

digDIFFERENT

Think outside the bucket

PROFILE:

**JAM-PACKED UNDERGROUND
INFRASTRUCTURE NO PROBLEM
FOR VIRGINIA CONTRACTOR**

12

DOWN & DIRTY:

**TUNNELING MACHINE RESTORES
SEWER SERVICE TO BUSINESSES**

18

Matt Bellmann
Owner
Sweetwater Utility Exploration

NOT PLAYING GAMES

**North Carolina locating
contractor won't cut corners
while serving customers**

24

TIPS:

10
**TROUBLESHOOTING
SURVEYING
EQUIPMENT**

38

SWEETWATER
UTILITY EXPLORATION

“Good Enough” Doesn’t Cut It Out Here.



You Deserve the Best

You stake your reputation on your equipment’s reliability and performance. There is no room for lost production or missed schedules. That’s why Cat Pumps® continues to be the industry’s trusted leader.

With over 47 years of proven manufacturing excellence, Cat Pumps has built a solid reputation for producing the highest quality, longest-lasting pumps available. Out there, this is exactly what you need.

Quality In Every Detail

Cat Pumps engineers have optimized every design detail for long-life and reliable performance. Features like specially-formulated seals and high density, polished ceramic plungers typify the attention to design detail. Maintaining a rigorous zero defect quality assurance program, Cat Pumps works to guarantee consistently high quality products — every time.

See why our pumps outlast, outrun and outperform the competition. Go to www.catpumps.com/hydroex for more details.

info@catpumps.com | (763) 780-5440

The Cat Pumps Difference

Why settle for just good enough when your business deserves the best?

- Longest pump life in the industry provides higher productivity and less downtime
- Service kits in stock for off-the-shelf delivery
- Subassemblies available to reduce manufacturing costs

Products to Meet All Your Application Needs



Model 660
10 gpm at 3,000 psi



Model 1580
12 gpm at 3,000 psi



Model 3560
25 gpm at 3,000 psi



Model 3570
30 gpm at 3,000 psi



Model 6835
40 gpm at 3,000 psi



TRANSWAY SYSTEMS INC.

Custom Built...Driven by You

Professional Vacuum Equipment

Direct: (905) 578-1000

Toll Free: 1-800-263-4508

sales@transwaysystems.com

parts@transwaysystems.com

YOUR SALES, PARTS AND SERVICE EXPERTS.

**NO LIMITS...
TO WHAT TRANSWAY CAN DO FOR YOU**



www.transwaysystems.com



Contents

MAY/JUNE 2016 FOCUS: Locating, Surveying and Site Logistics, Digital Technology

Think outside
the bucket

digDIFFERENT



FEATURES

12 PROFILE: LOCATING Digging Deep

Mid-Atlantic Utility Locating puts its detecting, locating and mapping expertise to good use in an area with a jam-packed underground infrastructure.

By Paul Nicolaus

22 WWETT SPOTLIGHT: Shiny Returns

Robotic wheel-polishing system gives aluminum rims a mirror finish, boosting fleet pride.

By Craig Mandli

32 SUCCESS STORIES: Locating, Surveying and Site Logistics, Digital Technology

By Craig Mandli

34 PRODUCT FOCUS: Locating, Surveying and Site Logistics, Digital Technology

By Craig Mandli

COLUMNS

8 BELOW THE SURFACE: Piece of the Puzzle

Locating is an important step in underground utility work that all contractors should be doing.

By Cory Dellenbach, Editor

18 DOWN & DIRTY: Strip Mall Savior

Tunneling machine helps a contractor replace lateral lines and restore sewer service to businesses.

By Scottie Dayton

30 TECH PERSPECTIVE: No More Tiers

Diesel manufacturers are delivering off-road equipment that meets Tier 4 Final standards.

By Peter Kenter

37 PROJECT SNAPSHOT: Specialized Trucks

Massachusetts' APC Corporation works on coal-fire plant site with GapVax vacuum excavators.

38 MACHINE SHOP: 10 Tips on Caring for Your Surveying Equipment

Proper handling and troubleshooting techniques can ensure accurate job site measurements.

By Kyle Rogers

41 SAFETY FIRST: Federal Safety Plan Gets Overhauled

Criminal prosecution for safety violations more likely under new federal plan, could mean the difference between 6 months and 20 years in prison.

By Doug Day

44 MONEY MANAGER: Family Financing

Proceed slowly and cautiously when it comes to borrowing money from relatives.

By Erik Gunn

IN EVERY ISSUE

10 @digdifferent.com

Visit daily for new and exclusive content.

42 The Latest: Products

This Issue's Feature: Kohler mobile diesel generator provides optimal power, custom options

By Ed Wodalski

46 The Latest: News

46 Happenings

NEXT ISSUE: July/August 2016

FOCUS: Horizontal Directional Drilling, Piercing, Bursting, Boring, Tunneling

- Profile: Henniker Directional Drilling (Henniker, New Hampshire)
- WWETT Spotlight: SchellVac Tri-Drive Hydroexcavator
- Machine Shop: Mud Recyclers

COVER STORY

24 PROFILE: LOCATING Not Playing Games

North Carolina's Sweetwater Utility Exploration goes above and beyond in locating utility lines for big clients.

By Cory Dellenbach

ON THE COVER:

Matt Bellmann is co-owner of Sweetwater Utility Exploration, based in Troutman, North Carolina. Sweetwater Utility Exploration uses a wide range of locating tools while serving customers throughout North Carolina and along the East Coast. (Photography by Jason Miczek)



DIG IN THE RIGHT PLACE EVERY TIME

When accuracy really matters, count on McLaughlin locators to precisely verify utilities. Then reduce jobsite risk even further by potholing with the new Vermeer VX50 Vacuum Excavator by McLaughlin. It's the perfect combination to get the job done right. Every time.



McLAUGHLIN
Providing Solutions Since 1921

800.435.9340 | mclaughlinunderground.com

VACUUM EXCAVATORS | AUGER BORING | HOLE HAMMER | LOCATORS | MOLEING

Vermeer, the Vermeer logo and Equipped to Do More are trademarks of Vermeer Manufacturing Company in the U.S. and/or other countries. McLaughlin and the McLAUGHLIN LOGO are trademarks of McLaughlin Group, Inc. © 2016 McLaughlin Group, Inc. All Rights Reserved.



(91) GEAREQUIP.COM

DRY SUCTION EXCAVATION TECHNOLOGY

THE NEW ENVIRONMENTAL SOLUTION WITH SUPERIOR HIGH SUCTION PERFORMANCE

- 9 DUMP ON SITE
- 9 NO WATER REQUIRED
- 9 UP TO 4X PRODUCTIVITY



GEAR EQUIPMENT INC. | 71 STEINWAY BOULEVARD | TORONTO, ONTARIO M9W 6H6 | 416.644.3076 | GEAREQUIP.COM

Advertiser Index

May/June 2016

| | | |
|--------------------------------|--|----|
| | Cat Pumps | 2 |
| | Ditch Witch | 48 |
| | Gear Equipment Inc. | 6 |
| | Great Lakes Equipment Sales, Inc. | 7 |
| | HammerHead Trenchless Equipment | 23 |
| LMT Inc. | | 31 |
| McLaughlin | | 5 |
| Monster Equipment, LLC | | 39 |
| MyTana Mfg. Company, Inc. | | 37 |
| | Premier | 33 |

| | |
|----------------------------|-----------|
| RODDIE, Inc. | 17 |
| Soil Surgeon, Inc. | 41 |
| Subsite Electronics | 9 |
| Transway Systems Inc. | 3 |
| | |
| Ultra Shore | 39 |
| Vac-Con, Inc. | 11 |
| VACMASTERS | 19 |
| Vector Manufacturing | 47 |
| | |
| VARCo | 21 |
| Vivax-Metrotech Corp. | 33 |
| Classifieds | 45 |
| Marketplace | 45 |

digDIFFERENT

Think outside the bucket

Published bimonthly by COLE Publishing, Inc.
1720 Maple Lake Dam Rd., PO Box 220, Three Lakes, WI 54562

Call toll free 800-257-7222
Outside of U.S. or Canada call 715-546-3346
Mon.-Fri., 7:30 a.m.-5 p.m. CST

Website: digdifferent.com / Email: info@digdifferent.com / Fax: 715-546-3786

SUBSCRIPTION INFORMATION: A one year (6 issues) subscription to Dig Different™ in the United States, Canada and Mexico is FREE to qualified subscribers. A qualified subscriber is any individual or company in the United States or Canada that partakes in excavation, tunneling, boring, trenching, pipeline rehabilitation, relining or bursting — including manufacturers, dealers, and service companies. Non-qualified subscriptions are available at a cost of \$60 per year in the United States and Canada/Mexico and \$80 per year/\$150 for two years to all other foreign countries. To subscribe, visit digdifferent.com or call 800-257-7222.

ADDRESS CHANGES: Submit to Dig Different, P.O. Box 220, Three Lakes, WI, 54562; call 800-257-7222 (715-546-3346); fax to 715-546-3786; or email nicole.labeau@colepublishing.com. Include both old and new addresses.

Our subscriber list is occasionally made available to carefully selected companies whose products or services may be of interest to you. Your privacy is important to us. If you prefer not to be a part of these lists, please contact nicole.labeau@colepublishing.com.

ADVERTISING RATES: Call 800-994-7990 and ask for Ann Richmond, or email ann.richmond@colepublishing.com. Publisher reserves the right to reject advertising which it considers misleading, unfair or incompatible with the character of the publication.



Ann Richmond

EDITORIAL CORRESPONDENCE: Address to Editor, Dig Different, P.O. Box 220, Three Lakes, WI, 54562 or email editor@digdifferent.com.

REPRINTS AND BACK ISSUES: Visit digdifferent.com for options and pricing. To order reprints, call Jeff Lane at 800-257-7222 (715-546-3346) or email jeff.lane@colepublishing.com. To order back issues, call Nicole at 800-257-7222 (715-546-3346) or email nicole.labeau@colepublishing.com.

CIRCULATION: Average circulation is 28,333 copies bimonthly.

© 2016 COLE PUBLISHING INC.

No part may be reproduced without permission of publisher.

HURRICANE HYDROVAC

Custom Designed and Manufactured Vacuum Systems and Hydro-Vac Units



- Up to 13 yard (10 meter) Debris
- Up to 2300 US gallon (8.7 meter) Water
- 25° Sloped Floor in Debris Compartment
- FULL WIDTH "D" Shaped Mud Door
- Heated 6" & 8" Rear Valves with Circulating Pump
- Epoxy Coated Debris and Water Compartments
- Calibrated SS Float Level in Water Compartment
- Calibrated SS Float Level in Debris Compartment
- 8' x 26' Reach Rebel Hydraulic Powered Hose Boom
- Light Weight Aluminum Insulated Van Body
- 2600 to 6600 CFM - 27" Hg. PD Blower
- Namco Transfer Case
- 3 Stage Filtering, Primary, Cyclone & Final Filter
- 2 Stage Intake and Exhaust Silencers
- Cat 3560 - 20 GPM - 3000PSI Wash Pump
- 770,000 to 970,000 BTU Boiler
- Hot Water Plumbing Manifold System
- Variable Speed Close Loop Hydraulic System
- Wireless Remote Control for ALL Functions
- Backup Manual Hydraulic Controls in Cabinet
- 3 Rear Storage Cabinets
- Rear Washdown Hose Reel Access (Heated)
- Heated Suction Line and Valves
- Air Rewind Hose Reels
- Ground Level Grease Manifold for Safety
- Access Ladder and Walkway
- Hose Trays
- Dig Tubes, Digging Wands and Nozzles
- Tool Box and Tools
- All LED Lighting
- Chain Carriers
- Painted to Request with Rock Guarding



Full Width "D" Door For Easy Cleanout

888-764-5841

www.UsedVacuumTrucks.com

Piece of the Puzzle

LOCATING IS AN IMPORTANT STEP IN UNDERGROUND UTILITY WORK THAT ALL CONTRACTORS SHOULD BE DOING

BY CORY DELLENBACH, EDITOR

So you're on a job site and the local 811 service has already done its job of "locating" the belowground utilities. Now what should you do?

Don't even think about turning on that vacuum excavation machine, trencher, directional drill or other excavating tool before first being confident about what is in the ground you are about to tear into.

The last thing you want to do is put your life or your employees at risk by striking a potentially dangerous utility. Even if no one gets hurt, it could cost your company millions to repair.

Many states require contacting a local 811 service before starting each job — but that shouldn't be your only line of defense. The 811 service is only responsible for identifying the public utilities, not the private.

A few examples of private utilities include: any utility line run between the main meter to the house, shed, barn, garage or other building on the same property; wires for sprinkler systems; electrical lines for outside lighting; propane lines that connect a tank to the house; lines running from a meter to submeters; and fiber-optic lines from building to building.

Your next step should be to contact a private utility locating company to locate at that same job site. Having those service companies available for your use can be a great supplement to the 811 services. Both profiles in this issue highlight private utility locating companies that know what it takes to make sure everyone is safe.

Sweetwater Utility Exploration in North Carolina and Mid-Atlantic Utility Locating of Ashburn, Virginia, use several locating methods, from electromagnetic to ground-penetrating radar and vacuum excavation.

While one company is large (Mid-Atlantic with 18 employees) and the other is small (Sweetwater with six), both know that if they don't do the job correctly, it could cost a life. Both companies are careful in completing every task on site whether the job is small or large.

"We never take shortcuts," says Matt Bellmann, owner of Sweetwater Utility. "When you take shortcuts is when you run into trouble."

EYE-OPENING STATS

Even though National Safe Digging Month (April) is already past, it doesn't mean you can stop thinking about safety.

According to the Common Ground Alliance, a member-driven association dedicated to promoting damage-prevention practices for underground utilities, 31 percent of all underground excavation damages were not preceded by a locate request. Reported incidental damage to underground utilities occurs more than 200,000 times a year in Canada and the U.S.

FINDING THE EQUIPMENT

If you're a contractor that locates utilities or would like to expand to offer those services, you can find out more about the available equipment by paging through the Product Focus feature in this issue. You'll find equipment to help you communicate better on a job site, plus mapping tools, software and locators. It's a great way to see what is on the market to help your company grow.

ALREADY LOCATING?

Are you already a utility locating contractor? Show us how you do your work. Take a picture of your crew locating, email it to me at editor@digdifferent.com and tell me about the job they are working on.

Enjoy this issue and remember to Dig Different! ▼

DON'T EVEN THINK ABOUT TURNING ON THAT VACUUM EXCAVATION MACHINE, TRENCHER, DIRECTIONAL DRILL OR OTHER EXCAVATING TOOL BEFORE FIRST BEING CONFIDENT ABOUT WHAT IS IN THE GROUND YOU ARE ABOUT TO TEAR INTO.



Have you **solved** a tough excavation **problem** with a creative solution?

Share your story with 28,000 other professionals.

Send a note to editor@digdifferent.com or call 800-257-7222

WHILE WE'RE LOCATING LINES, THEY'RE LOCATING BATTERIES.



Only UtiliGuard® locators deliver twice the battery life.
So you can spend more time making money and less time spending it.

Visit subsite.com to see our complete line
of **Underground Awareness™** products.
Available at your *Ditch Witch®* dealer.

 **SUBSITE®**
ELECTRONICS
subsite.com

RD8000™ is a trademark of Radiodetection Ltd.
© 2016 The Charles Machine Works, Inc.

A Charles Machine Works Company



OVERHEARD ONLINE

“KEEPING MY OPERATORS INVOLVED IN THE DAILY MAINTENANCE AND UPKEEP OF EQUIPMENT IS SIMPLY A NO BRAINER, AND IT’S PART OF THE JOB.”

Involve Operators in the Maintenance of Equipment
digdifferent.com/featured

SHOW US YOUR HYDROEXCAVATOR

What have you done to make your hydroexcavator unique? Maybe a bright color, a checker-board pattern, or added decals? We want to show off your truck. Email submissions to editor@digdifferent.com and we’ll post them online. Include your name, company name and contact information.





LUNCH, LEARN AND EARN

New Approach to Educating

Mid-Atlantic Utility Locating has been offering its “Lunch. Learn. Earn.” program the last three years as a way to educate potential clients. The hour-long presentation, with food included, explains what the company does, breaks down the process involved in subsurface utility engineering, and has helped the company secure customers.
digdifferent.com/featured

Connect with us!

-  facebook.com/digdifferent
-  twitter.com/digdifferent
-  linkedin.com/company/dig-different-magazine



SAFETY FOR WORKERS AND PUBLIC

Roadside Safety a Top Concern

The threat of injury is always present in a roadway construction zone. As common as these sites are, providing the crew and passers-by with a safe job site is not a simple task. Contractors give their tips on how to make a job site safe for employees and the general public.

digdifferent.com/featured

SHOWS NO
MERCY
EXCEPT TO
BURIED

GAS lines
INTERNET
HUBS AND
CABLE wires



The power and control of the VAC·CON X-Cavator™ keeps municipalities up and running.

