 gasoline engine with a 12gallon fuel tank, the plow has a maximum cutting depth of 24 inches, while the trencher has a maximum depth of 42 inches and can cut a trench 4 to 6 inches wide.



has a maximum torque of 620 ft-lbs. Planetary axles reduce stress and torque on the drivetrain.

Traction options include narrow-width 23- by 10.5-inch tires (2.4 mph transport speed and maximum creep speed of 127 fpm), 26- by 12-inch tires (2.7 mph transport speed and 143 fpm creep speed) as well as dual tires for lower ground pressure. An electronic control allows for creep speed setting.

A wireless remote enables the operator to plow and transport from up to 30 feet away for greater flexibility. When trenching, a 30-inch tether connects the plow and remote.

Hydraulic, engine oil and air filter maintenance can be performed without removing any shielding.

641/628-3141; www.vermeer.com

Products







12. Trelleborg integrated concrete pipe seal

The Forsheda 165 integrated concrete pipe seal from Trelleborg Pipe Seals Milford features a soft rubber slurry lip (50 international rubber hardness degrees) for flexibility. Forming parts are made from 70 IRHD rubber for stability and grip.

800/626-2180; www.trelleborg.com.

13. SENSIT combustible-gas leak detector

The HXG-2d combustible-gas leak detector from SENSIT Technologies is ATEX certified when used with approved batteries. The gas detector features a low-power semiconductor sensor for measuring combustible gases in the ppm and percent LEL range. Parts-per-million readings autorange to percent LEL when the concentration exceeds 990 ppm (2 percent LEL methane). Optionally, readings can be set to a resolution of 0.1 percent LEL.

888/473-6748; www.gasleaksensors.com.

14. BBA Pumps 4-inch solids-handling pump

The BA100K diesel-driven 4-inch solids-handling pump from BBA Pumps delivers 836 gpm with a maximum head of 73 feet. The dry, self-priming dewatering and sewage pump is driven by a single-cylinder diesel engine. The pump offers 1,500 hours of operation between service intervals, has a sound attenuated canopy and hot-dipped galvanized steel frame, and composite doors and panels.

843/849-3676; www.bbapumps.com. ▼



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to excavate soil.

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spraying water on the ground,
but it's a science —
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"We're here to stay. We've got a good

reputation,

and that makes me want to work
even harder. The guys and I all have
something to prove."

Mike Morehouse, Owner Davids Hydro Vac White Bear Lake, Minn.

Read what matters
to contractors
in every issue
of Dig Different.



THE LATEST:

Manitou Americas expands dealer network

Manitou Americas added Modern Equipment & Supply to its dealer network, serving eastern Pennsylvania and New Jersey.

Vermeer breaks ground on technology hub

The Iowa State University Research Park and Vermeer Corp. broke ground on the Vermeer Applied Technology Hub, located at 2710 South Loop Drive, Pella, Iowa. The facility will enable students and faculty from Iowa State and other schools to work collaboratively on technology advancements for Vermeer industrial and agricultural equipment. Vermeer will initially occupy about 23,000 feet of the 35,880-square-foot facility, which will be built, owned and operated by ISU RP. The facility is scheduled for completion in May 2016.

Avanti International names vice president

Avanti International named Frank Aguilar vice president of operations and integrator of Avanti's business endeavors. He will



Frank Aguilar

oversee day-to-day operations for all departments.

Subsite Electronics launches website

Subsite Electronics, a Charles Machine Works company, launched a mobile-friendly website, www.subsite.com. The site includes product information and a Ditch Witch dealer locator.

Case dealers offer **Thunder Creek trailers**

Case Construction Equipment dealers will offer Thunder Creek Equipment's FST Series trailers, designed for hauling and storing fuel and diesel exhaust fluid (DEF). Options include light towers and a three-in-one welder/generator/air compressor. The trailers are available in 500-, 750- and 990-gallon diesel capacities with a 100-gallon DEF tank.



Patrick Collings, left, PPI chairman, and Tony Radoszewski, president.

Plastics Pipe Institute names directors

The Plastics Pipe Institute named Patrick Collings of Lane Enterprises chairman of the board. He will serve a two-year term. Other new board members include David Fink, vice chair; Michael Pluimer, advisory council chair; and Peter Zut, treasurer.

Budget Attachments & Parts launches website

Budget Attachments & Parts launched a mobile-friendly website, www.budgetap.com. The site features industry information and specifications on attachments and parts for skid-steers, forklifts, loaders, telehandlers, tractors and backhoes.

