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Frank Ward
Operator
Capital City Services

THE RIGHT STUFF

Capital City Services grows into an
all-service shop for its customers

22

QUICK
TIPS

DIGGING
COMPONENTS
MAINTENANCE

36

PROFILE:

COLORADO CONTRACTOR
MEETS MARKETPLACE NEEDS

12

TECH PERSPECTIVE:

DRILLING THROUGH ROCK WITH
EASE WITH SPECIALIZED TOOLS

20

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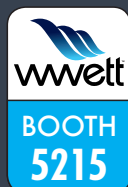
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Advertiser Index January 2018



Cat Pumps 2

CUES, Inc. 27



Ditch Witch back cover



Foremost 7

GapVax, Inc. 43



Gorman-Rupp Company 19



Kaiser Premier LLC 4

Milwaukee Rubber Products, Inc. 42

Oxford Plastics 21

R.A. Ross & Associates NE, Inc. ... 31

Rival Hydrovac Inc. 7

Schonstedt Instrument Company 37



Sonetics 3

Transway Systems Inc. 17



Ultra Shore 41

Vac-Con, Inc. 15

VACMASTERS 11



VARCO 5



Water Cannon, Inc. – MWBE 9

WWETT Show 29

Classifieds 42



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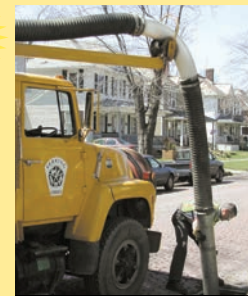
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Contents

JANUARY 2018

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FOCUS: Pumps and Blowers



COVER STORY

22 **PROFILE: VACUUM EXCAVATION** **The Right Stuff**

Virginia contractor moves beyond plumbing and drain cleaning, adding hydroexcavation to be a one-stop shop for his customers.

By Giles Lambertson

ON THE COVER:

Capital City Services hydroexcavator operator Frank Ward digs a hole using the company's Mud Dog 1600 hydrovac (Super Products) at a job site. Based in Mechanicsville, Virginia, the company services an area throughout the mid-Atlantic region and provides plumbing, drain cleaning, pipe and culvert cleaning, underground utility locating, and hydroexcavation services. (Photography by James Robinson)

FEATURES

12 **PROFILE: DIRECTIONAL DRILLING** **Formula for Success**

There's no slowing down for this Colorado contractor who keeps an eye on the marketplace while giving customers what they need.

By Ken Wysocky

32 **COMPANY DIRECTORY:** **Pumps**

36 **MACHINE SHOP:** **Essential Upkeep**

Contractors should follow regular maintenance guidelines to keep hydroexcavator digging components functioning in top form.

By MaryBeth Matzek

40 **PRODUCT FOCUS:** **Pumps and Blowers**

By Craig Mandli

COLUMNS

8 **BELOW THE SURFACE:** **A Bright Future**

Help your business prosper by working hard, finding that next great employee and discovering new tools.

By Cory Dellenbach, Editor

20 **TECH PERSPECTIVE:** **Drilling Through Rock**

Manufacturers give their insights into what type of drill bits contractors should be looking at for the tough digs.

By Giles Lambertson

28 **SMART BUSINESS:** **The Search Continues**

Various recruitment tools are available for employers to find workers, but finding the right one can be tough.

By Joan Koehne

30 **SAFETY FIRST:** **Seeing the Importance of** **Eye and Face Protection**

Operators see eye to eye on the need for safety glasses and face shields.

By Brenda Silva

34 **DOWN & DIRTY:** **Clearing the Line**

Operators overcome a myriad of challenges while removing 25 yards of concrete from sewer system.

By Jared Raney

IN EVERY ISSUE

10 **@digdifferent.com**

Visit daily for new and exclusive content.