The X-Cavator™ handles your toughest and tightest excavation applications. Its powerful vacuum and high-pressure water system will excavate to the power of X to get the job done right. The X-Cavator™ enables you to locate and safely excavate around valuable utilities without damaging them. There is no application too tough for the X-Cavator™, and you can order yours with specific options to handle those special excavation jobs you are expecting. [GO ON-LINE TO LEARN MORE.](#)

VAC-CON.COM

VAC·CON IS A SUBSIDIARY OF HOLDEN INDUSTRIES, INC., A 100% EMPLOYEE-OWNED COMPANY

 **VAC·CON**
MORE POWER TO YOU

A HOLDEN INDUSTRIES Company



DIGGING DEEP

MID-ATLANTIC UTILITY LOCATING PUTS ITS DETECTING, LOCATING AND MAPPING EXPERTISE TO GOOD USE IN AN AREA WITH A JAM-PACKED UNDERGROUND INFRASTRUCTURE

STORY: PAUL NICOLAUS PHOTOS: LAURA TURNER

As the area with the lengthiest settlement history in the United States, the Mid-Atlantic region presents some unique underground challenges. “The history of human development around here goes back almost 400 years,” says Erek Dorman, marketing and business development manager with Mid-Atlantic Utility Locating. “So people have been living and building and operating in this general geographic area for a long time without any kind of solid records on a lot of stuff.

“Something that you hear a lot about lately is the condition of the nation’s underground infrastructure,” he adds. “And that’s something that comes into play a lot, when we’re digging

test pits in particular, because we’re not just gathering data on the utility, as far as how deep it is and how close it is to other utilities, but also what condition it’s in.”

The history of the region presents another major difficulty — the more underground utilities that are installed, the more crowded it gets beneath the surface. High-tech companies and data centers are moving into the area along with companies that are laying miles and miles of cable. “The underground utility congestion is staggering around here,” Dorman says.

SUBSURFACE PRECISION

Located just a dozen miles from Washing-

Utility technician Jaime Velasquez uses a Vivax-Metrotech 9890XT locator to identify different utility lines prior to an air excavation dig at a site near Ashburn, Virginia. OPPOSITE PAGE: Technicians' focus remains set on accurate locating of all underground utilities.



**"THE UNDERGROUND
UTILITY CONGESTION
IS STAGGERING
AROUND HERE."**

Erek Dorman



The crew of Mid-Atlantic Utility Locating (shown with their VACMASTERS 5000) includes, from left, Lee Richie, Charles Sturdivant, Michael Cooper, Tommy Lockhart, Stephen Russell, Joseph True II, Zachary Church, Jamie Velasquez, Cody Brown and Brad Markovich.

Mid-Atlantic Utility Locating Ashburn, Virginia

OWNERS: A dozen partners, including founding member Gene Dorn and Steve Hulsey, another senior partner

NUMBER OF EMPLOYEES: 18

SERVICES OFFERED: Utility designating, vacuum excavation, ground-penetrating radar and utility survey mapping

SERVICE AREA: Mid-Atlantic region

WEBSITE: www.midatlanticlocating.com

ton, D.C., Mid-Atlantic Utility Locating's focus remains set on serving area customers with accurate detecting, locating and mapping of all underground utilities. Clients range from civil engineering firms and contractors to developers and utility owners. In addition, the company serves transportation departments, homeowners and various federal and state agencies.

"Our client demographics include civil engineers because they're doing all the work on the front end, which is where we like to be involved in site development, planning and design," Dorman says. "And on the other end general contractors and construction, because by the time they get in the ground they want to know exactly where that gas main is before somebody punctures it with a backhoe."

The public sector side of the company handles a lot of work in transportation, metro development and government agency projects — especially with the Department of Defense. A lot of the area installations date back to the Civil War, Dorman says, and the military buried various things as needed along the way. When these areas are being developed and revamped for new pur-

poses, there's a need to locate these types of weapons, aircraft, vehicles and chemicals. "You name it, we pull it out of the ground," he adds.

Mid-Atlantic's field crews perform surface utility designating and marking using its fleet of vacuum excavation trucks, ground-penetrating radar investigations and utility survey mapping. Utility designating involves the use of EM (electromagnetic) locating devices (Vivax-Metrotech). A sounding box is attached to any surface outcropping of a utility, such as switch boxes, to send out a signal that is picked up by the EM locator.

Then a crew member walks the line with a locator that gives an approximate depth, depending on soil conditions, along with a left or right variance in order to stay right on top of the line. The path of the utility is marked with a water-soluble spray paint that is color-coded to the specific type of utility.

Customers turn to Mid-Atlantic Utility Locating to collect this type of data because they're either going to be installing utility lines, moving utility lines or integrating new connections related to new construction. "Generally

"WE HAVE AN ONGOING CHALLENGE WHERE WE EXIST IN A MARKET WHERE THERE IS A FAIRLY FIXED NUMBER OF PROVIDERS, SO A KEY FOR US IS TO CONTINUE TO PROVIDE CONSISTENT AND RELIABLE SERVICE."

Erek Dorman

we send two-person crews on vacuum excavation jobs and surface-marking jobs," Dorman says. "But some of the senior guys can handle the surface marking on their own depending on the project needs.

"One thing that we do as opposed to a state-run utility in an 811 organization is we spend a lot more time on site, and our tolerances are much more constrained," Dorman says. "They get a variance in their markings of almost 2 feet on either side of the line, and we try to keep it to within 18 inches total."

Because of this, the techniques can differ significantly. "I've seen guys driving down a road hanging a locator out of the window of their pickup truck

and laying down marks,” he says. “Their only mandate is to prevent damage, and that’s fine, so they put down marks to let you know there’s a utility down there somewhere. But when you’re talking about providing data and locations to civil engineers and people who are looking for more precise marks and locations, it really becomes more important to stay as close to that line as you can.”

In recent years, civil engineering firms have begun to bring this type of help in-house, thinking it’s a way to save money. “When it comes down to it they can send guys out with spray paint and EM locators, but at some point, if they have to dig any kind of test pit, it’s always going to come down to companies like Mid-Atlantic,” Dorman says. “We have the equipment to do it.”

Mid-Atlantic operates a fleet of vacuum excavation trucks (VACMASTERS) in order to handle this process, which involves opening an 8- to 12-inch square hole and using a high-pressure air lance to loosen the dirt while it is removed by a vacuum tube. It helps prevent the damage of underground assets while allowing for the collection of data such as depth, elevation, proximity to other utilities and condition of utilities.

In addition to designating and locating, the company also provides utility survey mapping services to help prevent project delays, cost overruns and damages to the subsurface infrastructure. Ground-penetrating radar (GPR) is used when attempting to locate underground storage tanks, grave sites or any other object that leaves a noticeable disturbance in the subsurface strata.

SMALL SIZE, TIGHT FOCUS

The company continues to fall back on its heritage and the knowledge that it is providing a much-needed offering to its customers. Founded in 2003, Mid-Atlantic Utility Locating was born out of a civil engineering firm and spun off into its own company. “There were civil engineers who recognized the value of this service and then realized how much demand there was for that service,” Dorman says.

This dates back to a time when there were only two or three companies on the East Coast specializing in this type of work. They still exist, he adds, but

they’re massive now and have turned into the kind of companies that will take on giant federal projects. Most small, local companies just can’t afford their services.

In the wake of all this, a number of companies sprang up, and at this point Dorman estimates that there are maybe a half dozen competitors on the East Coast. “We have an ongoing challenge where we exist in a market where there is a fairly fixed number of providers, so a key for us is to continue to provide

Sturdy, reliable fleet

Mid-Atlantic Utility Locating boasts a whole fleet of pickup trucks used to haul surface locating equipment and handle surface markings as well as a towable vacuum excavation unit, but its four VACMASTERS excavation trucks are a crucial component to its success as well.

“For one thing, from a billing standpoint the test cut is our most expensive service, but it’s also the most involved,” says Erik Dorman, Mid-Atlantic marketing and business development manager. “To have equipment that you can rely on for something like that is extremely important, especially if we send a crew four or five hours down the road somewhere.”

The company uses three VACMASTERS System 4000 units and one VACMASTERS 5000 with a 173 hp engine and a 300 cfm/220 psi air compressor. The smaller units have an F-350 chassis and the 5000 has a 100-meter bed with a generator that powers a jackhammer as well as a high-pressure air lance and vacuum hose.

“I know the crews like using their equipment,” Dorman says. “They’re very reliable and sturdy.” The only thing the company needs to replace regularly is the vacuum hose, which tends to take the most abuse — especially when a lot of rocks are being sucked up.

“The biggest thing is that we’ve stuck with the VACMASTERS trucks for so long because they’ve been so reliable,” Dorman says. “Any time there’s been a service issue VACMASTERS has been right there to take care of it.”



A locating crew uses one of the company’s four VACMASTERS units on a job site near Ashburn, Virginia. Mid-Atlantic has one VACMASTERS 5000 machine and three 4000s.

Technicians use the Vivax-Metrotech Model 810 to locate utility lines.



“PEOPLE HAVE BEEN LIVING AND BUILDING AND OPERATING IN THIS GENERAL GEOGRAPHIC AREA FOR A LONG TIME **WITHOUT ANY KIND OF SOLID RECORDS ON A LOT OF STUFF.**”

Erek Dorman

consistent and reliable service,” he says. “I’ve noticed time and again that bigger companies tend to get sloppy and don’t have as much control over their people.”

When companies miss a utility and it gets hit, there are related fines imposed by regulatory agencies, for example, and it can cause a delay to the project at hand.

“Not to mention if they hit the right util-

ity or cause enough damage you’ve got lawyers involved and a public relations nightmare on your hands,” he adds.

Recognized as a leading provider of subsurface utility engineering services, Mid-Atlantic Utility Locating has an in-house staff consisting of the company director, administrator, proposal coordinator and marketing and business development manager, while a field crew of 14 operates four vacuum excavation trucks and a fleet of smaller vehicles.

It’s that relatively small size that also allows the company to distinguish itself from the rest of the pack. Price is one thing, Dorman says, but there are several competitors that all fall within the same general price range, so what it really comes down to is accuracy, consistency and the ability to fulfill a task when a client needs it.

“We like to keep our focus a lot more narrow so we don’t have so much to pay attention to that we start to lose on any one end of our service offerings,” Dorman adds. “Keeping our focus as narrow as we do really helps us run a much tighter ship.”



Lee Richie (left) and Stephen Russell work together to vacuum dirt and expose a utility line with the VACMASTERS 4000.

All employees are trained in-house, and typically the company avoids hiring locators from other businesses because of the habits that have potentially been developed elsewhere. “To keep employees for as long as we do ensures that we have reliable guys and ensures we’re able to bring them along on the process and equip them with all the knowledge and tools needed to do the job,” he says. “So when our clients call us it’s never a crapshoot as far as who or what they’re going to get.

“I’d like to see our company grow, of course, and we’ve been on a steady growth projection,” he adds. “But as far as rapid expansion I don’t see any benefit in terms of providing reliable service.” ▼

Featured products from:

VACMASTERS
800/466-7825
www.vacmasters.com
(See ad page 19)

Vivax-Metrotech Corp.
800/446-3392
www.vivax-metrotech.com
(See ad page 33)

NO TRENCHES NO PROBLEM

Trenchless Water and Sewer Line
Replacement Systems

PIPE BURSTING



THE R2

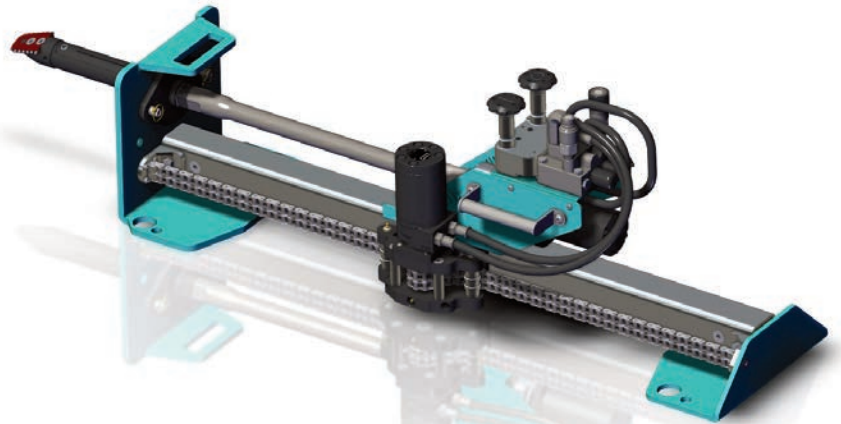
The lightest, simplest pipe bursting system available makes any bursting job faster and more efficient.

Our mission at Roddie Inc. is to maximize our customer's profit margins in the same way our products have for our contracting divisions in California and Montana.



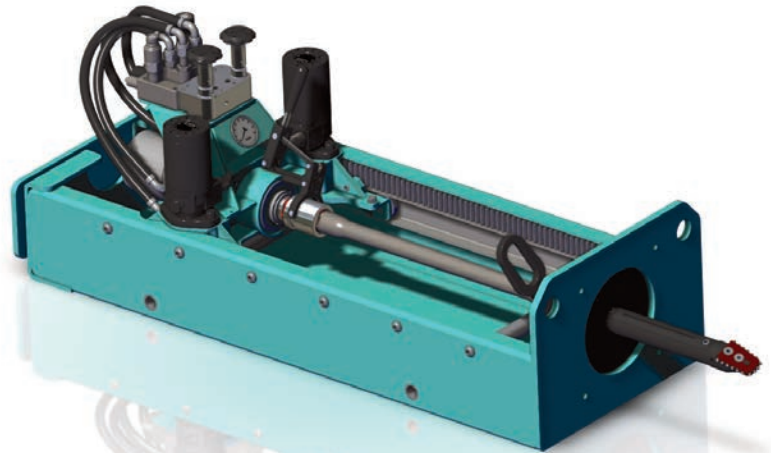
(888) 406-3821

DIRECTIONAL DRILLS



THE BASEMENT BUDDY

While easily carried into a basement or crawlspace this directional drill is great for installing anything from water lines to sewer laterals on grade.



THE PIT SHOT

Designed with the utility contractor in mind, this pit launch machine is our most powerful directional drill enclosed in a single, compact unit.

RoddieUnderground.com

Strip Mall Savior

TUNNELING MACHINE HELPS A CONTRACTOR REPLACE LATERAL LINES AND RESTORE SEWER SERVICE TO BUSINESSES

BY SCOTTIE DAYTON

Sand leaching into a corroded 4-inch cast iron lateral caused sewage backups into a restaurant (which had to close), a check-cashing service and a bank on one block of a Santa Cruz, California, strip mall. High groundwater enabled sewage to wick up through the sand and the mall's communal concrete floor, leaving wet spots in the check-cashing and bank carpets.

For more than a year and as often as three times per month, local mechanical contractor Geo. H. Wilson tried clearing the 130-foot line with cutters on cable machines. As the health department and tenants' patience expired, Wilson called subcontractor Roddie Underground Construction in San Martin. The company has a reputation for replacing sewer lines in difficult situations.

"The lateral ran north from the restaurant to the bank, turned 90 degrees under it and ran out to the sanitary sewer," says Roddie foreman John Mahana. "However, the bank refused to let us work inside, so we had to reroute the lateral out the south end of the mall." He used a UB-40 tunneling machine from RODDIE in Columbia Falls, Montana, to install a 4-inch HDPE lateral under the mall without affecting customer access.

TOUCHY WORK

Mahana, Jim Vouidy and Gustavo Barajas worked mornings and evenings before the establishments opened and after they closed. They also erected a chain-link fence and placed barricades to isolate the work zone.

From a manhole, Mahana televised the pipe using a GatorCam3+ from Radiodetection and took sonde measurements to plot the line's location. Two drop ends from the bank and one from the check-cashing service tied into the lateral at the common wall separating the two establishments. The restaurant had one drop cap for the lavatory and one for the kitchen.

"Documentation was very difficult because of the concrete walls and floor," Mahana says. "I wound up measuring off the walls and doing lots of complicated geometry to plot the course and grade correctly." The machine had to drill at a 1.7 percent grade to intercept the drop caps and maintain grade to the sanitary sewer.

Underground Service Alert identified the 6-inch water main and gas, power and communication lines running under the sidewalk in front of the restaurant and into the parking lot. Mahana's team used an Aquatech B15 combination truck from Keith Huber to excavate five 3- to 4-foot-deep potholes to document the numerous utilities, then backfilled the holes and replaced the concrete in the sidewalks. The work took two days.