Snap-On adds educational program

Snap-On added the ToolsHeight tool-drop prevention certification to its technical education program. The two-day certification course includes good safety habits when working at heights greater than 6 feet and competency in using tethered tools.

GPS Insight, Hydra-Flex recognized for growth

GPS Insight, with three-year sales growth of 133 percent, ranks 2,734 on the 2015 Inc. 5,000 list of fastestgrowing private companies. Hydra-Flex ranks 3,047 on the list with sales growth of 114 percent.

EDGE becomes exclusive brand of Manitou Americas

EDGE-branded products, formerly part of Compact Equipment Attachments (CEAttachments), will become the exclusive brand of Manitou Americas, primarily in association with Gehl and Mustang products. \checkmark



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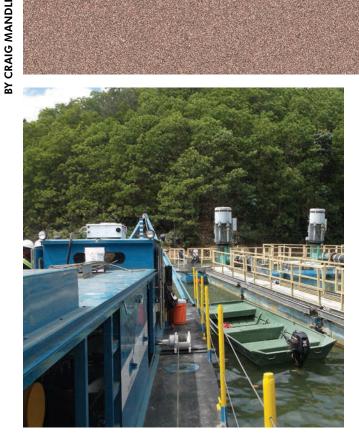
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Dredging prevents sediment pond overflow at mining operation

PROBLEM

In 2006, Barrick Gold Corporation acquired the largest open-pit mine in Pueblo Vienjo, the Sanchez Ramirez Province of the Dominican Republic. The area had been damaged by a previous mining operation in 1999, which resulted in contaminated water, environmental damage and structures in need of demolition. When Barrick began a wide-scale cleanup of the area, it was determined that the area would need to be dredged to remove small grains of silt and sand that had been washing into sediment ponds, which created buildup and reduced the capacity for water storage.

SOLUTION

A Wolverine Class Dredge from DSC Dredge was brought in to help maintain the sediment ponds to prevent additional contamination of the local water system. Dredging the area regularly removes the silt and sand buildup from the sediment ponds and maintains their depth while also preventing overflow into surrounding waterways, which is beneficial for the overall water quality. When water comes into contact with ore stockpiles or waste rock, it is fed through a series of canals, channels and sediment ponds that hold it until it can be pumped through the facility's water treatment plant, significantly reducing contamination.

Barrick's efforts have helped to restore the Margajita River's pH to a level low enough that the waters have returned to their natural color and quality. Additional efforts have included revegetating 8,650 acres of land to prevent soil erosion and removing 6.35 million cubic feet of contaminated soil. 985/479-1355; www.dscdredge.com.



Custom excavator configured for wetland work

PROBLEM

The State of Connecticut is one of several states with programs created to remediate the remaining acres of wetlands. Finding machinery that can effectively conduct restoration work without causing further land disturbance was a challenge.

SOLUTION

The Connecticut Department of Energy and Environmental Protection purchased a zero-gravity marsh excavator for the Fletcher Creek Tidal Wetlands Project. The ECR88D excavator from Volvo Construction Equipment has a bucket capacity of more than 23 cubic feet and over 20 feet digging reach, allowing it to remove harmful plant life. Its low ground pressure, around 1.15 psi, makes it effective when operating in soft marsh that sinks under pressure. Special tracks by Norris Manufacturing were added, and the undercarriage was widened and lengthened to better distribute weight.

The reliability and versatility of this machine are what make this project possible. Each salt marsh project can take four to six months, with plans for this Volvo excavator to be used in marsh conditions for at least the next 10 years. The Volvo machine works at least six hours per day, four days per week. 828/650-2000; www.volvo.com/constructionequipment.



"We ask questions ... if we have Carity as to what the project is and what they expect of us, that is helpful.



Tractor used to cut trenches for new development

PROBLEM

In Texas Hill Country, San Antonio-based contractor SACC was hired to carve an intricate network of roads, water and sewer lines to accommodate a new 60-acre luxury gated community near the Dominion Country Club. "It's easy to be fooled by the lush landscape and rolling topography," says Jason Merck, co-owner of SACC. "Just below the surface is hard rock of the limestone variety. Milling and trenching through Texas limestone is no picnic. It takes operator patience and know-how, and tough equipment." The milling component of the job was tricky. The development was platted with curves and arcs designed to complement the sloping terrain. Crews encountered porous limestone underground aquifers, bird habitats, flint and a variety of related "sensitive" zones along the roadways. Dust control was also a concern.