31 **The Latest: News**

38 **The Latest: Products**

This Issue's Feature: Full vacuum via remote

By Craig Mandli

42 **Happenings**



NEXT ISSUE: February 2018

FOCUS: Conduit, Pipe Installation/Repair,
Fiber Blowing; WWETT Show issue

- Profile: J. Moraga Construction (Merced, California)
- Machine Shop: Trencher attachments (plow, saw, reel carriers)

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WHEN LOOKING TO MAKE YOUR COMPANY STRONGER, MORE OFTEN THAN NOT THAT INCLUDES **ADDING NEW SERVICES, TOOLS AND PEOPLE.**

A Bright Future

HELP YOUR BUSINESS PROSPER BY WORKING HARD, FINDING THAT NEXT GREAT EMPLOYEE AND DISCOVERING NEW TOOLS

BY CORY DELLENBACH

First of all, happy 2018! What does that mean for you? It means your company has made it through another year with great success. Business has grown, income has increased and another busy year awaits.

That's what everyone would like to be saying, right? And you can say that, too, with hard work and a smart business plan.

That's what both contractors featured in this issue have in common. It wasn't easy for either owner, but they made it through struggles to build thriving businesses that continue to see growth year after year.

Richard and Helena Chuapoco started Diversified Underground in 2000, with Richard doing the work on a Vermeer 7x11 directional drill. Today, the Colorado-based company employs 43 people and owns many pieces of equipment, including two larger directional drills. The company has increased its revenue every year since, and a new office and equipment storage facility are in the works.

Wayne Norman founded his company, Capital City Services, much the same way — as a small operation doing plumbing, drain cleaning, and heating and cooling. Over the next 40 years, though, Norman moved into hydroexcavation, thrust boring, pipe bursting and utility locating.

Norman didn't plan to expand into any of those areas: It happened because opportunities arose, and he took advantage. That is how a strong business is developed.

ADDING TOOLS AND PEOPLE

When looking to make your company stronger, more often than not that includes adding new services, tools and people.

Adding to the staff can be one of the most complicated tasks an owner or manager can have. The prospective employee has to be reliable, able to do the assigned work, and able to work well with others.

The Smart Business feature in this issue presents ways an owner or manager can look for the right employee. January is always a good month to look at your company and see if you need additional help.

You might need to hire if you are adding tools and services. Directional drillers, for example, might be adding different drill bits to attack multiple ground conditions and become more valuable to clients.

The Tech Perspective this month looks at drill bits to consider when encountering rock. Manufacturers are coming out with new technology that could make rock drilling easier and more cost-effective.

WHAT'S NEXT?

With 12 months left until 2019, what are your plans for this year? I'd like to hear how your company plans to grow and your thoughts on where the industry is going. Email me at editor@digdifferent.com or call 800-257-7222.

Enjoy this issue! ▼

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BRIGHT FUTURE AHEAD

Future Outlook Improving for Oil Industry Directional Drillers

Just a few years ago the oil industry took a downturn and the price of crude oil plummeted. Oil rigs shut down and pipeline construction slowed to a crawl or stopped. Now, however, HDD contractors and manufacturers are seeing an uptick in pipelines being built and more is expected in the coming years.

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OVERHEARD ONLINE

“EVERYBODY IS LOOKING AT NEW PROJECTS AND **IT’S EXCITING TO SEE THAT [DIRECTIONAL DRILLING]** IS REALLY COMING TO LIFE HERE AS OF LATE.”

An Uptick in the Directional Drilling Market
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TO FINANCE OR NOT TO FINANCE

Should you Finance Your Next Truck or Pay Cash?

Whether your current truck is on its last legs or you’re looking

to add to your fleet, the big question is should you buy it outright or finance it? That’s a tricky question to answer for any contractor.

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PLANNING FOR RETIREMENT

The Good and Bad to Offering Retirement Packages

There are a number of ways to make your employee benefits package look more attractive — and one of those is including retirement planning options. There are many advantages and disadvantages to doing that and you should research first.

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FORMULA FOR SUCCESS

**THERE'S NO SLOWING DOWN FOR THIS COLORADO
CONTRACTOR WHO KEEPS AN EYE ON THE MARKETPLACE
WHILE GIVING CUSTOMERS WHAT THEY NEED**

STORY: KEN WYSOCKY PHOTOS: CARL SCOFIELD

If ever a company was aptly named, it's Diversified Underground, based in Aurora, Colorado. Since its inception in 2000, the company has steadily expanded its core services by following a simple formula: Determine what services customers need, and invest in advanced, reliable equipment that can efficiently deliver those services.