ROCK SOLID

To excavate the 7.5-foot-diameter, 7-foot-deep launch pit on the far side of the sidewalk in line with the restaurant's front door, the team dug a trench

A UB-40 tunneling machine (RODDIE) is used for a difficult HDPE lateral install under a strip mall in Santa Cruz.



PHOTOS COURTESY OF RODDIE UNDERGROUND CONSTRUCTION

PROJECT: Replace a lateral backing up under a strip mall
CUSTOMER: Geo. H. Wilson, Santa Cruz, California
CONTRACTOR: Roddie Underground Construction, San Martin, California
EQUIPMENT: UB-40 tunneling machine, RODDIE, Columbia Falls, Montana, 406/863-7777; www.rodдиеunderground.com
RESULTS: Backups eliminated, pipe replaced and flow reversed

DOWN & DIRTY

around the perimeter with the combo truck to verify that it was free of utilities, then they dug out the center with a TBO15 Takeuchi mini excavator. Soil was stockpiled in another secure area in the well-lit parking lot. *(continued)*

Build Your Business



from the Ground Down!

Pothole *profitably* with air using a VACMASTERS Air-Vacuum Excavation System. With five different sized models, VACMASTERS has the system designed to meet all your excavation and budget requirements. From the *SYSTEM 6000*, the world's most powerful air-vacuum excavator, to the highly mobile, low-cost *SYSTEM 1000*, VACMASTERS systems are guaranteed to get your jobs done quickly, efficiently and safely.

SYSTEM 6000 – *The world's most powerful air-vacuum excavation system and the first with the power to trench as well as pothole. Hydraulic boom for safer/easier operation.*

SYSTEM 5000 – *Incredible power to pothole and open up larger excavations in stubborn soils. Substantially faster than the SYSTEM 4000 with only a negligible size increase.*

SYSTEM 4000 – *The most powerful and highest capacity non-CDL system we offer and power to pothole in the hardest soils and ground frost make this a very popular unit.*

SYSTEM 3000 – *Powerful, compact, maneuverable. Offers you a mid-priced system with big-time power.*

SYSTEM 1000 – *Affordable, trailer, truck, or skid mounted. Our smallest air-vacuum system, offering low cost, small size and high performance.*

**To see VACMASTERS
air systems in action,
view our demo at
www.vacmasters.com
or for more
information, call
1-800-466-7825.**



The Leader in Air-Vacuum Excavation • www.vacmasters.com

5879 West 58th Avenue, Arvada, Colorado 80002 • 303-467-3801 • 1-800-466-7825 • E-mail: sales@vacmasters.com



Jim Voudy (left) and John Mahana of Roddie Underground Construction help guide the 6.5-foot-diameter corrugated steel casing into place as Gustavo Barajas lifts it with the Gradall excavator.



Mahana checks the target's image on the monitor while Voudy (right) feeds out the pulling cable.

"If the drilling machine moves 1/8 inch, it has to be reset," says Mahana. "To prevent that from happening, we steady it inside a 6.5-foot-diameter corrugated steel casing."

Barajas used a rented Gradall excavator to lower the casing into the pit, then the crew poured two-sack slurry in the annular space. (The mix was soft enough to be hand excavated later if necessary.) After the slurry set, Barajas lifted the 2,600-pound drilling machine off the trailer with the Gradall and lowered it into the pit. Mahana secured the frame of the machine to the casing with jacking plates.

To access the drop ends, the crew entered the check-cashing service early in the morning and removed an 18- by 18-inch-square slab of 10-inch-thick concrete with multiple layers of rebar. "It took one hour to saw out the 300-pound piece using a hydraulic chain saw with an 18-inch diamond chain powered by the pump on the combo truck," says Mahana. "Then we pried up the chunk, lifted it onto a wheelbarrow, and took it outside."

After hydroexcavating down 3 feet to the tie-ins, the team repeated the process in the restaurant, which opened at 11 a.m. While Voudy and Barajas fused three 40-foot sticks of polyethylene pipe with a pulling head for the 90-foot run from the pit upstream to the common wall, Mahana drilled the pilot hole.

OPTIC-GUIDED

Mahana used a forward-reverse joystick to advance or retract the machine's dual hydraulic rams. After he loaded a 3-foot-long hollow lead tube with slanted tip, 40 tons of thrust pushed it through a flexible seal in the casing and into the soil. "The soil displaced easily, so we didn't need a boring auger," he says.

Mahana repeated the jacking process with more hollow tubes until they reached the destination. To follow the programmed route, the guidance system used a camera on a surveyor's level, focused on an LED target visible inside the lead tube. The level, mounted on an independent adjustable support, set the height, grade and direction.

An image of the target on a monitor enabled Mahana to steer the lead tube with a joystick and maintain the target in the level's cross hairs, which represented the desired line and grade. He made approximately one course correction per foot.

"DOCUMENTATION WAS VERY DIFFICULT BECAUSE OF THE CONCRETE WALLS AND FLOOR. I WOUND UP MEASURING OFF THE WALLS AND DOING LOTS OF COMPLICATED GEOMETRY TO PLOT THE COURSE AND GRADE CORRECTLY."

John Mahana

When the lead tube arrived at the check-cashing excavation, Voudy replaced it with the pulling head, then monitored the pipe's progress. The machine pulled the greased pipe through the tunnel at 1 foot per minute. Rollers and plastic sheeting under the pipe protected the carpets, and plywood panels protected the walls. As the tube sections emerged, Mahana disconnected them and handed them up to Barajas.

PULL TWO, CONNECT THREE

The next day, the team excavated an entry pit at the sewer, welded a 10-foot length of pipe to a 40-foot stick, and turned the machine around to repeat the drilling process for the downhill shot. "The new line reversed the flow and removed the bank from the picture," says Mahana.

On the last day, the crew connected the lateral to the sewer with a cut-in wye, fused the two pipe ends in the pit, and attached the polyethylene pipe to the cast iron lines from the bank with PVC SDR 35 and transition couplings. "The machine's ability to drill at specific grades made this project possible," says Mahana.

The overall job took two weeks and ended the mall's sewer problems. ▼

See the UB-40 in action:

www.youtube.com/watch?v=nDUw3aC0gBg

**Beyond buckets
and blades.**

digDIFFERENT

GET YOUR OWN COPY.

FREE subscription at digdifferent.com



VARCO TUFF SUCTION *Abrasion Resistant SBR Rubber*



| | 10' | 20' | 25' | 30' | 33' | 35' | 40' | 100 FT. BULK |
|----|----------|----------|----------|----------|----------|----------|----------|--------------|
| 2" | \$46.45 | \$82.95 | \$101.20 | \$119.45 | \$130.40 | \$137.70 | \$155.95 | \$3.45 |
| 3" | \$78.35 | \$140.95 | \$172.25 | \$203.55 | \$222.33 | \$234.85 | \$266.15 | \$5.95 |
| 4" | \$127.55 | \$230.15 | \$281.45 | \$332.75 | \$363.53 | \$384.05 | \$435.35 | \$9.75 |
| 6" | \$264.65 | \$459.35 | \$556.70 | \$654.05 | \$712.46 | \$751.40 | \$848.75 | \$18.50 |
| 8" | - | - | - | - | - | - | - | \$31.95 |



VACTOR/VACCON FLANGE FITTINGS AVAILABLE



AMPHIBIAN SERIES HEAVY DUTY POLYURETHANE LINED MATERIAL HANDLING HOSE

Superior Abrasive Resistant Polyurethane Tube and Cover

- Static Dissipative Cover
- "Cold-Flex" Materials - Hose remains flexible in sub-zero temperatures.
- Flexible Convoluted Cover Design
- Oil Resistant Polyurethane Liner

| | PRICE | STD. LENGTHS |
|----|-------------|--------------|
| 4" | \$13.52 ft. | 100' |
| 5" | \$20.90 ft. | 20', 100' |
| 6" | \$26.71 ft. | 20', 100' |
| 8" | \$44.05 ft. | 21', 60' |



CAM & GROOVE FITTINGS & REDUCERS

Available in Aluminum, Stainless Steel or Polypropylene



REAL TIGERFLEX® EPDM SUCTION HOSE

The Industry Standard! **FULL 6 MONTH WARRANTY**

4 COLORS - SAME LOW PRICE!

Actual Colors May Not Match Photo



| 100 FT. BULK | | |
|--------------|--------|------------|
| ITEM# | SIZE | YOUR PRICE |
| EP15 BULK | 1 1/2" | \$1.49 ft |
| EP20 BULK | 2" | \$1.79 ft |
| EP25 BULK | 2 1/2" | \$2.99 ft |
| EP30 BULK | 3" | \$2.85 ft |
| EP40 BULK | 4" | \$5.25 ft |
| EP60 BULK | 6" | \$11.49 ft |

| COUPLED HOSE PRICE INCLUDES M X F QUICK CONNECTS | | | |
|---|----------|----------|----------|
| | 20' | 25' | 33' |
| 2" | \$51.12 | \$61.30 | \$77.59 |
| 3" | \$72.96 | \$87.99 | \$112.03 |
| 4" | \$147.21 | \$177.50 | \$225.97 |



BANDLOCK FITTINGS

CUSTOM LENGTH MUNICIPAL VACUUM HOSE

Made to Vac Con / Vactor / OEM Standards!



| | PRICE |
|-----------------|----------|
| 8" ID x 60" OAL | \$325.71 |
| 8" ID x 62" OAL | \$325.71 |
| 8" ID x 66" OAL | \$342.86 |
| 8" ID x 77" OAL | \$354.29 |

CALL FOR OPTIONS & PRICING FOR DIFFERENT SIZES



**4 PK. NOZZLES
\$12⁹¹**

PRESSURE WASHER HOSE

Strength and flexibility for pressure washer machines with working pressures up to 5800 PSI.

- 250°F Temp • Coupled M x M

| 4000 PSI 1 Wire Braid Reinforcement | | |
|-------------------------------------|-------------|------------|
| ITEM# | SIZE | YOUR PRICE |
| PW4000 | 3/8" x 50' | \$59.95 |
| PW4000 | 3/8" x 100' | \$115.95 |
| 5800 PSI 2 Wire Braid Reinforcement | | |
| PW5800 | 3/8" x 100' | \$129.95 |

Quick Connect Socket and Plugs Available



BRASS LEVER VALVE

Solid brass with a quick opening lever. Full port allows for easy flow. Female NPT threaded.

| | 2" | 3" | 4" | 6" |
|-----|---------|----------|----------|----------|
| RIV | \$65.00 | \$108.00 | \$152.00 | \$299.00 |

DOUBLE JACKETED MILL HOSE

Working Pressure: 300 psi. COUPLED OR BULK

FROM \$1⁰⁰ ft.



COMPLETE LINE OF GLOVES & PROTECTIVE GEAR

Shiny Returns

ROBOTIC WHEEL-POLISHING SYSTEM GIVES ALUMINUM RIMS A MIRROR FINISH, BOOSTING FLEET PRIDE

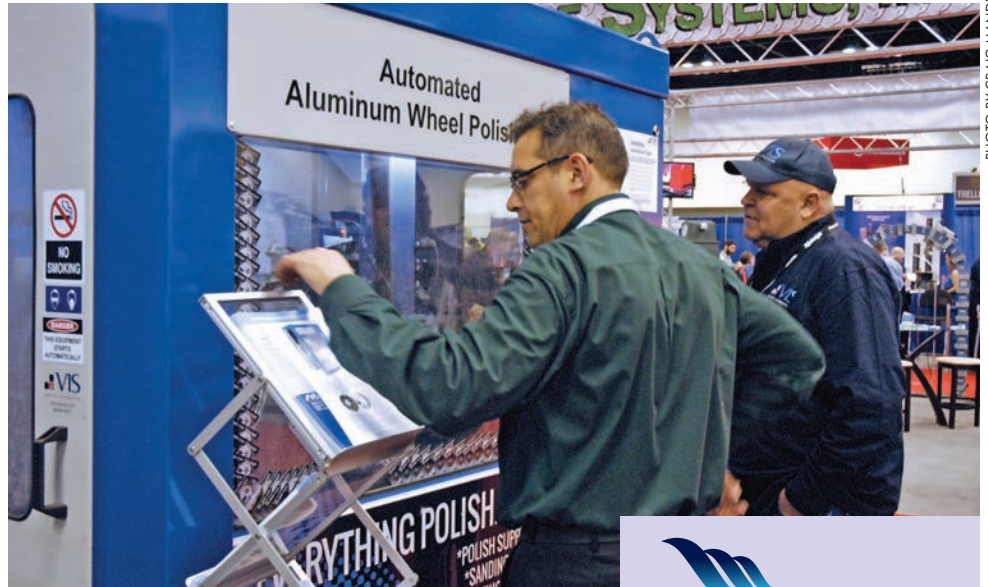
BY CRAIG MANDLI

Your fleet is your livelihood. Not only do your trucks need to do the heavy lifting in your business, they need to be properly maintained for driver safety, and kept looking sharp for both employee pride and the positive projection of your business in the community. The VIS-Polish can help accomplish that.

The VIS-Polish, demonstrated by Vehicle Inspection Systems on the floor of the 2016 Water & Wastewater Equipment, Treatment & Transport (WWETT) Show, is a robotic wheel-polishing system that restores aluminum truck rims to a mirror finish. It can quickly refurbish road-wear wheels to reveal any hidden damage before a wheel can break. It is easy to use, as all the tech needs to do is install the wheel to be polished, start the system and walk away.

“Oxidation can eat through a dirty wheel or camouflage cracks without the driver even knowing,” says Lauren Del Brocco, marketing manager with Vehicle Inspection Systems. “Not only does keeping the wheels clean make the rig look nicer, it adds life to the wheels and allows the driver to keep a closer eye on their condition.”

The system is available for 19.5-, 22.5- and 24.5-inch aluminum wheels, including super singles and wide-base steer. Its automatic, enclosed process contains the dirt, dust and noise of aluminum wheel polishing in a sturdy work cell, isolating the aluminum and polishing dust from the operator, practically eliminating the health hazards present during manual or assisted wheel polishing. Even the most soiled and oxidized wheels are typically fully clean after the maximum 45-minute polishing cycle. For fleet operators and truck dealers, the system boosts fleet pride while enhancing vehicle safety and ensuring maximum vehicle resale value.



Steve Stone, left, a regional support technician with Vehicle Inspection Systems, demonstrates the VIS-Polish automated polishing system for a WWETT Show attendee. The enclosed robotic system is designed to restore aluminum truck rims to a mirror finish.

“NOT ONLY DOES KEEPING THE WHEELS CLEAN MAKE THE RIG LOOK NICER, IT ADDS LIFE TO THE WHEELS AND ALLOWS THE DRIVER TO KEEP A CLOSER EYE ON THEIR CONDITION.”

Lauren Del Brocco

SAFE AND SPEEDY

“The system is so much faster and safer than polishing wheels by hand,” says Del Brocco. “All you have to do is put the wheel in and press a few buttons, and you’re good to go.”

The system’s computer automation means it’s faster than manual polishing and never has to take a break. The computer is programmed to apply a set amount of polishing motion and pressure to each wheel, ensuring all wheels come out looking similar. Its automated service allows technicians to multitask to reduce maintenance labor costs, as the unit requires very little attention during operating cycles. While the 2016 WWETT Show was the first as an exhibitor for Vehicle Inspection Systems, Del Brocco feels that the attendees are the target market for the polishing system.

“The majority of the attendees at this show own multiple trucks running aluminum wheels, whether they are from the septic pumping industry, hydroexcavation, sewer cleaning or mining and gas industry,” says Del Brocco. “This is a great product for both the dealers that are selling those guys their trucks, and the operators that have multiple trucks in their fleet and are concerned about both the safety and appearance of their trucks.”

Del Brocco says the biggest goal the company had coming into the WWETT Show was simply to introduce its product line to the water and wastewater industry. She was enthused by the feedback they received on all their products on display, but especially the VIS-Polish, which was being demonstrated on the show floor.

“We’ve gotten a ton of great comments, and a lot of good leads,” she says. “This is a big show; probably a much larger show than what we’re used to, but that is good. I feel we’re making great inroads into this industry.”

Del Brocco says the company is already looking into what it’s going to feature at next year’s WWETT Show. “I would say being here and talking to the attendees at WWETT tells me that we are perhaps an even better fit for this show and this industry than what we had originally anticipated,” she says. “So many of these guys are running large fleets, and there is a lot of pride in not only making sure those fleets are safe, but that they look good. That’s our market.”