SOLUTION

A Vermeer T1055 Commander 3 tractor with a Terrain Leveler attachment was used to chart the course for the roadways, followed by a T1155, T1255 and another T1055 Commander 3 tractor with trencher attachments that were used to cut three separate trenches — 15,000 feet total.

Merck credits operator experience with knowing just how hard to push the machines. The corresponding result was production rates that exceeded expectations and projections, especially given all the obstacles. "Vermeer equipment is tough — especially in rock — which made 300 to 400 feet per day production rates a reality," says Merck. 641/628-3141; www.vermeer.com.



Hydroexcavator used to install communications conduit

PROBLEM

Bancker Construction of Islandia, New York, was hired to install new communications conduit for a client that uses international satellite technology full time. Due to the sensitive nature of the business, this installation had to be done without the client taking an outage or shifting to a redundant system.

SOLUTION

Bancker Construction used a GapVax hydroexcavator with the client, demonstrating faster dig capability, the exposure of subsurface utilities without risking damage to existing facilities, and a neat, efficient construc-



The job was successful and the client was satisfied. 888/442-7829; www.gapvax.com.

We like to walk it with the client — to understand all hazards. We are often working with volatile utilities we need to work around. That is our job."

- Richard Young, President, Hydro Spy LLC, Houston, Texas

Read what **matters** to contractors in every issue of Dig Different.





Cleaning Out the Grit

COMBINATION TRUCK FROM POLSTON IS A STAND-ALONE TANK-CLEANING SOLUTION

BY CRAIG MANDLI

he PAT 1249 medium-sized combination truck from Polston Applied Technologies provides a stand-alone cleaning system for large-diameter pipes, digesters, grit and frac tanks, lift stations, wastewater treatment plants, ponds, lagoons and other difficult-to-clean environments. The new model made its debut at the 2015 Water & Wastewater Equipment, Treatment & Transport (WWETT) Show in Indianapolis.

"The people in the wastewater industry know us, but it's always exciting to talk about a new product with them," says Pat Polston, company co-founder and chief technical officer. "This product takes what we've proven works and improves it even more."

Polston's Combination3 technology found on the new truck breaks down to three components — a vacuum, a jetter and a downhole system. The downhole system allows equipment to clean in deep or submerged environments and remove high-viscosity material. The service can be performed while a wastewater treatment plant remains fully online — a capability that Polston says gives his units a leg up on the traditional vacuum truck.



Pat Polston, left, co-founder and chief technical officer of Polston Applied Technologies, explains the process behind the new PAT 1249 combination truck at the 2015 WWETT Show. The truck combines vacuum and jetting with a downhole wastewater cleaning system.

"IT'S BASICALLY SEPARATING SAND FROM WATER AS IT RUNS THROUGH OUR UNIT, **ALLOWING MACHINERY TO REMAIN IN OPERATION THE WHOLE TIME.** IT'S A FIT FOR ANYONE DEALING WITH SLUDGE CLEANING, FROM MUNICIPALITIES TO INDUSTRIAL WASTEWATER TREATMENT OPERATORS." Pat Polston

"The process filters the water, leaving sand and grit to dry for normal disposal," he says. "It's basically separating sand from water as it runs through our unit, allowing machinery to remain in operation the whole time. It's a fit for anyone dealing with sludge cleaning, from municipalities to industrial wastewater treatment operators."

Debris dumps into the truck's pressurized 12-yard steel tank or a roll-off container. After treatment, water is pumped right back out of the unit, ready for reuse. The debris tank has a full-opening rear door (power up/down) and a 45-degree dumping angle with manual door locks, level indicator and internal float shut-off. A fully baffled tank provides water for the fully automated multi-directional jetting system with up to 1,000 feet of jetter hose on the reel.

"This truck can pump to 25-yard debris boxes for quick disposal, allowing it to remain in constant operation," says Polston. "There's never a need to shut anything down."

A hydrostatically driven, boom-mounted 6-inch submersible pump with six-blade impeller sits in the water, grabbing material and pushing it into the truck. Powered by a 400 hp engine, the unit can pump and separate grit from

water at depths of more than 27 feet. The truck has a 49-foot hydraulic

Indiana Convention Center, Indianapolis

Water & Wastewater Equipment,

Treatment & Transport Show

www.wwettshow.com Education Day: Feb. 17, 2016

Exhibits: Feb. 18-20, 2016

articulating knuckleboom crane with telescoping tubes for hard-to-reach places, wireless remote control, and 180-degree rotation. Its hydrostatic drive vacuum system delivers 16-inch Hg at 3,600 cfm, and the jetter nozzle produces 180 gpm at 2,000 psi. The complete process can be performed remotely by one operator, saving time and manpower, and eliminating the need for confined-space entry. "This is an efficient, safe process," says Polston. "Once people learn about it, they're hooked."