The results speak for themselves. When owner Richard Chuapoco and his wife, Helena, started the company as a horizontal directional drilling outfit, he started out with one employee — himself — and one drilling machine, a Vermeer 7x11. Today, the company employs 43 people and owns two larger directional drills, one tandem-axle vacuum truck, eight small trailer-mounted hydroexcavation/vacuum units, and a wide array of pipeline inspection camera systems, says Mark Allen, the company's general manager.

Moreover, the company has increased its revenue every year since 2001, including an average of 22 percent revenue growth since 2013. And the company

recently purchased 40 acres of property, located east of Denver in Watkins, where it plans to build an office and equipment storage facility. Before that, management ran the company from construction trailers.

How Diversified Underground got from where it started to where it is today illustrates the value of not only listening to customers, but also keeping an eye on the overall marketplace — being alert to other business opportunities. That's no small task in an industry that demands speed and an intense focus on a daily basis. In short, when drinking water from a fire hose, it's hard to come up for air and look at the big picture. But it's worth the effort, Allen says.

"Our largest advantage is that our clients know they can call us and we're a one-stop shop," Allen explains, pointing to the company's horizontal drilling, hydro-excavating and utility-locating capabilities. "For example, if an engineering firm needs a gas line installed for an apartment complex, we can locate and identify all the utilities and mark them. Then after the firm

does the surveying, we can pothole and find the depths of all the lines we located. After that, we can do the drilling, if needed. We don't do just one piece of the pie — we can do it all."

Another key to the company's growth: Hiring more estimators, which also requires management to delegate things they used to handle. In 2012, for instance, the company hired two more estimators, bringing the total to three. That contributed greatly to the company's recent growth spurt. "Yes, it's hard to give up some of those responsibilities," Allen concedes. "But it's the natural way for a business to grow. If you try to do everything yourself, you can only do so much before you get spread too thin."

STARTED OUT SMALL

Allen and Chuapoco met while they both worked for a utility locating outfit in Denver during the mid-1990s. Then Allen moved to Australia to work on a large cable-laying project, during which time Chuapoco quit his job and struck out on his own, focusing on directional drilling. When Allen returned from Australia in 2002, the two joined forces and agreed to explore expanding into utility line locating.

"We already had a lot of contacts in the industry — knew general contractors and people who needed private utilities located," Allen says. "We grew the business through a lot of beating the bushes, making phone calls and word-of-mouth referrals."

The company's first big break occurred when it landed a contract to locate utilities at Denver International Airport — a service it still provides today. Literally a small city, the airport is constantly expanding and upgrading its facilities, which creates strong demand for locating services.

"WE DO POTHOLING BASED ON MARKS DONE BY OTHER COMPANIES, AND THEY'RE NOT AS ACCURATE. THAT'S BECAUSE THEY DON'T HAVE A HORSE IN THE RACE."

Mark Allen



Diversified Underground Aurora, Colorado

FOUNDED: 2000

OWNER: Richard and Helena Chuapoco

EMPLOYEES: 43

SPECIALTIES: Directional drilling, vacuum excavation, and utility locating

SERVICE AREA: Central Colorado

WEBSITE: www.diversifiedunderground.com

Diversified Underground operators Rudy Padilla (left) and Manuel Ortiz use a Vermeer vacuum excavator to pothole for utilities prior to using a directional drill for installation of an underground electrical line.

Multipurpose machine is a good fit for multiservice company

It seems only fitting that Diversified Underground has invested in eight SpoilVac hydroexcavators made by VACMASTERS. Why? The machines are a perfect complement to the company's multifaceted service offerings, capable of everything from exposing utility lines and slot trenching to cleaning culverts and catch basins and performing caisson excavations.

In addition, the trailer-mounted SpoilVacs are more maneuverable than larger hydroexcavating trucks, which has opened a new niche market for the Aurora, Colorado-based outfit: excavating and vacuuming in difficult-to-access locations, says Mark Allen, the company's general manager.