866/847-8721; www.vischeck.net. ▼



Water & Wastewater Equipment, Treatment & Transport Show
www.wwettshow.com

Education Day: Feb. 22, 2017
Exhibits: Feb. 23-25, 2017
Indiana Convention Center, Indianapolis

PHOTO BY CRAIG MANDLI

PIPE BURSTING PROS DEPEND ON HAMMERHEAD®

“ We worked very closely with HammerHead Trenchless Equipment in the development of their new 100XT static pipe bursting system, and we couldn't be happier with the final result. It's fast, reliable, and backed by customer support that has always been quick to respond when we have a question. Municipalities are catching on to the advantages of pipe bursting, and our 100XT positions us to take advantage of pipe bursting's growing popularity.”

MARK DIMICHELE,
Owner, D & D Water & Sewer, Canton MI



**EQUIPMENT.
EXPERTISE.
SUPPORT.**

HammerHead Equipment products and expertise take the guesswork out of pipe bursting. And legendary factory support puts even the toughest pipe bursting jobs within your reach.



Find your local dealer at
hammerheadtrenchless.com
or call 800-331-6653



MOLING | RAMMING | BURSTING | HDD ASSIST | WINCHES | CIPP


LOCATING

Profile



"WHEN WE PULL UP ON A JOB SITE, PEOPLE KNOW WE MEAN BUSINESS. OUR MOTTO IS, 'THIS ISN'T RECESS. **WE'RE NOT HERE TO PLAY GAMES.**'"

Matt Bellmann



Matt Bellmann, co-owner of Sweetwater Utility Exploration, uses a RIDGID locator to map utilities in Charlotte. Looking on is field technician Tommy Wyatt.

NOT PLAYING GAMES

NORTH CAROLINA'S SWEETWATER UTILITY EXPLORATION GOES ABOVE AND BEYOND IN LOCATING UTILITY LINES FOR BIG CLIENTS

STORY: CORY DELLENBACH PHOTOS: JASON MICZEK

After years of working in the hotel and restaurant business, Matt Bellmann knew it was time for a change. He didn't want to work inside anymore; he wanted a job that would allow him to be outside.

His dad owned a concrete business, and Bellmann had always dreamed of having his own company. In 2012, that dream became reality when he founded Sweetwater Utility Exploration. "It was just one of those things where I wanted to own a business," Bellmann says. "I just started pinching pennies and saved wherever I could and went for it."

The company, based in Troutman, North Carolina, offers vacuum excavation services along with electromagnetic and ground-penetrating radar locating services throughout the Northeast and as far south as Florida. "A lot of our clients are developers and engineering companies, and they have us come out and map the entire area before they'll even start working," Bellmann says.

GETTING THE COMPANY GOING

It wasn't a fast road to starting Sweetwater. After leaving the hotel and restaurant business, Bellmann started as a field technician for his first utility locating company — So-Deep U.S. P.C. — in the 1990s. He completed a project manager training program with the company. In 2004, Bellmann decided he wanted to be home more with his family and he took a job as project manager at the engineering and surveying firm Taylor, Wiseman & Taylor (TWT).

Bellmann began in TWT's office in Cary, North Carolina, and subsequently started the subsurface utility engineering department in Charlotte.

After eight years with TWT, Bellmann knew it was time to follow his dream and, along with his wife, Sandy, started Sweetwater. "Our goal from the start was to make sure we could do every job from start to finish and we're doing that now," Bellmann says.

Matt and Sandy Bellmann, owners of Sweetwater Utility Exploration.



“OUR GOAL FROM THE START WAS TO MAKE SURE WE COULD **DO EVERY JOB FROM START TO FINISH** AND WE’RE DOING THAT NOW.”

Matt Bellmann

Sweetwater Utility Exploration Troutman, North Carolina

OWNERS: Matt and Sandy Bellmann

EMPLOYEES: 4 full time, 2 part time

SERVICE AREA: Throughout the Northeast and as far south as Florida

SERVICES: Utility location, potholing, mapping of job sites

WEBSITE: www.sweetwaterutility.com

Sweetwater crews mark every utility on a job site and will also conduct records research on properties for clients. “I’ve got contacts with all the utility companies in the area, so we call them and get all those records,” Bellmann says.

After surveying the job site, crews map the area and compare those maps to the records they received to confirm the location of all utilities and other underground obstacles.

When clients determine where new utilities will go in, Sweetwater uses its custom-built vacuum excavation equipment to pothole.

“We’ll tell them everything we find,” Bellmann says. “If it’s a water pipe, we’ll tell them the type of pipe, size, depth and exact location, and we take a picture of it. We give them everything they would need to know, including soil condition and depth or if there is asphalt or concrete there.”

ALL THE METHODS AVAILABLE

Sweetwater crews start each job performing electromagnetic (EM) locating, where the tools can be directly connected to the utilities, and then proceed to the other options available to them.

“We’ll run the ground-penetrating radar (GPR) over the site and then finish with a sweep of everything,” Bellmann says. “That’s why we use two guys to every job. One has the transmitter and one has the receiver. Once that signal attaches to something conductive, the receiver will start directing you over to the utility.”

If there is no access to connect to the utility and GPR equipment isn’t an option, then crews go to the vacuum excavation equipment.

“We’ll do as much field recon as we can, and then take out the vacuum excavation tools and verify the utility that way,” Bellmann says. “Usually we can get a good feel for what things are. We then come in with the truck and positively identify.”

Bellmann has his favorites when it comes to locating equipment. Most of his EM locators and sondes are from RIDGID, but he also has a Metrotech 810 (Vivax-Metrotech) that he prefers in certain situations.

“That’s my security blanket,” Bellmann says. “When something’s not working out well, I just grab that old Metrotech and it puts me at ease. It’s what I trained on.”

Bellmann uses a RIDGID SR-60 locator to map utilities outside Bank of America Stadium in Charlotte. The company uses primarily RIDGID locating equipment.

“IT’S A HARD BUSINESS IF YOU DON’T HAVE THE RIGHT EQUIPMENT. I WANT MY GUYS AND MYSELF TO HAVE AS MANY TOOLS AS POSSIBLE THAT ARE OUT THERE.”

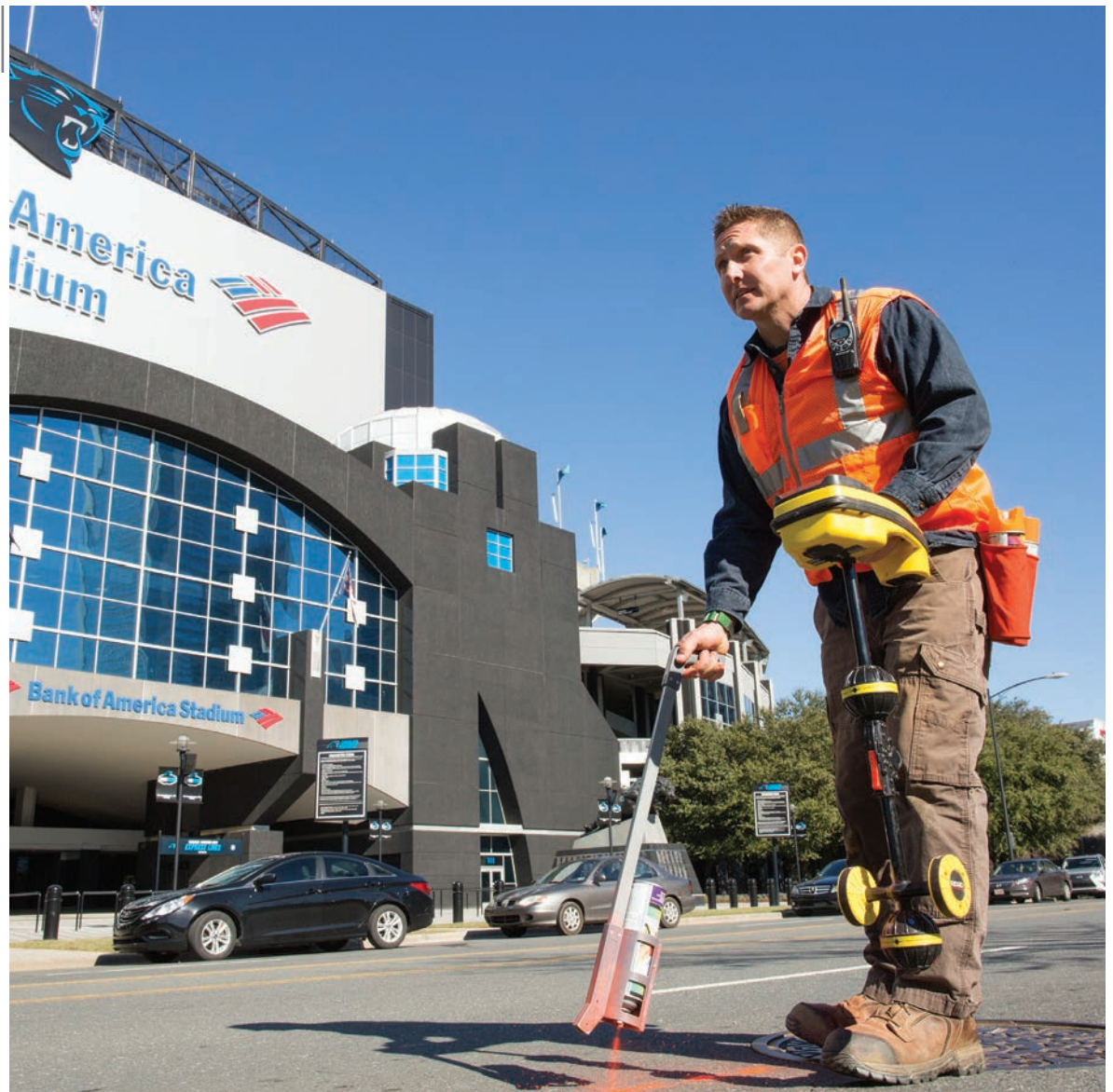
Matt Bellmann

The sondes come in handy often; and the company even has a few that look like fishing bobbers. “We’ll tie the fishing line to it and if it’s a flowing current we’ll drop it in there,” Bellmann says. “I have my guys let the line out 5 or 10 feet at a time and we can track it with our receiver. We have environmental clients that have remediation systems, and a lot of that is put in with plastic pipes that run into manufacturing facilities. It’s questionable where these pipes go sometimes, so we use the sondes all the time on those jobs.”

With the GPR equipment, Bellmann has only used MALA equipment. The company recently purchased a new MALA unit. The company’s standard MALA GPR unit has a 350 MHz antenna, while the newest model has a high-dynamic range (HDR) antenna. “It’s still pretty much the same frequency, but they’ve put a greater signal bandwidth on there, so it’s like having multiple antennas in one. You get a lot better depth and the resolution on it is crazy.”

On a job in 2015, Sweetwater found how useful having two GPR units can be. Crews were called to Charlotte to help the city find a sanitary force main. “They weren’t sure where it was,” Bellmann says. “They had it on record but had no idea where it was. We got hired by the engineering company that was helping the city upgrade its sewer system.”

Crews used two GPR units side by side, and both picked up the force main in thick red clay. Bellmann was impressed because normally GPR units



Finding the right tool

When Matt Bellmann, co-owner of Sweetwater Utility Exploration, started his utility locating business, he decided to go with mainly RIDGID equipment.

“I wanted to be able to have the best possible equipment and offer the most services,” Bellmann says. “We use the SR-60 locator when we do electromagnetic locates.”

The SeekTech SR-60 locator from RIDGID is designed for locating under difficult conditions, such as poor conductors, poor soil conditions and poor grounding. It traces frequencies from 10 Hz to 490,000 Hz and can trace energized lines and sondes at the same time.

“You can pick up electric lines without putting your own signal on it because it can scan and find the frequency of that line,” Bellmann says. “It’s very beneficial when we do interior work.”

When doing work for Duke Power in North Carolina, Sweetwater uses its SR-60 because much of the work is inside buildings.

“We can’t hook up to the utilities and there are concrete floors with rebar that disrupts the GPR units,” Bellmann says. “Our RIDGID, however, will pick up those utilities right away.”

The unit has a readout display that shows the operator a proximity signal, a depth indicator and a frequency signal, all in real time. The readouts help the operator constantly verify the quality of the locate. The unit displays a line on the screen that’s a picture of the utility line below, as opposed to a series of readouts that users have to synthesize in their head.

“You just look at the tracing line on the screen and start walking,” says Bellmann. “You’re actually finding the utility line, rather than guessing.”

Crosshairs on the screen show the operator’s position relative to the target signal. When the tracing line intersects with the crosshairs, the operator knows he’s directly above the line. The tracing line stays on target even if the receiver’s orientation changes, and it indicates when the utility line changes direction.



Matt Bellmann made his dream of owning a business a reality. Here he uses a ground-penetrating radar unit (MALA) to locate utilities.

have a tough time in clay; the signal reflects back at the unit because of the conductive materials in the clay.

“The locating equipment does pay for itself,” Bellmann says. “It’s a hard business if you don’t have the right equipment. I want my guys and myself to have as many tools as possible that are out there.”

LANDING THE BIG JOBS

Putting that equipment to work is something that Bellmann doesn’t have to worry about. Out of about 120 clients, Bellmann estimates that 80 are environmental and petroleum companies.

“A lot of that work is finding underground storage tanks,” Bellmann says. The environmental companies are a big reason Sweetwater survived the recession. “We were getting a lot of Phase 2 jobs, which are when a business is getting foreclosed on or trying to finance, and an assessment of the site is done to see if there is contamination. Before they go out and do any of their borings for monitoring equipment, they would call us to find where the underground storage tanks would be.”

Building a vacuum

While most utility locating companies that offer vacuum excavation offer big manufacturer-named trucks, Sweetwater Utility Exploration crews went a different route.

They wanted something that fit their needs exactly, so co-owner Matt Bellmann went to the drawing board and developed his own vacuum excavation trailer. “We’re a little bit different than everybody else,” he says. “Our units can get to where a lot of others can’t.”

The main portion of the unit, a Utilivac, is about the size of a 55-gallon drum with wheels and a large bazooka-looking attachment on the top of the drum. “There is a plate on top of the drum, and that plate has the bazooka-looking thing on it,” Bellmann says. “That bazooka takes in the air and pushes it over the top of the drum.”

Also on the top of the drum is a 4-inch port where the vacuum hose is attached. The unit has a door at the bottom for quick access.

“We have a 375 cfm compressor mounted on a car-hauler trailer, and then we outfitted the rest of the unit from there,” Bellmann says. The drum portion of the unit can be wheeled out as far as necessary with hose attachments. “We do a lot of work where guys can’t fit into because they have huge vacuum rigs.”

One such job was for the City of Charlotte on a gas transmission line where the work was down a remote access road. “We had to four-wheel drive down that access road. When we got within 400 feet of where they needed the hole, we couldn’t go any further,” Bellmann says. “We let out the compressor lines and brought the unit out there. The big rigs wouldn’t have even been able to make it down the access road.”

Bellmann says he’s been through a few versions of the unit, making improvements along the way: “They’re a great tool and we get plenty of use out of them.”

Aside from the environmental work the company does, Sweetwater performs a lot of work at Charlotte Douglas Airport. Bellmann says it’s a tough environment to work in because of the noise and the wind from planes.

“It’s crazy loud and it’s super intense out there,” Bellmann says. “You’re not only dealing with all these utility lines running everywhere, but you’ve also got directional lighting and the signs. Then the FFA has tons of fiber-optic lines that lead everywhere. It’s one of the jobs where you have to calm yourself.”

Sweetwater began working for the airport about 2 1/2 years ago when called in on a roadway improvement project. The airport wanted to put a bridge over the

“IT’S CRAZY LOUD AND IT’S SUPER INTENSE OUT THERE. YOU’RE NOT ONLY DEALING WITH ALL THESE UTILITY LINES ... YOU’VE ALSO GOT DIRECTIONAL LIGHTING AND THE SIGNS. THEN THE FFA HAS TONS OF FIBER-OPTIC LINES THAT LEAD EVERYWHERE.”

Matt Bellmann

existing railroad, but running parallel to the tracks were two fiber-optic cables.

“The owners of those cables wanted \$75,000 for each line to relocate them,” Bellmann says. “We came in and mapped where the two cables were. Then we went in with vacuum excavation, positively identified the cables and gave them the coordinates.”

The airport was able to design the bridge around the cables and saved \$150,000. “It saved them quite a bit of time, too,” Bellmann says. “The company that owned the cables told them it would take at least a year to relocate the cables.”

Bellmann (right) and his crew, including field technician Tommy Wyatt, are proud of the detailed order of operations followed on every project.

DOING THE WORK THE RIGHT WAY

Despite being busy, there is one area where Bellmann won't falter, and that's the quality of work. He prides himself on running a company that pays attention to the details and follows a very detailed order of operations for every project.