Polston says the 2015 WWETT Show was a big success for his company. He is already planning to make an even bigger splash in 2016. The PAT 1249 serves as a medium-sized model to the company's smaller PAT 949 and the larger PAT 360HD Combination3 trucks, and Polston wants to introduce another truck option geared toward municipalities as well as a training program designed to increase the reach of the Polston Process. He sees WWETT as the opportunity to do that.

"I've been coming here to this show since 1986 and have built a lot of trucks," says Polston. "This has always been the best place to get the product in front of customers." **844/765-7866**; www.polstonprocess.com.

Happenings



CALENDAR

Nov. 9-11

International Associations of Directional Drilling (IADD) Annual Technology Forum Series; Hyatt Regency Lost Pines Resort and Spa; Austin, Texas; www.iadd-intl.org.

Feb. 3-4, 2016

Underground Construction Technology (UCT); Georgia World Congress Center; Atlanta; www.uctonline.com.

Horizontal Directional Drilling Academy; Tempe Mission Palms Hotel; Tempe, Arizona; www.hddacademy.com.

Feb. 17-20

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

Feb. 24-28

Wisconsin Underground Contractors Association (WUCA) 2016 Midwinter Conference; Atlantis, Paradise Island Resort and Casino Nassau; Bahamas; www.wuca.org.

Feb. 25-27

Great Lakes Trenchless Association and National Utility Contractors Association (NUCA) of Ohio Annual Convention & Training Expo; Kalahari Resorts; Sandusky, Ohio; www.greatlakestrenchless.com.

March 10-12

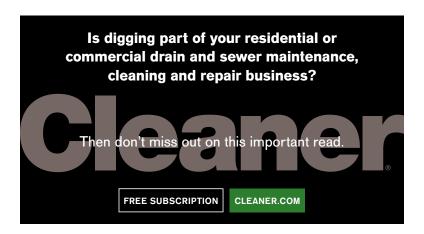
NUCA 2016 Annual Convention; El Conquistador Resort; Fajardo, Puerto Rico; www.nuca.com/convention.

NASTT's No-Dig Show; Gaylord Texan Convention Center; Dallas; www.nodigshow.com.

April 22-28

World Tunnel Congress (WTC); The Moscone Center; San Francisco; www.wtc2016.us.

Dig Different welcomes your contributions to our Happenings column. To recognize members of your team, please send notices of new hires, promotions, service milestones, certifications or achievements. We also invite your national, state or local associations to post notices, news items and learning opportunities. Send contributions to editor@digdifferent.com. ▼







BY CRAIG MANDLI

Preparing a work site for underground utility service, and making sure the site is returned to the status quo following the work, is typically a large part of an excavation company's job. These backfilling, compacting, erosion control, grading and safety products can help get the site work-ready and return it to order when finished.

Backfilling

ABB ACQ550

The ACQ550 drive from ABB is available from 1 to 550 hp and seamlessly integrates as a NEMA-1, NEMA-12 or outdoor-rated NEMA-3R solution. A library of preprogrammed startup assistants provides commissioning for submers-



ible, centrifugal or positive-displacement pumps, and application macros simplify configuration of inputs, outputs and parameters. The drive is suited for the

simplest pumping application through the most demanding, resulting in significant cost savings. On centrifugal pump applications, for example, the power requirement of the pump varies by the cube of the speed. Electronically reducing the pump speed by 20 percent will typically cut energy costs in half.

800/752-0696; www.abb.com

Foremost 2000 Model

The 2000 Model hydrovac system from Foremost is designed for use in energy, utility and municipal applica-



tions. It 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 that provides storage room, a shelving unit and a microwave on the driver's side. It is available with either a Robuschi RB-DV125 or RB-DV145 blower. The water system is composed of a CAT 3560 wash pump, 740,000 Btu boiler and full winterization features. The 26-foot rear-mounted extendable boom is controlled by a wireless Omnex controller allowing for control of off-loading, vacuum, wash and vehicle rpm functions. This boom is stored on the rear fender with the dig tube attached for convenient digging to 18 feet of depth prior to adding any extension pipe.