"We charge by the hour, but we're not going to take advantage of people and stay on the job site forever," Bellmann says. "If we have a client that is rushing my guys, I would rather have my guys leave the job and tell the client to find somebody else or let us do the job the way we need to."

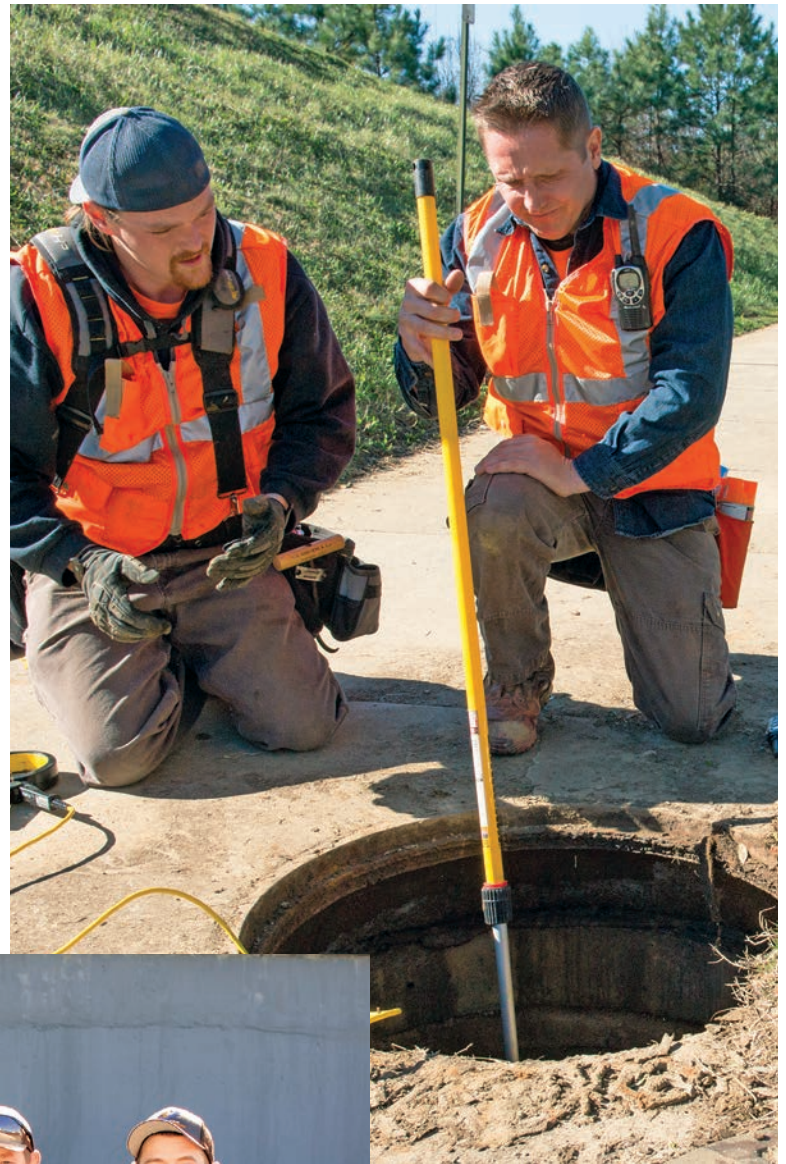
Bellmann says there are contractors who will rush through jobs just to get them done, but his company won't. "If you rush through a job, somebody can get hurt working on that site and then it falls back on you," he says.

Crews are required to show up on time, clean and in company gear and with all equipment in full working order. "The clients really respect you and I think the guys enjoy that respect," Bellmann says. "When we pull up on a job site, people know we mean business. Our motto is, 'This isn't recess. We're not here to play games.'"

Bellmann is happy at where the company stands, with two field crews, but he would like to add one more full-time crew in the coming years to give him time to do other work, such as marketing.

"I'm pretty satisfied with where we are now," Bellmann says. "We didn't get into this to get rich. We just wanted a company that has a great reputation and a great client base and I'm thankful for what we have now." ▼

The Sweetwater Utility Exploration team includes, from left, Tommy Wyatt, field technician; Matt and Sandy Bellmann, owners; Michael Sheperd, project manager; and Drannan Wyatt, field technician.



Featured products from:

MALA GeoScience USA, Inc.
843/852-5021
www.malags.com

RIDGID
800/769-7743
www.ridgid.com

Utiliscope Corporation
800/824-7709
www.utiliscope.com

Vivax-Metrotech Corp.
800/446-3392
www.vivax-metrotech.com
(See ad page 33)

No More Tiers

DIESEL MANUFACTURERS ARE DELIVERING OFF-ROAD EQUIPMENT THAT MEETS TIER 4 FINAL STANDARDS

BY PETER KENTER

Off-road diesel engines have made significant strides since the Environmental Protection Agency (EPA) first adopted Tier 1 emission standards in 1994. Tier 4 standards have been phased in since 2008, with the strictest Tier 4 Final requirements to reduce nitrogen oxides (NOx) and particulate matter (PM) incorporated last year and this year.

However, Tier 4 Final standards are outcome-based, not prescriptive — each manufacturer is permitted to achieve outcomes using its own solutions and technology. On hand to discuss their approaches are: Joe Mastanduno, account manager, rental marketing, with John Deere’s Construction and Forestry Division; and Brad Stemper, solutions marketing manager with CASE Construction Equipment.

digDIFFERENT: What differences will operators see in off-road vehicle engines in Tier 4 Final?

Brad: Selective catalytic reduction (SCR) has allowed manufacturers of excavators and other machines to meet the NOx standards of Tier 4 Final most efficiently. Our excavator solution involves a more efficient SCR system in combination with a diesel oxygen catalyst that uses a chemical process to break down particulates into less harmful components, reducing overall emissions by up to 95 percent. We didn’t want to stack up technologies that could use more fuel, affect peak horsepower or force us to redesign the machine envelope for technologies that would adversely affect our purchase prices, particularly on small- to medium-sized equipment.

Joe: Our approach at John Deere has been to build on proven technologies including cooled exhaust gas recirculation (EGR), exhaust filters and variable geometry turbochargers. We refer to this as the building block approach. Particulate matter levels established in our Interim Tier 4 designs will be maintained, while NOx will be further reduced by about 80 percent. This NOx reduction will drive the need for a new technology called SCR to be added to engines above 75 hp. This technology will require an additional fluid called diesel exhaust fluid (DEF), therefore a tank, lines, pump and nozzle are all new components associated with Tier 4 Final. Due to the continued usage of cooled EGR, the DEF consumption will be quite low, which allows for smaller DEF tanks and lower DEF costs.

digDIFFERENT: How do these changes benefit contractors?

Brad: Contractors don’t care about how Tier 4 Final is being resolved. They want a machine that runs the same, offers the same or better efficiency, costs less and earns them more money. We used the emission mandate as an opportunity to improve our machines. For example, we looked at ways to integrate hydraulics and electronics to create a variety of work selection modes and make the machines more efficiently leverage movement and stored power.

Joe: Aside from the obvious benefit of lower engine emissions, John Deere has worked to provide additional benefits as well. A great example of this is in

the telematics, which creates the ability to monitor engine performance remotely, diagnose any problems and report them to the owner. We can also update diagnostic software remotely and seamlessly using our exclusive communications tool, JDLink.

digDIFFERENT: Have Tier 4 Final engines sacrificed any power?

Brad: Power hasn’t been sacrificed between Tier 4 Interim and Tier 4 Final, because power range is still a deciding factor in contractor purchase. On earlier versions, we reaped the efficiencies of going electronic, using high-pressure common rail fuel delivery and increasing performance with reduced engine size, so we haven’t sacrificed horsepower with Tier 4 Final.

Joe: People aren’t willing to sacrifice power or torque. Through all of the changes, the power and performance of our engines have remained the same, with no degradation in reliability, responsiveness or ease of operation.

digDIFFERENT: Are there any increased requirements for maintenance?

Brad: The SCR system found in our new excavator line requires the use of DEF. However, as a whole the equipment is migrating to a longer life cycle, longer time between oil changes and longer service intervals. There’s no diesel particulate filter that needs to be changed and no related regeneration.

“CONTRACTORS DON’T CARE ABOUT HOW TIER 4 FINAL IS BEING RESOLVED. THEY WANT A MACHINE THAT RUNS THE SAME, OFFERS THE SAME OR BETTER EFFICIENCY, COSTS LESS AND EARNS THEM MORE MONEY.”

Brad Stemper

Joe: The exhaust filter is integrated into the engine design, which continuously regenerates and cleans it during normal engine operation without operator involvement. The initial EPA requirement was that diesel particulate filters needed to last 3,000 hours before ash removal. We’re now up to 10,000 to 15,000 hours, which is often the life cycle of construction equipment before people retire or sell their machines. Operators will now have to change a small DEF filter along with routine maintenance.

digDIFFERENT: Have off-road contractors become more savvy about maintaining supplies of DEF?

Brad: The industry has adapted to that, primarily because the trucking industry drove demand before off-road requirements were phased in. Custom-



Brad Stemper, CASE Construction Equipment



Joe Mastanduno, John Deere

SMART-DIG® HX-4000 HYDRO EXCAVATOR

By **LMT** Inc

Unique Modular Design Adapts to Your New or Existing Truck Chassis!



CONTROL YOUR OPERATING COST!

The HX-4000 is a fully self contained modular hydro excavator.

- ✓ Reduce truck engine wear
- ✓ Reduce truck engine hours
- ✓ Reduce fuel consumption
- ✓ Eliminate PTO and installation cost



TUTHILL 6015 Blower
14" Hg, 1000 CFM @ 1750 RPM
KUBOTA V3600T
83hp @ 2600rpm

FREIGHTLINER:
M2 106 Day Cab
Allison 3000 RDS transmission
300 HP Cummins engine

Dig Smarter. SMART-DIG.COM



Built to Order.
Built to Last.



800-545-0174 309-932-3311
1105 SE 2nd Street Galva, IL 61434
www.smart-dig.com



ers in remote locations are now seeing fuel delivery trucks carrying DEF. As Tier 4 Final becomes applicable to vehicles with lower horsepower, we're now seeing a brand-new customer base being exposed to the need for DEF for the first time — owners of skid-steers and backhoes, and small landscape companies, for example.

Joe: Fueling companies have adapted well to the market needs and they're routinely supplying DEF along with diesel fuel. DEF can be purchased in numerous ways, ranging from simple 2-gallon jugs to bulk delivery.

digDIFFERENT: Any new engine monitors or alarms?

Brad: One change is that some systems no longer require operator intervention. For example, the SCR technology doesn't require the operator to regenerate the system. In short, there are fewer bells and indicators in our Tier 4 Final.

Joe: We've added sensors and monitors to the equipment, but we didn't want to add flashing lights just because something is happening. Do you need to see a light flashing when a filter is going through a self-cleaning cycle? Manufacturers struggle with the right level of information to provide the operator, and we will only flash a light when it's something that requires action from the operator.

digDIFFERENT: Does Tier 4 Final offer retrofit possibilities?

Brad: Today's engines are very complex, from electronic engine management to exacting exhaust pressures entering the catalytic chamber and leaving it. To retrofit, you not only have to add equipment, but understand how it works with every other part of the engine and then go through the process of finding a way to monitor it. I would say it is difficult and becomes cost-prohibitive to the owner.

Joe: Retrofitting will continue to be an option for contractors who own older machines and have a need to bring the emissions up to a higher standard than what they were originally designed to meet. This need is often tied

"THROUGH ALL OF THE CHANGES, THE POWER AND PERFORMANCE OF OUR ENGINES HAVE REMAINED THE SAME, WITH NO DEGRADATION IN RELIABILITY, RESPONSIVENESS OR EASE OF OPERATION."

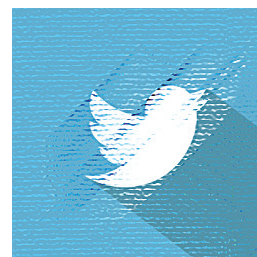
Joe Mastanduno

to certain contracts or local air quality requirements. At this time, the retrofits John Deere offers will improve both PM and NOx emissions, but generally are not capable of achieving Tier 4 standards.

digDIFFERENT: The EPA is always looking to the future. What could Tier 5 look like?

Brad: Europe is currently looking at implementing standards for CO₂ exhaust emissions. We're hearing rumblings in the industry that this might be introduced in North America but nothing has been formally decided yet.

Joe: If it does happen, we might see attention paid to smaller particulates or fuel consumption controls. However, for off-road vehicles, setting a standard for fuel consumption could be very difficult. How do you measure the fuel efficiency of a skid-steer against the efficiency of a motor grader? ▼



Talk with us.

[Twitter.com/DigDifferent](https://twitter.com/DigDifferent)

Success Stories:



Laser rangefinder and data software enables underground pipe installation

PROBLEM

A mining company in Oklahoma City, Oklahoma, aimed to run a pipe horizontally underground. In order to save resources, time and money, they wanted to efficiently calculate the required distance belowground that the pipe needed to be installed. A total station is large, tough to operate and difficult to transport, especially through wooded terrain. The mining company was in search for a better solution.

SOLUTION

The company partnered with **Laser Technology** to evaluate the contour of the ground in which the pipe would be horizontally placed. With an **LTI laser rangefinder** and **MapSmart data collection software**, they measured the contour of the ground and the required distance belowground needed to install the pipe.

RESULT The LTI laser system provided an exact contour of the ground. The mining company determined the minimum distance from the bottom of the ground to their pipe placement underneath, therefore not having to drill any deeper than needed. Because the LTI solution is extremely light, easily portable and simple to use, the mining company quickly determined a precise profile that was within a few inches of accuracy and well within tolerances. **877/696-2584; www.lasertech.com.**

Construction company improves maintenance, manages costs with GPS tracking

PROBLEM

Rich Duncan, owner of Rich Duncan Construction, a commercial contractor serving Oregon, Washington and Idaho, dealt with ongoing maintenance problems and high repair costs cutting into his company's bottom line. Duncan sought to increase driver accountability, reduce fuel usage and improve maintenance processes to help lower repair costs and extend the vehicle life.

SOLUTION

Duncan turned to **Verizon Networkfleet's telematics solution**. It monitors engine performance and tracks the service history of every vehicle. "The engine diagnostic alerts allow us to bring in vehicles for service as soon as a problem is identified, potentially avoiding costlier repairs," says Duncan. "We didn't even know we had a problem with idling until we started tracking it. We quickly found out that some trucks were idling up to half an hour at a time. We made our drivers more aware of their idling habits, and the problem went away after only a few months. Since then, average mpg per vehicle has gone up."

RESULT With the ability to track vehicles 24/7, the company has improved vehicle maintenance, reduced idle time and addressed inefficient driver behaviors that contribute to high operational costs, improving productivity as a result. "Networkfleet gives me more control over my company," says Duncan. "I can now focus on growing the business because I no longer have to micromanage my drivers." **866/869-1353; www.networkfleet.com.** ▼

THE MOST **EFFICIENT**
DIGGING SYSTEM ON EARTH.



DIG WITH
AIR, WATER
OR BOTH.



FIELD-TESTED
IN MOTHER NATURE'S BOARDROOM

Premier

WWW.POEQUIPMENT.COM • 970-542-1975 • SALES@POEQUIP.COM

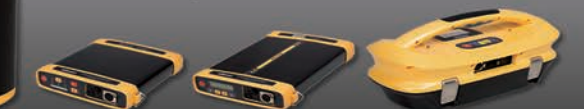
**VIVAX
METROTECH**

Locate buried utilities with accuracy, confidence, and speed with the vLoc and VM range of utility locators.



vLocPro2 Receiver

- Lightweight and ergonomic
- Lightning fast LCD response
- Long battery life
- Fault locate, Bluetooth, and GPS options



1 Watt, 5 Watt, and 10 Watt Transmitters



VM-810 Locator

- True left/right guidance
- One button operation
- Backlit LCD
- Full crisp digital sound



VM-810 Transmitter



Please call us to schedule an on site, no obligation demonstration!

Vivax-Metrotech Corporation

3251 Olcott Street
Santa Clara, CA 95054, USA

Toll Free: 800-446-3392
Fax: +1-408-734-1415

Email: sales@vxmt.com
www.vivax-metrotech.com

BY CRAIG MANDLI

Communication Equipment

Ritron PT-150M

The PT-150M professional-grade, license-free portable two-way radio from Ritron operates in the VHF MURS frequency band, allowing business-only users to operate license-free at 2 watts anywhere within the U.S. This saves customers the hassle and expense of the licensing typically associated with FCC Part 90 business band radio frequencies, and provides out-of-the-box functionality and simplicity. It has eight-channel capacity, which allows maximum use of all five MURS frequencies plus reuse of three frequencies for additional work groups. A 2-watt transmitter is adequate for up to 2-mile range, line-of-sight, no obstructions or 250,000-square-foot indoor range. A 1,000 mW speaker provides easy-to-hear clarity and



volume for noisy environments. A slim, lightweight design is ergonomic and easy to carry and use. Each comes complete with antenna, lithium-ion battery, spring-action belt clip, drop-in charging stand and AC adapter. Options include a six-unit gang charger, remote speaker microphone, lightweight ear set and nylon carry holster.