403/295-5800; www.foremost.ca



Gradall Discovery Series D152

Discovery Series D152 crossover hydraulic excavators from Gradall Industries combine the versatility and benefits of a tilting, telescoping boom with the reliable over-the-road mobility of a Freightliner truck chassis in one package. Specially designed to handle projects frequently addressed by county and state governments, the units are adept at ditching, grading, culvert replacement, landscaping, mowing, vegetation control, and removal and replacement of curbs, gutters and sidewalks. They can be driven to one or more job sites without the need for a lowboy trailer. The D154 model is four-wheel-drive with an automatic transmission and over-the-road travel at highway speeds. The chassis can efficiently be repositioned along the length of a ditch or around the site from the upper-structure cab.

330/339-2211; www.gradallindustries.com

Hitachi ZX300LC-6

The ZX300LC-6 excavator from Hitachi has an EPA Final Tier 4/ EU Stage 4 Isuzu engine that provides 249 hp and doesn't require a diesel particulate filter. Large,



durable hydraulic pumps provide great lift capacity and swing torque to boost productivity. The larger pumps, a heavy operating weight and a redesigned boom and arm allow the operator to maximize efficiency by using a larger bucket.

866/973-0394; www.hitachiconstruction.com

Hyundai Construction Equipment Americas R220LC-9A

The 49,640-pound R220LC-9A excavator from Hyundai Construction Equipment Americas has a maximum dig depth of 20 feet 5 inches and a bucket breakout force of 29,980 pounds. It has a low-emission, low-noise, 157 hp Cummins Interim

Tier 4 Stage 3B QSB6.7 engine and a hydraulic system to provide the operator with super-fine touch and controllability. A variable-speed fan clutch, two-stage autodeceleration system and economy mode help conserve fuel and reduce environmental impact.



It has heated seats, a roomy interior, an enhanced climate control system, an advanced audio system with USB player, AM/FM stereo, MP3 capabilities and hands-free Bluetooth.

877/509-2254; www.hceamericas.com

JCB North America 100C-1

The 100C-1 compact excavator from JCB North America has an H-design undercarriage, steel body panels, a spacious operator environment and a 74 hp Tier 4 Final engine. With an operating weight of 21,458 pounds, it has a maximum bucket tearout force of 16,231 ft-lbs and a dipper arm tear-out force of 9,510 ft-lbs. It has a maximum dig depth

of 15 feet, a dump height of 18 feet 6 inches, and a reach at ground level of 24 feet 4 inches. A reduced-loss hydraulic sys-



tem operates with reduced backpressure, eliminating parasitic losses, and the hydraulic system puts less demand on the engine, reducing fuel consumption. A graphite-based pin-and-bush design delivers 500-hour greasing intervals for reduced daily maintenance and lower operating costs. Two digging modes, including an ECO mode for maximum efficiency and a HEAVY mode for increased productivity, make it possible to tailor performance to the application.

912/447-2000; www.jcbna.com

Kawasaki Construction Machinery 90Z7

The Tier 4 Final 90Z7 loader from Kawasaki Construction Machinery offers a 275 hp Cummins

engine, with bucket ranges from 5.5 to 6.1 cubic yards, no DPF technology, no DPF Regen, a fuelefficient SRC



system and the Intellitech system of intuitive programs. It is easy to operate and maintain.

770/499-7000; www.kawasakiloaders.com

Kobelco Construction Machinery USA SK350

The 82,200pound SK350 from Kobelco Construction Machinery USA is powered by a 270 hp Tier 4 Final Hino engine that delivers as much as a 10 per-



cent reduction in fuel consumption compared to a Tier 3 machine. It incorporates both selective catalytic reduction and self-cleaning diesel particulate filter systems to provide low operation costs. It has a digging force of 45,900 pounds, a digging depth of 24 feet 10 inches, a suggested 0.875- to 2.75-cubic-yard bucket range, and a swing speed of 10 rpm, ensuring quick cycle times.

281/888-8430; www.kobelco-usa.com

LMT Smart-Dig HX4000

The Smart-Dig HX4000 modular hydroexcavator from LMT can be mounted on a wide variety of new or used truck chassis. It has a compact design for installation on smaller, single-axle trucks, which promotes increased maneuverability and efficiency. It has an onboard 85

hp Kubota diesel engine to eliminate wear and tear on truck power. The Tuthill blower provides

1,300 cfm of airflow

combined with a 3,000 psi Udor water blaster and 675 gallons of freshwater. It has a fully hydraulic rear door and wireless remote control telescoping boom. A 445,000 Btu diesel-powered water heater is available for colder climates.