800/872-1872; www.ritron.com

Sonetics wireless communication

Sonetics wireless communication systems let crews talk to each other in real time, completely hands-free, with no interruptions or stopping equipment. They can deliver clear instructions and answer questions directly while the work rolls on. They help crews maintain precision through continuous communication. Job quality and performance increase as mistakes are reduced.

When the headsets are on, the crew is fully protected. Since they can talk to each other, there's no need to remove them. The crew can get warnings, alerts, instructions and updates instantly to avoid hazards, injuries and mistakes.



888/887-1272; www.soneticscorp.com

Erosion Control Products

AlturnaMATS VersaMAT

The VersaMAT versatile ground protection mat from AlturnaMATS can be used to create an access

road or temporary pathway. It has a load rating of 120 tons, which makes it usable for heavy-load distribution, but has a flat oval tread design on the



top surface for pedestrian traffic to prevent people from tripping when in use. The underside has an aggressive diamond-plate tread design for ground traction, but can be used as the top surface if maximum traction is needed for equipment. They are available in 2- by 8-, 3- by 8- and 4- by 8-foot sizes. 888/544-6287; www.alturnamats.com

Rhino Linings GeoTech CC2TB

GeoTech CC2TB from Rhino Linings is a 100 percent water-blown, closed-cell spray polyurethane foam system designed for exterior ditch breaker, soil stabilization and geotechnical applications. The trench breaker foam is formulated to lower its exothermic reaction temperature during installation, allowing contractors to apply it in one continuous spray lift of beyond 4 inches without compromising applicator safety or foam combustion. It cures quickly, forming a thick skin so contractors may install successive lifts without significant foam blowout or pooling. It expands 30 times its size and because it is water-blown, contractors are able to preheat or recirculate without causing damage or material loss. It only requires a single individual to install, and will not rot or break down when covered with soil.



800/422-2603; www.rhino linings.com

Mapping Tools

RapidView IBAK North America 3D-GeoSense

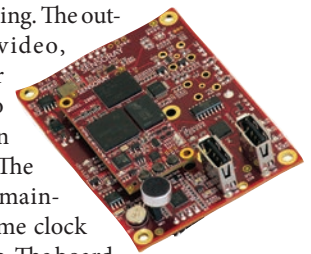
The 3D-GeoSense system from RapidView IBAK North America uses a sensor in the camera to provide users with a 3-D map of the lateral. The XYZ coordinates can be determined when the camera is moving both forward and backward, immediately providing the operator a real-life site plan with the width, length and elevation data of the lateral being inspected. It can be used in push- or lateral-launch applications. Additional third-party software is required. 800/656-4225; www.rapidview.com



Sensoray Model 4011

The Model 4011 from Sensoray is a compact digital video recorder designed for inspection systems. It records audio and video to USB storage media and can capture JPEG images without inter-

rupting A/V recording. The outputs allow live video, recorded A/V or JPEG snapshots to be displayed on an external monitor. The date and time are maintained by a real-time clock with battery backup. The board



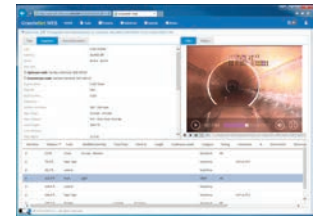
encodes standard NTSC/PAL composite video using efficient H.264 compression. Each of the three overlay generators can position up to 160 text characters anywhere in the video frame. An external USB storage device is required for DVR operation. If desired, a second USB storage device may also be connected, and the unit will simultaneously record to both devices. A common application for this is recording to a removable device while creating an archival copy on a non-removable device.

503/684-8005; www.sensoray.com

Software

CUES GraniteNet

GraniteNet condition-assessment software for the water/wastewater industry from CUES is asset-based, which enables the software to easily interface with other asset-based software products such as ESRI ArcGIS Mapping systems and asset-management systems that include Cityworks, Hansen, IBM Maximo and others. Intuitive and easy to use, data and video can be accessed via a Web portal.



800/327-7791; www.cuesinc.com

Utility/Leak Locators

Electro Scan ES-H2O 4-in-1

The ES-H2O 4-in-1 from Electro Scan integrates closed-circuit television, an acoustic hydrophone, a pressure sensor and the company's scanning technology into a single multi-sensor probe allowing for the identification of defects in pressurized water pipes of all materials. By using multiple technologies with different strengths and weaknesses, it can provide beneficial data about the location and size of defects as well as aid in eliminating false positives, more accurately and safely determining the condition of the pipe. Variations of electricity flowing through cracks, bad joints and defective connections are automatically recorded and transmitted to the PC-based application, as is data from the pressure sensor, hydrophone and camera. Upon completing the scan, all data is instantly available on the Critical H2O Cloud, giving utilities and contractors imme-



diate access to data such as accurate defect locations and measurements of exfiltration.

916/779-0660; www.electroscan.com

Fluid Conservation Systems PermaNet+

The PermaNet+ wireless network from Fluid Conservation Systems reduces water lost from leaks while saving time, money and labor. Responses are immediate when leaks are detected, eliminating the need for site visits and drive-by patrols. The system is installed in the chamber, removing the need for above-ground installations. It works with FCS Permalog wireless leak noise loggers. Customers receive leak reports generated by Permalogs on any Internet-enabled device, and the status of each deployed logger is shown on map-based software. The system can also send a leak alert whenever a logger detects a potential leak, enabling rapid response and minimizing water loss.

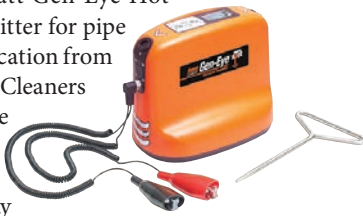
800/531-5465; www.fluidconservation.com



General Pipe Cleaners Gen-Eye Hot Spot Transmitter

The 5-watt Gen-Eye Hot Spot Transmitter for pipe and utility location from General Pipe Cleaners has four trace frequencies, and an LCD graphic display that indicates line resistance and current flow. Choose one of four line trace frequencies — 1 kHz, 8 kHz, 33 kHz or 65 kHz. The user can select the frequency and power that best suits the application. The graphic display with auto-backlight indicates battery level, output level, USB connection, connectivity, type of transmission and active frequencies. Long battery life keeps the unit operating for as much as 100 hours.

800/245-6200; www.drainbrain.com



IDS North America Opera DUO

The Opera DUO dual-frequency ground-penetrating radar from IDS North America helps track the position of the radar and marks underground targets. All the acquired data can be exported to CAD and the report can be generated directly on site. It has a dual-frequency antenna (250 to 700 MHz) to provide data for shallow and deep targets, advanced GPS and total station integration to generate accurate geo-referenced maps, a pivoting head to ensure good ground coupling



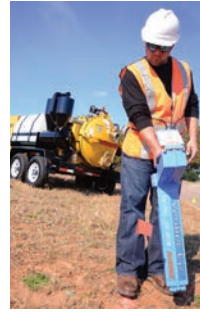
in uneven terrain, two encoders to ensure continuous signal triggering and a collapsible handle for easy transportation. Models are available with two or four wheels. A spray marker kit provides remote-controlled spray paint marking.

303/232-3047; www.idscorporation.com

McLaughlin Verifier G2

The McLaughlin Verifier G2 uses smart transmitter technology along with improved noise reduction to achieve accuracy in utility line location and depth calculation. It has peak and null locating modes, four active frequencies, depth estimate readout and Current Measurement Index (CMI), a unique inductive method, passive radio search, increased depth capacity to 30 feet and a completely weatherproof receiver.

800/435-9340; www.mclaughlinunderground.com



Radiodetection Corporation RD7100

The RD7100 from Radiodetection Corporation has an arrangement of five antennas with optional integrated GPS and usage logging, keeping users on the right line while enabling them to demonstrate safe working practices and validate quality of work. It has integrated, automatic GPS and usage-logging options. By analyzing usage patterns, users and



management can assess individual locating operations to ensure compliance with best practices or to identify training needs. Additionally, the data can be used for internal audits or shared with customers as evidence of completed tasks.

877/247-3797; www.radiodetection.com

RIDGID SeekTech SR-24 Line Locator

The SeekTech SR-24 Line Locator paired with the RIDGIDtrax app from RIDGID simplifies locating jobs and streamlines the creation of accurate maps of underground utilities to protect critical assets. The SR-24 is a locating receiver that uses integrated Bluetooth communications to transmit data to an onboard microSD card or third-party survey-grade GPS or mobile device. Its omnidirectional antennas capture the complete signal field, making it easy to locate a line and follow its path. Connecting it to RIDGIDtrax allows for creation of visual maps of underground utilities using a phone or tablet. Multiple lines can be traced, color coded and named on an overhead satellite image of a job site. The unit weighs 3 1/2 pounds, has a battery life of 16 hours and wireless range of 200 yards, and can be programmed to detect any active frequency from 10 Hz to 35 kHz.

800/769-7743; www.ridgid.com



Subsite Electronics UtiliGuard

The UtiliGuard utility-locating system from Subsite Electronics uses AIM to automatically scan

"Having the latest and best
technology available is important.

It gives us the ability to find just about anything

at typical scanning depths.

It helps us live up to our performance claims and legitimizes

the Pegasus mission statement."

Colission Wells
Pegasus Utility Locating Services, Inc.
Phoenix, Arizona

Read what **matters** to contractors

in every issue of *Dig Different*.



Subscribe for FREE at
digdifferent.com

the surrounding area for noise and recommend the best frequency among its 70 options. To help users make more accurate locates of obstructed utilities, it measures distances (depth) both horizontally and vertically to the utility. To ease use, the system has an intuitive, six-button, multi-language operator interface and a high-contrast LCD display to ensure visibility in all conditions, including direct sunlight. A dual-output feature allows users to connect the transmitter to two utilities at once, and the system is Bluetooth-enabled to simplify data transfers. Its rugged housing with an IP65 rating protects against dusty, dirty and wet conditions, and it has 100-hour transmitter and 30-hour receiver battery life.



SubSurface Locators LD-18

The LD-18 digital water leak detector from SubSurface Locators is designed to reduce ambient, intermittent noises from dogs

barking, cars passing by, footsteps and people talking. Its digital electronics sample the sounds every few thousandths of a second, and if it detects an intermittent sound, it suppresses it instantly. Water leak sounds are almost always continuous noises, and the unit can identify continuous leak sounds even in difficult conditions like busy streets.



775/298-2701; www.subsurfaceleak.com

Superior Signal Company 5E Electric Smoker

The 5E Electric Smoker from Superior Signal Company easily connects to any septic clean-out or inspection port to smoke test the entire system in just a few minutes. Smoke testing can help find sources of odors and many other faults throughout building plumbing, the septic system and even the leachfield. It gently pushes smoke throughout the system to find cracks, leaks and quickly identify problems. It comes with 8 feet of industrial-



grade flex-hose. Used with smoke candles with up to 40,000 cubic feet of smoke output, it helps locate hard-to-find odors, leaks and other faults in residential and commercial facilities.

800/945-8378; www.superiorsignal.com

Vivax-Metrotech vScan Utility Avoidance Tool

The vScan Utility Avoidance Tool from Vivax-Metrotech makes buried utility detection a simple and cost-effective process. Dual active frequencies, together with power and radio modes, ensure the maximum detection rate. Alerts and alarms can be configured to encourage correct usage. Seamless data logging helps identify training needs and, with the optional GPS, enables mapping features. A compass line direction indicator is included, and optional features such as GPS, BT and a buried metal cover mode are also available. An integrated self-test/calibration facility ensures the unit is fit for use at any time.



800/446-3392; www.vivax-metrotech.com ▼

Think outside the bucket



Sign up to learn about alternative excavation techniques and the people and products that power them.

It's FREE.

SEND A FREE* SUBSCRIPTION OF DIG DIFFERENT TO:

Contact Person _____
 Company Name (optional) _____
 Job Title (optional) _____
 Address _____
 City _____
 State/Province _____ Zip/Postal Code _____
 Phone _____ Phone Extension (optional) _____
 Fax _____ Cell Phone (optional) _____
 Email _____

*U.S., Canada and Mexico only

FAX this form to 715-546-3786

MAIL this form to COLE Publishing, P.O. Box 220, Three Lakes, WI 54562

SUBSCRIBE ONLINE at digdifferent.com

Please indicate your primary service: (optional)

Excavation/Grading Hydroexcavation Other _____

Do you pass Dig Different magazine along to others to read?

Yes No

When it comes to equipment and other purchasing decisions, what is your role?

Not at all involved Somewhat involved Heavily involved Final decision maker

How many pieces of excavation equipment do you have in service?

0 1-3 4-5 6-7 8-9 10+

What is your annual equipment budget?

0-50K 51K-75K 76K-150K 151K-250K 251K-350K 350K+

What services do you perform on a regular basis?

Excavating Hydroexcavating Trenching Horizontal Directional Drilling/Boring
 Vertical Drilling/Boring Pipe Relining/Rehabilitation Utility Location/Leak Detection

Other _____

What is your company's primary service?

Excavation Contracting Utility Contracting Government/Municipal
 Industrial/Commercial Vacuum/Cleaning Services Dealer/Distributor/Manufacturer

Other _____

D0516

NGX10 Sewer Inspection System

Inspect, stream live video and transmit 512hz signal—
at the same time

- Suitable for inspecting 3" - 8" lines
- Color self-leveling 1½" dia. camera head
- 512 Hz transmitter built-in
- 200' pushrod



ACCU-STIC 512 Locator

- Peak and null modes
- All digital
- Push button depth

ML2011 AccuCane 512 Locator

- Peak only mode
- Analog
- Calculate depth



RL8873 512Hz Locator by Rycom

- Multi-frequency capability
- Continual depth readout
- Directional indicators



Contact us for your FREE full line catalog today!

www.MyTana.com

MyTana

800.328.8170

fax: 651.222.1739

CABLE MACHINES JETTERS PUSH CAMERAS FOR MAIN LINES & DRAIN LINES LOCATORS RELATED PARTS ACCESSORIES



PROJECT SNAPSHOT

Specialized Trucks

MASSACHUSETTS' APC CORPORATION WORKS ON COAL-FIRE PLANT SITE WITH GAPVAX VACUUM EXCAVATORS

Starting in 2014 and running into early 2015, APC Corporation worked at Brayton Point, a coal-fired power plant in Somerset, Massachusetts. The plant was building two 500-foot-tall cooling towers. Over the course of the project, APC dug close to 300 holes for various fence posts, light poles, ballads and foundation footings, using the company's GapVax hydroexcavators. The company has a fleet of 11 vacuum trucks that can do wet or dry vacuum excavation. The trucks are capable of 28 inches Hg vacuum at 5,300 cfm, 2,500 psi and 5 gpm of hot or cold water. A 185 cfm air compressor is built into the truck. The holes that were dug were just 30 inches wide and 18 feet deep, requiring the use of the vacuum excavators. APC's vacuum excavators use air compressors instead of water pressure, allowing the company to maintain the integrity of the soil, which keeps the hole from caving in. APC crews were met with underground water, gas and electric lines while digging the holes and also had to contend with overhead high-voltage wires on the job site. Read more on this job at www.digdifferent.com/featured. ▼



PHOTO COURTESY OF APC CORPORATION

Let us show off your project!

Send photos of a current project (hydroexcavation, trenching, tunneling, directional drilling, utility locating, pipe bursting or similar nontraditional excavation) showing your equipment and crew on site.

Include name, company name, mailing address, phone number and details (what you are doing, equipment used, time expected on the project and anything difficult or unique about it). Email to editor@digdifferent.com or mail to Editor, Dig Different, P.O. Box 220, Three Lakes, WI 54562. We look forward to hearing from you.

10 Tips on Caring for Your Surveying Equipment

PROPER HANDLING AND TROUBLESHOOTING TECHNIQUES CAN ENSURE ACCURATE JOB SITE MEASUREMENTS

BY KYLE ROGERS

Accuracy is the end game when it comes to surveying a job site. If that information isn't spot on, you're bound to run into problems once it is time to get down to work. That's where caring for your surveying equipment comes into play.

"The reason you want to care for this technology is so you don't make a mistake in positioning when you're out on site," says Scott Crozier, business area manager for site positioning solutions at Trimble. "You think you've positioned something correctly that you haven't — that's when it will cost you money."

Here are some tips on surveying equipment maintenance so you can ensure your site measurements are precise.

1

SERVICE ANNUALLY

Contractors using total stations will want to make a habit of sending their equipment in once a year to be serviced.

"We design our equipment specifically for the construction industry so that it is more rugged, robust and requires little maintenance. That is especially true of the GPS receivers," Crozier says. "On the total stations, though, they are high-precision instruments. That's why we recommend an annual service."

Even if there aren't any clear issues with a total station's site positioning capabilities, a regular service can prevent problems from developing.

"At a service center, they'll go through and tune up anything that is 'drifting off' from the specifications and get it back to performing optimally," Crozier says. "If you don't do that and it starts drifting, the wear and tear on the instrument increases over time. It's better to bring it back so it's in its optimal state. It's like changing the oil in a car. You wonder if you really need to get the oil changed, but if you don't, you run the risk of something failing that may not have failed if you were keeping up on regular oil service."

"[A RAIN SHIELD] HELPS KEEP MOISTURE FROM GETTING INTO MECHANICAL JOINTS. WHILE THESE INSTRUMENTS ARE ROBUST AND DEVELOPED FOR A CONSTRUCTION ENVIRONMENT, YOU DO WANT TO TREAT THEM THE RIGHT WAY."

Scott Crozier

2

CALIBRATE REGULARLY AND CHECK AGAINST CONTROL POINTS

Outside of an annual service, upkeep in the field for a total station should consist of a calibration at least every two weeks, as well as ensuring positioning accuracy by checking the instrument on a known point.

"All of our software that works with these total stations has the ability to do a basic calibration on site," Crozier says. "And whether it's a GPS receiver or a total station, you should check it on a known control point to make sure that everything is measuring within specs. That should be done on every setup."



PHOTO COURTESY OF SEMPCO SURVEYING

A Sempco Surveying employee surveys a well pad site in Texas using Trimble equipment. It's important to perform regular maintenance on the equipment to ensure a correct measurement on job sites.

3

STAY CURRENT ON SOFTWARE UPGRADES

"Typically you'll see software being upgraded a couple times a year, and this will improve system performance and usually fix any bugs there may have been with previous software releases,"

Crozier says. "Anyone who uses these devices should be on some sort of software support."

4

USE THE CARRYING CASE FOR STORAGE AND TRANSPORT

Surveying equipment comes equipped with a rugged carrying case, and it's important to make use of it.

"They should be treated as precision devices, specifically the total stations," Crozier says. "Any time you knock them around or drop them, they have a chance of getting knocked out of calibration. GPS receivers don't have the same kind of mechanical precision to them, so they don't need quite the same level of care."

Still, that's not a pass to handle GPS receivers roughly.

"There's a little bubble on the rod that tells you when the rod is level or vertical. If that gets knocked around some, it may not give you a level rod anymore, which would give you inaccurate positioning," Crozier says.

In addition to using the carrying case, be mindful of how exactly you're transporting the equipment. Crozier recommends keeping it inside the cab of the service vehicle instead of a trailer or truck bed.

"If you do keep it back there, make sure that the carrying case is very well strapped in so that it doesn't slide and get knocked around," he says.

5 CLEAN WITH SOAP AND WATER
For cleaning your surveying tools, all you need is some soap and water.

"All the devices that Trimble makes are rated at IP67 so they can handle some moisture," Crozier says. "We recommend soap and water. Alcohol wipes are another good way to clean the devices."

On total stations, contractors must be leery of what they use to clean the optic lenses.

"The lens cap should be used when the equipment is being transported and not in use," Crozier says. "If you need to wipe the lens, you should use a specific lens cleaning cloth. You don't want to use anything that can scratch the lens."

"THE REASON YOU WANT TO CARE FOR THIS TECHNOLOGY IS SO YOU DON'T MAKE A MISTAKE IN POSITIONING WHEN YOU'RE OUT ON SITE."

Scott Crozier

6 TROUBLESHOOTING IN THE FIELD
If your total station isn't positioning correctly after testing it on a control point, the first step is to check the calibration, Crozier says. "That can be done on site by the user," he says. "If that still doesn't fix the problem, it needs to be taken to a service center."

The troubleshooting process for a GPS receiver isn't as straightforward. "With GPS receivers, there are a number of things that can cause the position to be wrong," Crozier says. "The bubble on the rod can cause an issue if that's not right. The base station could be set up incorrectly. And third would be on the site calibration side. A GPS receiver is typically not going to give you a bad position mechanically, but any of those three things can cause issues."

7 JOB SITE CONDITIONS
Be mindful of the conditions you're working in. "The equipment can be used in the rain, but don't dunk it in water," Crozier says. "And even in the rain, you can get a rain shield to go over the instrument in those conditions where it might be a little too much. It helps keep moisture from getting into mechanical joints. While these instruments are robust and developed for a construction environment, you do want to treat them the right way."

8 PROBLEM WARNING SIGNS
Anything on the equipment that is looser or tighter than usual should warrant further inspection. Lack of consistency on the expected measurements is another sign there could be a problem with the equipment.

"Say you measure a point and it's good, and sometimes you measure and get a bad point. If that variability is great, that's a sign something is not working the way it should be," Crozier says. "That applies mostly to total stations."

9 LIMIT DO-IT-YOURSELF REPAIRS
Crozier warns against attempting to make significant repairs to surveying equipment out in the field. He recommends contractors call the manufacturer or reseller of the product first.

"That would be the starting point," he says. "I wouldn't assume anything could be fixed in the field unless I've been told by them. If a screw comes loose, you can tighten a screw. But typically these instruments are not designed to be repaired at the customer level. They're precision instruments."

ultra ultra ultra
LIGHT - VERSATILE - SAFE

ultraSHORE
PRODUCTS



Quick to Install.
As light as 130lbs.

Roll Your Own.
Optional wheel kit.

Stacks easily with
2' & 4' high panels.

This is What Aluminum Shoring Was Meant to be!



1-800-SHORING
CALL TOLL-FREE NATIONWIDE • 1-800-746-7464

1-800-683-8837 **www.shoring.com**

MONSTEREQUIPMENT

BUY OR RENT

A Gapvax or Vactor
Today!!

Rent-to-Own
Available



Call Steve (888) 393-4425 Or
Visit us at: www.RentHydroVac.com

10 MACHINE CONTROL ADVICE
When surveying equipment is incorporated into the machine itself, the primary maintenance item to keep in mind is wear points on wiring.

"People are putting this equipment on machines now and have machine control and guidance," Crozier says. "The key thing to check is the wiring for any points of wear, because that could ultimately cause a short or break in the wiring." ▼

HAVING MAINTENANCE ISSUES?

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

Wisconsin State Fair Park, Milwaukee, Wisconsin

WEQFAIR

Wastewater Equipment Fair

PRODUCED BY COLE PUBLISHING

SEPT. 12-13, 2016

MILWAUKEE

Live demonstrations and operational equipment for the water and wastewater industries!

\$20

per person
in advance

\$30

per person
on site

Registration
includes ear plugs
and safety glasses!

MONDAY

September 12th

Fair Hours: 12 p.m. - 6 p.m.

TUESDAY

September 13th

Fair Hours: 8 a.m. - 2 p.m.

Outdoor Event - Rain or Shine



Get your hands
on equipment!

► Many hotel options close by: wistatefair.com/wsfp/visitor-information

Pumper installer **PRO**
Cleaner **MUNICIPAL SEWER WATER** **GAS OIL & MINING CONTRACTOR** **tpo**
digDIFFERENT Plumber

View complete event details at:
WEQFAIR.COM

Call 866-933-2653 for more info.

Federal Safety Plan Gets Overhauled

CRIMINAL PROSECUTION FOR SAFETY VIOLATIONS MORE LIKELY UNDER NEW FEDERAL PLAN, COULD MEAN THE DIFFERENCE BETWEEN 6 MONTHS AND 20 YEARS IN PRISON

BY DOUG DAY

Deterrence is one goal of a new effort to charge more safety and environmental violations as federal felonies. Under an agreement announced in December, federal officials are being encouraged to charge more safety and environmental violations as felonies rather than as misdemeanors.

According to a memorandum of understanding between federal agencies, more of the prosecutions would be handled by the Department of Justice's Environmental and Natural Resources Environmental Crimes Section and the U.S. Attorney's offices. Those two will be working more closely with the Department of Labor's OSHA, Mine Safety and Health Administration (MSHA), and Wage and Hour Division. Violations of the Seasonal Agricultural Worker Protection Act are also included in the agreement between the agencies. The Department of Labor has added a position to coordinate agency cooperation and agency staffs are being trained to be more familiar with applicable federal statutes.

"On an average day in America, 13 workers die on the job, thousands are injured and 150 succumb to diseases they obtained from exposure to carcinogens and other toxic and hazardous substances while they worked," says Dep-

"ON AN AVERAGE DAY IN AMERICA, 13 WORKERS DIE ON THE JOB, THOUSANDS ARE INJURED AND 150 SUCCUMB TO DISEASES THEY OBTAINED FROM EXPOSURE TO CARCINOGENS AND OTHER TOXIC AND HAZARDOUS SUBSTANCES WHILE THEY WORKED."

Sally Quillian Yates

ty Attorney General Sally Quillian Yates. "Given the troubling statistics on workplace deaths and injuries, the Department of Justice is redoubling its efforts to hold accountable those who unlawfully jeopardize workers' health and safety."

In a memo to all 93 U.S. Attorneys, Yates provided examples of how the increased prosecution could impact penalties. Misdemeanors under the Occupational Safety and Health Act are punishable by fines up to \$10,000 and six months imprisonment for acts such as willful safety violations that result in a worker's death or falsifying documents. Those penalties have not increased since the law was passed in 1970.

On the other hand, charging the same violations as felonies for false statements, obstruction of justice, witness tampering, conspiracy, and environmental and endangerment crimes carry penalties from five to 20 years in prison along with the potential for larger fines.

Besides filing criminal charges under Title 18 of the U.S. Criminal Code, the Environment and Natural Resources Division has increased civil prose-



Soil Surgeon Inc.

The Most Powerful Hydro-Excavating Tool On The Market

Storm Drain Separator Cleaner

Features Include:

- 6' Aluminum Tube
- Handles for easy maneuvering
- Water ring tips boring inward to cut the soil & outward to get tube down
- Bumpers on bottom to protect tips & lines

Now clean storm drain walls, filter screens and basin bottom using one tool in minutes

- Jets bore upward & outward for easy cleaning
- No man entry needed
- No awkward spray wand

Patent #6,484,422B1

Fits all truck manufacture designs
Quick Connects To 8" or 6" Boom

You Control Water Flow, Pressure & Power With the Truck's Controls
Designed To Cut Through All Types Of Soil

Call for a FREE Video and Information of Where Your Nearest Distributor is Located
949-363-1401 Fax 714-434-9998 www.soilsurgeoninc.com

cutions for worker safety violations under other laws such as the Clean Air Act, Clean Water Act, Resource Conservation and Recovery Act and the Toxic Substances Control Act because such violations have a direct relationship with workers handling dangerous chemicals, cleaning up spills and responding to hazardous materials releases.

"While most employers try to do the right thing, we know that strong sanctions are the best tool to ensure that low-road employers comply with the law and protect workers' lives," says Assistant Secretary for Occupational Safety and Health Dr. David Michaels. "More frequent and effective prosecution of these crimes will send a strong message to those employers who fail to provide a safe workplace for their employees."

Companies that violate safety regulations often do the same with environmental laws, according to Assistant Attorney General John C. Cruden of the Environment and Natural Resources Division. "We will remove the profit from these crimes by vigorously prosecuting employers who break safety and environmental laws at the expense of American workers." ▼



COLE publishing

Keeping it GREEN since 1979

colepublishing.com

THE LATEST: Products



1



2



3



4



5



6



7



8



9



10

1. Water Cannon electric pressure washer

The 15M71 electric-powered pressure washer from Water Cannon - MWBE has a 20 hp, 460-volt 3-phase motor with an auto start/stop feature that powers a TSP Series General triplex plunger pump at 4.5 gpm and 6,000 psi using the poly chain drive system. It comes with 500 feet of high-pressure hose, gun/wand kit, safety couplers rated at 10,000 psi and 12 feet of power cord. **800/333-9274; www.watercannon.com/catalogrequest.aspx**

2. Kafko International cleaner/degreaser

The Oil Eater cleaner/degreaser from Kafko International is formulated to eliminate the need for multiple cleaners. It dissolves grease, grime and dirt from storage tanks, power equipment, engines and tools. It is also effective in parts cleaning and pressure washing systems. The eco-friendly cleaner is biodegradable, noncorrosive, nontoxic and nonflammable. It contains no acids, abrasives or petroleum solvents. The low-VOC cleaner quickly and safely encapsulates grease into a solution that rinses off easily, leaves no residue and will not harm the skin. It is available in 1-, 5-, 30-, and 55-gallon containers and a 275-gallon tote for high-volume users. **800/528-0334; www.oileater.com**

3. Ditch Witch RT80 ride-on trencher

The RT80 ride-on trencher from Ditch Witch is a midrange machine equipped for trenching in small places. It is powered by a 74.5 hp turbo-charged Deutz Tier 4 diesel engine. A compact design and axle capacity give the machine a static load rating of 39,000 pounds. The machine has a tight turn radius and is equipped with three-speed, shift-on-the-fly ground drive controls for improved versatility, along with a standard cruise control system that senses changing load conditions and automatically adjusts. An LCD color display shows engine information and diagnostics. **800/654-6481; www.ditchwitch.com**

4. ProSoft Industrial Hotspot radios

Industrial Hotspot radios from ProSoft Technology, designed for I/O control and video streaming applications, are capable of radio frequency (RF) data transmission rates of up to 300 Mbps. EtherNet/IP object and Modbus agent support enable EtherNet/IP and Modbus TCP controllers to read diagnostic information from the radios, helping reduce downtime. The quality of service (QoS) feature allows for data prioritization. Virtual local area networks (VLAN) allow for network-secure segmentation. **661/716-5100; www.prosoft-technology.com**

5. General Machine Products microfiber cable fleeters

Micro and Mini Microfiber Cable Fleeters from General Machine Products (GMP) are designed to ensure cable protection from pedestrians or vehicles and prevents outside contamination. Cable fleeters replace the manual method of "figure-eighting" cable at deployment midpoints, saving time and money. They are designed to work in conjunction with GMP Breeze and Air Stream Cable Blowing Machine brands. The Micro Fleeter can accommodate 0.19- to 0.33-inch microfiber cable with a maximum cable handling of 6,500 feet by 0.33 inches. The Mini Fleeter can accommodate 0.19- to 0.43-inch microfiber cable. **215/357-5500; www.gmptools.com**

6. Komatsu America crawler dozer

The D61-24 crawler dozer from Komatsu America Corp. features a 6.8-liter, 168 hp SAA4D107E-3 EPA Tier 4 Final engine and choice between quick-shift, three-speed mode and variable 20-speed customizable transmission. KOMTRAX telematics provide machine metrics, including KDPF status, DEF consumption, fuel level, operating hours, location, cautions and maintenance alerts. The multilingual, 7-inch, high-resolution LCD monitor with Ecology Guidance helps operators monitor machine performance. A rear-view monitoring system is standard. **847/437-5800; www.komatsuamerica.com**

7. DSC Dredge underwater pump mining dredge

The Marlin Class underwater pump mining dredge manufactured by DSC Dredge is designed to meet the needs of deep mining and aggregate deposits by providing a more efficient tool for material excavation. Deep digging capability is made possible by the use of an underwater pump system with a high-torque cutter drive assembly. Digging depths range from 35 feet to more than 200 feet. Dredges are available in either a diesel- or electric-powered model. Drive systems include a Caterpillar ACERT diesel engine with inline direct marine-style transmission, or TEFC electric motor, variable-frequency AC dredge pump motor drive and double-helical gear reducer. All models feature a PLC operating system, magnetic flowmeter, electro-proportional hydraulic circuits, high-capacity service water system, suction dilution valves and a three-wire mooring system. **985/479-1355; www.dscdredge.com.**

8. Muncie Power Products TG Series power take-off

The TG Series power take-off from Muncie Power Products is available with 10 speed ratios, 19 shift types, 19 output shaft options and 78 input gears for all popular transmissions. An electric/hydraulic shift option eliminates the need for cables. Die-cast aluminum housing reduces weight and noise and aids in heat dissipation. A constant mesh input gear isolates the transmission from engagement errors. The PTO's compact size minimizes mounting interference for maximum pump clearance. **800/367-7867; www.munciepower.com.**

9. Sherman & Reilly pintle eye trailer configuration

Sherman & Reilly, a Textron company, has enhanced the towing ability of its Revolution Series transmission equipment product line with the addition of a pintle eye trailer configuration for use with line trucks. The platform provides reductions in overall weight and allows for a small field and storage footprint. It can be found on the T-7212-P Bullwheel Tensioner, PTR-7230S-P Split Model Puller/Tensioner/Reconductor and RC-2500X-P powered Reel Carrier. **800/251-7780; www.sherman-reilly.com.**

10. Larson Electronics LED string lights

The WAL-SL-5PAR38-LED-12.3-TLP from Larson Electronics is a 125-watt temporary construction LED string light set that includes five 25-watt LED lamps providing 12,500 lumens of light over 50,000 hours. It features industrial-grade LED lamps with 10 feet of 12/3 SJTW cable between each lamp for a total of 46 feet. Each individual socket is equipped with a hook eyelet, allowing operators to attach an S-hook to each lamp for overhead illumination and hands-free operation. Lights operate with 120 volts AC to 277 volts AC or 12-24 volts DC without modifications. LED lamps are suitable for wet areas and resistant to damage from impacts and vibrations. **800/369-6671; www.magnalight.com. ▼**

This Issue's Feature:

Kohler mobile diesel generator provides optimal power, custom options

BY ED WODALSKI

The 55REOZT4 diesel-powered mobile generator from Kohler Power Systems is EPA emission-certified for non-road use and mounted on a DOT-certified trailer.