800/545-0174; www.vaxteel.com

Petrofield Industries Tornado F4 Slope

The Tornado F4 Slope hydroexcavator from



Petrofield Industries holds 13 cubic yards of mud and more than 2,100 gallons of freshwater. It has a water tank from which you excavate, a mud tank to which the excavated spoils are held, a water pump, a boiler to heat the water, and a positive displacement vacuum blower (4,000 to 6,300 cfm) to pull the spoils to the tank via a boom. The boom has a 342-degree rotation and a 26-foot reach. All of the critical components are housed in an insulated and heated aluminum van body. Because of the sloped floor design, operators do not hoist the tank to empty it, eliminating the dangers of overhead power lines and dumping on uneven ground. 877/340-8141; www.tornadotrucks.com

Presvac Hydrovac

The Presvac Hydrovac hydroexcavator is designed for cold-weather operation and is available in a version in full compliance with DOT collection and transportation of hazardous materials. The high-vacuum blower allows extraction of all types of soils, gravel, rock, clay, water and silt material. Knockout features in the debris tank minimize carryover. Modular filtration configured to

the blower size provides blower protection and requires minimal mainte nance. It has



a heavy-duty 8-inch boom up to 25 feet long, 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



SchellVac Equipment 2600 Series **Combination Hydrovac**

The 2600 Series Combination Hydrovac from SchellVac Equipment is designed to serve construction, energy and utility industries. The system is mounted on a tridem chassis and is equipped with a 6,400 cfm Robuschi PD blower direct-powered by a Namco transfer case. The water jetter system consists of a 3560 CAT 20 gpm, 4,000 psi pressure pump, 980,000 Btu boiler, and 1,200-gallon water capacity. The complete water system is installed in an insulated and heated aluminum body. The hoisted 15.5-cubic-yard debris body includes a dual cyclone plus cartridge filtration system. It has a full-open rear door with hydraulic locks, an 8-inch remotecontrolled telescopic boom with a 27-foot reach when fully extended, and a load-sense hydraulic

877/336-0081; www.schellvacequipment.com

Vac-Con X-Cavator

The easy-to-operate X-Cavator from Vac-Con comes with a hydrostatic drive that uses the chas-

sis engine to eliminate the need for PTO, clutch and gearbox operation. It offers water systems up to 4,000 psi and a mobile



wireless remote control enabling the operator to work the chassis engine rpm, boom, automatic vacuum breaker, dump controls and hydraulic door locks from up to a half mile away. The boom rotates 270 degrees.

855/336-2962; www.vac-con.com

Vacmasters by Sewer Equipment System 4000

The Vacmasters by Sewer Equipment System 4000 allows operators to dig faster and safer in soil that is



hard, wet, sunbaked or compact, including ground frost. It provides operators with seven to eight minutes average potholing time and efficiency in backfilling with no mud hauling or disposal costs. It has remote operation, a low-maintenance design, hydraulic-powered dumping, a supervisory control panel, a self-purging filtration system and a fast-acting interceptor canister.

877/735-4640; www.sewerequipment.com



Vactor Manufacturing 2100 Plus

The 2100 Plus sewer cleaner from Vactor Manufacturing is available in a single-engine, dualstage fan configuration with a 10-foot telescopic boom on the Vactor 2100 Plus PD truck. It has an easy-load, fast-dump debris body, Modul-Flex design system and multistage blower filtration system. The fan model takes advantage of the unused power available in the chassis engine. A closedloop hydrostatic drive system powers the fan vacuum. The controls have components designed to give the operator power only when and where they need it, all while offering a simple interface. The front operator control panel has two selector switches for the fan drive — fan on/off and fan mode (low/ medium/high). The 10-foot telescoping boom (tube within tube, box beam within box beam) on the PD unit retracts a minimum of 10 feet without affecting the vertical position of the pickup tubes while enhancing reach and productivity.

800/627-3171; www.vactor.com

X-Vac X-6 Hydro Excavator

The truckmounted X-6 Hydro Excavator from X-Vac, A Product of Hi-Vac Corporation, has a 6-cubic-yard debris tank and can store 570 gal-



lons of freshwater with an option for a capacity of 1,000 gallons. The adjustable triplex water pump exerts 0 to 3,000 psi and is set independently of the blower speed. Vacuum systems range in size from 2,600 cfm at 27 inches Hg vacuum to 3,400 cfm at 16 inches Hg of vacuum. Its 6-inch vacuum hose exposes any type or size of underground utility, especially in residential areas where space is tight and crews want to avoid blocking residential streets.

740/374-2306; www.x-vac.com

Compacting

John Deere vibratory roller

Ideal for asphalt patch, foundation, trench and flat-



work compaction, vibratory rollers from John Deere turn a skid-steer into a powerful compactor. The vibratory rollers are available in three models — VR66C, VR73C and VR84C - in 72-, 79- and 90-inch widths. Like all Worksite Pro attachments, they are optimized to work with John Deere skid-steers and compact track loaders, and are compatible with most competitive models.