Features include a KDI 3404 Tier 4 Final engine that does not require a diesel particulate filter; external emergency stop; stainless steel door latches and hinges; cold weather package (block and battery heater); single-point lifting eye; sound-attenuating housing (69 dBA at 23 feet); voltage, current, frequency and power monitoring; analog inputs; warnings; and faults monitoring. Customization is available.

"We have the ability at Kohler to modify any of our generators," says Anne Feudner, product manager, Kohler Power Systems. "You could have a larger fuel tank or different voltages. You can have a different paint color to match the fleet, different trailer configurations or receptacle configurations."

The generator is compatible with Kohler's Mobile Paralleling Box, enabling users to link different-sized generators to optimize power for a specific task.

"Where the Paralleling Box might work on a job site is if you have some equipment going 24 hours and some of it going eight hours," Feudner says. "You currently might use one big generator but could potentially use two smaller generators. Say for 10 hours a day you're not running as much equipment, the controller and the generator senses that the load has gone down. And if it goes down to a certain level, it automatically shuts one of the units off. Now you're only burning fuel and giving off emissions from one small unit."



55REOZT4 generator from Kohler Power Systems

The generator is capable of a 46-48 kW standby rating and 42-43 kW prime and continuous rating. Fuel tanks are sized for 40 hours of runtime at 75 percent load and can be increased with the use of auxiliary tanks.

"Say you are remote and you don't want to deal with refueling, you could bring in an auxiliary tank," she says. "The unit has optional fuel ports that you could tie into and pull from that auxiliary tank."

A lockable enclosure and 3.1-cubic-foot toolbox provide added security and storage. The toolbox includes a fire extinguisher, lug wrench and jack.

The Decision-Maker 3500 digital controller provides intuitive displays and keypad functions, plus advanced network communications for remote monitoring. Other features include 4.3-inch LED color graphic LCD display; remote start and stop; sealed connectors to protect against the environment; auto-sensors on the selector switch setting that eliminate the need to program voltage changes; voltage, current, frequency and power monitoring; analog inputs; warnings; and faults monitoring.

800/544-2444; www.kohlerpower.com

Family Financing

PROCEED SLOWLY AND CAUTIOUSLY WHEN IT COMES TO BORROWING MONEY FROM RELATIVES

BY ERIK GUNN

So it's time to get a new truck. "And it's only \$120,000," you whisper to yourself when you've pulled all the information together.

Unless you've been *really* lucky, you're not going to pay cash in full for it. Not to say you couldn't afford to, but the fact is, if you can afford the cost of borrowing, even for a short time, it often makes sense to use credit and avoid tying up too much cash that you might need for other expenses — especially unexpected ones.

So the next step is financing. Vendors, of course, have financing programs. And your business bank is usually the ideal source for a truck loan.

But those involve paperwork. And there may be any number of reasons that the loan officer looks at you sideways and decides you don't quite qualify for their lowest rate — even if your credit score and repayment record are spotless.

Then, along comes your wealthy Uncle George. He's always been kind of proud of how you've built your business with your own two hands.

So there you and he are, looking at a beautiful new truck. And when Uncle George offers to lend you the money for it on the spot, it's hard not to shout, "YES! THANK YOU!" right away, shake Uncle George's hand and place your order with the vendor right then and there.

But should you take the money?

PROCEED SLOWLY

Rob deJong is managing partner with the Milwaukee, Wisconsin, law firm of Rose & deJong, where he handles all kinds of transactions for small- to mid-market companies. His advice? Think twice.

"Loans between family members are fraught with potential downfalls," deJong points out. "I would tell Uncle George to make the loan only if a complete loss wouldn't change his view of the borrower and it wouldn't change his life."

His cautionary stance applies to both sides of the deal. "I would tell Mr. Business Owner to decline out of hand if he could borrow the money from a bank or financial institution," deJong says.

The reality, though, is that these transactions happen — a lot. Then what?

LAWYER UP

Suppose Uncle George has money to burn and is willing to take the risk — and that you are comfortable letting Uncle George be your loan officer. What's the next step?

"Everyone needs a lawyer because they have different, conflicting interests," deJong says. "But at the very minimum, Uncle George needs someone who can draw up a legally binding agreement."

Yes, it's tempting to skip the paid advice. After all, it seems so straightforward — five years to repay, 9 percent interest — how complicated can it be?

Answer: You don't even know — and the protection you buy by employing an attorney in the deal is inexpensive insurance.



"Documenting a loan like this is a relatively easy, low-cost thing for a lawyer to do," deJong points out. "On the other hand, doing it incorrectly can be costly for both borrower and lender."

The contract should provide for certain kinds of protection for both you and Uncle George, deJong explains.

"The documentation should be crystal clear that the money is owed with any deductions and the principal accelerates upon a default in a regular payment," he explains. "It should also provide that Uncle George can add his legal fees to the total if he has to sue to collect payment."

CHECK THE MARKET

Before you get an agreement drawn up, both you and Uncle George should have an idea of fair interest rates and a reasonable time for repayment. Check with your local bank and credit union.

The agreement also needs language that's clear on what the loan collateral is and on the general terms of the loan. "The collateral — a lien on the truck in this case — must be properly documented," says deJong.

"LOANS BETWEEN FAMILY MEMBERS ARE FRAUGHT WITH POTENTIAL DOWNFALLS. I WOULD TELL UNCLE GEORGE TO MAKE THE LOAN ONLY IF A COMPLETE LOSS WOULDN'T CHANGE HIS VIEW OF THE BORROWER AND IT WOULDN'T CHANGE HIS LIFE."

Rob deJong

We'd hate to think we'd have to look for fine print in a transaction with a relative — but deJong warns, "Also, watch out for any prepayment penalties, should Mr. Business Owner decide to pay off the loan early."

Another good reason to involve a lawyer is state-by-state differences concerning the terms of business loans. "For business transactions (as opposed to consumer transactions), there is no limit on the amount of interest to be charged in Wisconsin," deJong offers as an example.

Every state will have slightly different provisions, and the underlying assumption is often that business owners need fewer protections than ordinary consumers. (Sound familiar? Remember that a recent Money Manager column pointed out certain federal credit card consumer protections don't extend to businesses.)

COVER THE 'WHAT IFS'

Last, but hardly least, what happens if you can't repay the money?

For any other lender, the typical remedy is that if you get too far behind on your payments, you lose the collateral. So if Uncle George has taken a strictly business approach to your deal — as, arguably, he should — he'd have the right to take away the truck.

So, as with any other lender, you want to be sure he can't take away any of your other assets. That includes business assets and any personal assets, such as your house. To guard against that, the loan absolutely should be made to your business, not to you personally. And that also means there should be no personal guarantee.

"If the loan is to an entity like a corporation or limited liability company, the obligation to repay the loan stays with the entity," says deJong.

The contract should also make clear that the new truck is the only collateral included. None of your other equipment or supplies should be mentioned.


All of which adds up to this: You might think borrowing from a relative would involve a lot less bureaucracy and paperwork. But if you do it right, it won't — and a lot of that bureaucracy and paperwork is for everyone's protection.

So — borrow from a family member? In general, you're going to be better off just saying no. But if everything adds up to tell you that, yes, that's really the best option, then make it as businesslike a transaction as possible.

Good luck, and happy truck shopping!

ABOUT THE AUTHOR

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




facebook.com/DigDifferent
twitter.com/DigDifferent
linkedin.com/company/dig-different-magazine

Generator-Parts.com

Online parts breakdowns to help you troubleshoot and identify repair parts.

FULL LINE OF GENERATORS AND OEM PARTS FROM:

GENERAC KOHLER Cummins Onan

MANY PARTS IN STOCK:

- Filters
- Fuel System Components
- Starter Motors
- Replacement Gaskets
- Solenoids
- Much More!

Same day shipping on in-stock inventory orders placed before 4 p.m. CST.

Our large midwest inventory reaches most places in 2-3 business days via standard shipping.

Government and Military Quotations Welcome

Trained & Certified Repair and Installation Staff
877-409-1618 • sales@generator-parts.com

Generator-Parts.com

UNIVERSAL REPLACEMENT PUMP



\$67.99

2000 PSI

For Vertical Shaft Engines

watercannon.com
800.333.9274

GET EMAIL NEWS ALERTS FOR digDIFFERENT

Go to digdifferent.com/alerts and get started today!

WHAT'S TRENDING IN ALTERNATIVE EXCAVATION? FIND OUT.

Visit digdifferent.com

Also:

- FREE Subscriptions
- Online Exclusives
- Email Alerts
- E-Newsletters
- Blogs and Videos

CLASSIFIEDS

ADVERTISING

Equipment Decals/Stickers: 100 11" x 15" - \$295. No setup charge & fast turnaround. Free shipping. sales@stickers4all.com 844-744-6236 (D09)

HYDROEXCAVATING EQUIPMENT



2016 Vac-Con Xcavator mounted on an 2016 Freightliner 114SD, Roots 827 blower, 20gpm @ 4,000psi water system with winter recirculation, 410,000 BTU boiler, 12-yard debris body with vibrator, 8' telescoping flex boom. Truck is new - never used, FET has been paid, NO FET.

For more info call Jeff 317-258-4900, IN P05

LEASE/FINANCING

Quick and easy financing for new or used equipment — without all the headaches. **Credit is not an issue.** We have working capital available for commercial equipment purchases \$20,000 to \$2,000,000. **BSG Services** - Call 866-259-5370 or email bsgfin@earthlink.net (PBM)

ABC LEASING & FINANCING - Fast, E-Z Financing, ONE-page application, \$10-250,000 — Vehicles, equipment, portable toilets. Since 1979. Call Gerry @ 518-857-5206 (P06)

RENTAL EQUIPMENT

Liquid vacs, wet/dry industrial vacs, combination jetter/vacs, vacuum street sweeper & catch basin cleaner, truck & trailer mounted jettors. All available for daily, weekly, monthly, and yearly rentals. **VSI Rentals, LLC, (888) VAC-UNIT (822-8648) www.vsirentalsllc.com** (PBM)

Hydroexcavators for Rent/Rent-to-Own. GapVax and Vactors available. Monthly-Weekly-Daily. Multiple units available — Ready for work! Monster Equipment 888-393-4425 www.renthydrovac.com (D05)

Sell your equipment in DIG DIFFERENT classifieds!
www.digdifferent.com/classifieds/place_ad

THE LATEST: News



Vac-Con saves \$150,000 on sales tax exemption

Vac-Con, in the midst of an \$11 million plant expansion, saved over \$150,000 on Florida Gov. Rick Scott's sales tax exemption on manufacturing equipment. Vac-Con hosted the governor in January at a stop on his Million Miles for a Million Jobs Tour. Vac-Con plans to hire about 60 employees as a result of the expansion.

JCB raises \$85,000 at annual golf fundraiser

JCB North America raised \$85,000 for The Lady Bamford Center during its ninth annual Lady Bamford Center Golf Tournament at The Club at Savannah Harbor in Savannah, Georgia. The center provides education and social skills development to local children.

Armstrong Equipment partners with Green Leaf

Armstrong Equipment formed a partnership with Green Leaf Inc. that includes Green Leaf's exclusive line of GatorLock cam-lever hose couplings.

J&J Truck Bodies & Trailers appoints regional sales manager

J&J Truck Bodies & Trailers named Tim Davis regional sales manager. He will be responsible for supporting and developing the customer base and brand awareness in western Pennsylvania; west of Rochester, New York; Ohio; and West Virginia.



Tim Davis

Hydra-Flex names national sales manager

Hydra-Flex named Joshua Pelovsky national industrial sales manager. Based out of the company's corpo-

rate headquarters in Burnsville, Minnesota, he will focus on hydroexcavation and industrial cleaning products.

Continental ContiTech to expand industrial hose plant

Continental ContiTech announced a \$7.2 million expansion of its industrial hose plant in Mount Pleasant, Iowa. The company expects construction to be completed by the end of the year.

Vactor Manufacturing, US Jetting forge marketing agreement

Vactor Manufacturing will market and distribute US Jetting trailer- and skid-mounted jetters under the Vactor name to customers in North America.

Liquid Environmental acquires All American Grease Services

Liquid Environmental Solutions acquired All American Grease Services Companies, a nonhazardous liquid waste company that offers grease trap and used cooking oil collection services across the Gulf Coast and southeastern United States. The acquisition adds five service branches and three wastewater treatment facilities to the Liquid Environmental network. ▼

Happenings

CALENDAR

May 13-14

Pacific Heavy Equipment Show, Tradex, Abbotsford, British Columbia, www.masterpromotions.ca/Previous-Events/pacific-heavy-equipment-show-2016.

May 23-26

National Utility Contractors Association (NUCA) Washington Summit, Washington, D.C., www.nuca.com.

June 5-8

Electric Utility Fleet Managers Conference (EUFMC), Williamsburg Lodge and Conference Center, Williamsburg, Virginia, www.eufmc.com.

June 26-29

ASSE Professional Development Conference & Exposition, Atlanta, safety.asse.org.

Sept. 24-28

89th Technical Exhibition and Conference (WEFTEC), Ernest N. Morial Convention Center, New Orleans, www.weftec.org.

Nov. 2-3

WJTA-IMCA Conference & Expo, Ernest N. Morial Convention Center, New Orleans, www.wjta.org.

Nov. 6-9

Cutting Edge: Advances in Tunneling Technology, The Concourse Hotel at Los Angeles Airport, Los Angeles, www.ucaofsmecuttingedge.com.

Nov. 17

Minnesota Utility Contractors Association Annual Meeting, www.muca.org.

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. ▼

Is digging part of your residential or commercial drain and sewer maintenance, cleaning and repair business?

Cleaner

Then don't miss out on this important read.

FREE SUBSCRIPTION

CLEANER.COM



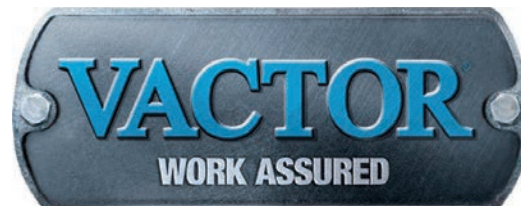
Think of it as a multi-purpose tool on wheels.

The powerful Vactor HXX 824 is a **cost effective** alternative to larger, more expensive vacuum excavators. It is ideal for typical vacuum excavations and its modular design **maximizes legal payload capacities** for over the road hauling – making it versatile enough to be your one-truck job-site multi-purpose tool. The HXX 824 delivers up to **3x more suction power** than trailers, is equipped with a **22' hydraulic boom** and can dig with **air or water** for incredibly fast results. The HXX 824 can easily **locate utilities**, **perform trenching**, and handle **potholing** and **day lighting** as well as bigger excavations if necessary. But it's more than just a vacuum excavator, it can...

- ✓ *Power jackhammers, tampers or other utility tools with either on-board air compressor or hydraulic power pack*
- ✓ *Provide towing capacity up to 30,000 lb. to haul mini-excavator, HDD drill or job supply trailers*
- ✓ *Supply high pressure hot water for efficient jobsite and equipment clean-up*

Save on manpower & resources with one multi-purpose truck, the Vactor HXX 824. For a free demo, call Mike at: 435-901-1989.

©2015 Vactor Manufacturing. Vactor® and HXX® are registered trademarks of Federal Signal.



www.vactor.com

DITCH WITCH® CERTIFIED TRAINING

When it comes to productivity and profitability,
it's not just about having the right equipment.
It's about having the right training, too.

WE GET CREWS READY.



Ditch Witch®

WE'RE IN THIS TOGETHER