800/503-3373; www.deere.com

The Toro Company TR-34 **Trench Roller**

The TR-34 Trench Roller from The Toro Company has 15,709 pounds of centrifugal force for optimum compac-

tion on a single pass. With compaction speeds of 68 feet per minute, it can cover over 10,000 square



feet per hour. Used for a variety of compaction needs, from foundations to utility trenches or excavation work, it can make tight turns and has the power needed for any job. Its radio frequency remote control works up to 100 feet with no line-of-sight transmission errors to maximize productivity. It uses a Snap-Tek electronic control system to monitor operating history via its microprocessor readout on the control console. The unit's

swing-away cover and LED lights and diagnostic ports make maintenance quick and easy.

800/344-8676; www.toro.com

Erosion Control



Advanced Drainage Systems erosion-control family

The erosion-control family of stormwater management products from Advanced Drainage Systems improves water quality by protecting newly seeded soils from raindrop impact, minimizing soil loss and promoting infiltration to accelerate the development of the seeds. Degradable erosion control blankets act as dimensionally stable, reinforced mulches to hold seeds and soil in place until vegetation is established in non-critical applications. Erosion-control products help to capture sediment and other contaminants from stormwater. Biodegradable ECBs are available in numerous varieties, including excelsior, straw, straw/coconut and coconut, which are confined by nettings stitched together. Natural/synthetic woven fiber blankets are used for slope stabilization and protection of stream banks and low-flow channels.

800/821-6710; www.ads-pipe.com

AlturnaMATS ground cover mats

AlturnaMATS ground cover mats provide a convenient portable roadway system to protect landscaped or environmentally sensitive areas from

damage and prevent equipment from getting stuck in muddy or sandy



situations. Made of 100 percent recycled high-density polyethylene, these 1/2-inch-thick mats will bend to conform to the ground but will not break, crack or splinter. They have been tested in extreme hot and cold weather conditions, have a bold cleat pattern for traction, can hold up to 120 tons in weight and are available in either black or white.

888/544-6287; www.alturnamats.com

Ditch Witch SK850

The Ditch Witch SK850 mini skid-steer delivers power to the attachment with its 37 hp Tier 4

Yanmar diesel engine. The hydraulic power delivered to the attachment helps operators increase performance of dozens of attachments for a wide range of tasks, including landscaping, plumbing and underground utility. It has an



860-pound-rated operating capacity, 83-inch hingepin height and 4.7 mph ground speed in both forward and reverse. A standard auto-throttle reduces engine throttle when not under load for greater efficiency and enhanced safety. Its high-drive track system has bolt-on interchangeable sprockets and wide track rollers to ease maintenance and enhance track life. Standard tracks are 42 inches wide, with optional 36-inch narrow tracks. It has a belt-free design and low-maintenance track-tensioning system, a 74-square-inch operator platform, and ergonomic dual-lever ground drive controls. A single-lever joystick is optional.

580/336-4402; www.ditchwitch.com

Fibergrate Composite Structures portable containment system

Portable containment systems from Fibergrate Composite Structures are suitable for a variety of

applications. These modular spill containment systems consist of large pans created from a matrix of fiberglass reinforcement embedded in a cor-



rosion-resistant resin, covered with slip-resistant molded grating. The containment pans provide a durable, uniform flat surface that can withstand vehicular traffic and support heavy equipment. The lightweight, reusable pans are easy to move and install, and require minimal maintenance. Different size and layout options are available.

800/527-4043; www.fibergrate.com

Jarraff Industries Geo-Boy Brush Cutter

The Geo-Boy Brush Cutter from Jarraff Industries is designed for land clearing and vegetation management. Available in both wheeled and track configurations, it has the ability to lift the cutter

head approximately 11 feet high and can quickly and effectively clear brush and trees up to 12 inches in diameter. It has two Tier 3 engine options, 220



and 260 hp, and is ROPS and FOPS certified. Safety features include full Lexan, No Mar windows and a rear view.

800/436-2691; www.geo-boy.com

SVE Portable Roadway Systems TRAKMAT

TRAKMAT ground protection cover mats from SVE Portable Roadway Systems are designed to move large vehicles over lawns, sidewalks and driveways without causing damage. The mats are easy

to handle and provide longevity, strength and safety. The traction surface helps keep the mat in place and prevents vehicle slippage. The lightweight mats with hand cutouts are easy to lift, load and unload.



They can be used to build roadways with additional accessories like two- or four-way urethane connectors, and provide an easy access road to remote locations.

800/762-8267; www.trakmat.com

Grading

Caterpillar Building Construction Products D3K2

The D3K2 tracktype tractor from Caterpillar Building Construction Products includes an engine meeting U.S. EPA Tier 4 Final/EU Stage 4 emissions



standards. It has automatic traction control, slope indicate and available slope assist with hydrostatic drive, stable blade and power pitch systems, eco mode, and spacious operator's stations with climate comfort. With a power rating of 80 hp, it uses a CAT C4.4 ACERT engine that meets stringent

emissions standards with the NOx Reduction System (cooled exhaust gas recirculation), maintenance-free diesel oxidation catalyst and selective catalytic reduction system. It has precision blade control for grading applications and automatic traction control that reduces track slippage when the machine encounters maximum load conditions. Slope indicate accurately displays the machine's blade cross-slope direction, as well as its main-fall (fore/aft) direction, eliminating guesswork and allowing operators to grade with assurance. Slope assist facilitates achieving the required main-fall by automatically maintaining pre-established blade angles.

919/465-6877; www.cat.com

Komatsu America Corp. GD655-6

The GD655-6 motor grader from Komatsu America Corp. is powered by a Komatsu SAA6D107E-3 EPA Tier 4 Final emission certified



engine. It comes with a Turbo I precleaner, independent blade lift float, front-mounted work lights, toolbox with lock and 10 control valves.

847/437-5800; www.komatsuamerica.com

Safety Equipment

Cestusline HMD Cut-5

HMD Cut-5 gloves from Cestusline offer maximum Level 5 cut protection with dexterity. The fast-drying glove provides the needed protection from cut injuries. The double-dipped Nitrile palm



offers both water- and oil-resistant grip. The breathable glove material, with sandy-finished palm, offers flexibility for handling smaller objects while working on big tasks. Flexible TPR shields protect the fingertips while allowing for maximum range of motion, with knuckles and metacarpals that bend with hand movement. They are CE rated 4543.

503/894-8549; www.cestusline.com

LaValley Industries Deckhand

The Deckhand product line from LaValley Industries enhances safety on job sites by keeping ground crews farther from moving poles or pipe. The variety of arm attachments can safely and efficiently load or unload pipe, utility poles, road mats and other



materials. An excavator's auxiliary hydraulic circuit safely and efficiently powers the attachments. They have 360-degree continuous rotation, tilt function and load-holding valves that lead to precise load control. Interchangeable grab arms pick up the pole or pipe and hold it securely as it is lifted, lowered, rotated, tilted and moved. Long-lasting padding on the arms allows users to work safely with coated pipe, as well as a variety of other materials. The head unit is manufactured in several sizes allowing it to be used with any brand of excavator in the 18- to 75-metric-ton range.

218/444-3030; www.lavalleyindustries.com

Majestic Glove Driller X10

The Driller X10 from Majestic Glove combines traditional cotton driller gloves with a mechanics-style back with impact protection and high visibility. This provides finger and metacarpal protection, as well as the superior grip, heat protection and visibility required by the oil and gas, hydraulic



fracturing, commercial mining, and construction industries. The gloves have injection-molded thermoplastic technology that strategically places protective exoskeleton shields over the back of the hand and fingers. These shields provide defense against impacts and abrasions while maintaining dexterity and comfort. The glove's 18-ounce quilted cotton cord palm delivers ideal grip as it absorbs excess oil when working with oily or greasy metal machinery and parts. The glove is built with ANSI 107-certified high-visibility orange, spandex stretch back and elastic stretch cuffs for added safety, visibility and comfort.

800/367-4568; www.majesticglove.com

Sonetics wireless headsets

Sonetics offers wireless headsets and team communication systems for challenging environments. They allow companies to optimize teamwork with handsfree communication, improving safety while protecting hearing,



along with training, supervising and auditing in real time.

800/833-4558; www.soneticscorp.com

US Jetting Safety Gloves

Safety Gloves from US Jetting can withstand a blast up to 7,500 psi rotary jet or 3,000 psi single jet. They are made of cut- and abrasion-resistant Dyneema fiber. Also available are work aprons,

trousers, jackets and coveralls, all of which can withstand a 7,500 psi rotary liquid blast or 3,000 psi single jet. Eye protection, hard hats, face shields and other safety equipment are also



available. Protection vests come with fluorescent safety markings built in for high visibility.

800/538-8464; www.usjetting.com ▼

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