"The medium size of these units allow us to offer customers a good competitive price and grab a piece of the market that bigger trucks can't enter," Allen says. "A lot of our competitors run big vacuum trucks and charge a lot more to be on a job site ... but we can outbid those bigger trucks. So in many cases, we can locate utilities faster and more economically with the SpoilVacs."

Each unit measures roughly 19 feet long and 8 feet high and features an 800-gallon, carbon-steel debris tank that tilts up to 45 degrees for gravity-based rear drainage; it also has a powerful positive displacement blower (780 cfm), 36 hp Kubota diesel engine, high-pressure waterjetting system (2,250 psi at 3 gpm), and 800-gallon water tank.

Allen also lauds the units' reliability. One of the units is more than

10 years old but "still runs like a champ," Allen says. On-the-job breakdowns are a profit killer, he says, noting that when machines go down, the company loses time while paying employees' wages, even though they're not able to work. In addition, Diversified Underground is usually the second contractor on a job site after pipeline locators. Tasked with finding the depth at which pipelines are located, the company must finish its work before the next contractor — usually excavation companies — can get in.

As such, no one wants to be the contractor that has to stop working, creating a negative domino effect that puts projects behind schedule. "Getting in and out quickly is important," Allen says. "We always seem to be under the gun."

The SpoilVacs — which weigh about 6,000 pounds — are towed by four-wheel-drive Ford F-450s or International 5500s. That allows Underground Diversified to also carry "squeegee" (gravel backfill material) to job sites. That provides another cost advantage because competitors with large vacuum trucks have to bring a second truck to a job site to accomplish the same task, Allen says.

That's not to say that Diversified Underground doesn't ever think about investing in a larger hydroexcavating machine. "But every time we look at the price tag of a big truck, we say, 'No, let's just get another SpoilVac,'" Allen says. "They're very reliable workhorses. We know we can take them to a job site and get work done in a timely manner with minimal breakdowns. You just can't ask for much more than that."

Around that time, it occurred to Chuapoco and Allen that the company could grow by seeking dedicated hydroexcavating contracts from construction companies. "We already were doing potholing for our own projects," he explains. "But we started thinking that if things were kind of slow in between drilling jobs, it just made sense to go out and make something happen and grow it."

CONTINUED EXPANSION

That led to even further expansion from just construction potholing to engineering and design work. So instead of just getting hired to locate and expose utility lines, Diversified Underground got into the design and engineering work that precedes those services. Essentially, that meant collecting all the maps and data from existing tier-one and tier-two utility owners in the area where a project is occurring, marking all those utilities, exposing them and recording all the horizontal and vertical data. "Before we were just potholing wherever they told us to," Allen says, explaining the difference. "But after that, we started doing everything on the front end, too."

That service shift occurred around 2005 and 2006. "It opened up opportunities to work for more than just (general) contractors around town," Allen points out. "It's also more profitable than chasing small contracts for private (utility) locates." Another advantage: The company didn't need to make considerably more investments in equipment. "We could basically use the same equipment but just sell those services to a broader target audience."

Today, the company owns two directional drilling machines, a Vermeer 20x22 and Vermeer 16x20, and eight trailer-mounted SpoilVac hydroexcavators, manufactured by VACMASTERS. Each SpoilVac features an 800-gallon, carbon-steel debris tank that tilts up to 45 degrees for gravity-fed drainage; it has a powerful positive displacement blower (780 cfm), 36 hp Kubota diesel engine, high-pressure waterjetting system (2,250 psi at 3 gpm), and 800-gallon water tank.

Diversified Underground also owns a tandem-axle Vactor vacuum truck built on a 2015 Western Star chassis. Features include a 13-cubic-yard debris

(continued)



Diversified Underground operators Michael Griego (left) and Scott Canadas use a VACMASTERS SpoilVac unit to locate utilities in downtown Denver. The company has eight of the SpoilVac units.



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The staff of Diversified Underground at their facility in Aurora, Colorado.

tank, 1,600-gallon water tank, Cat pump (20 gpm/2,500 psi), 27-foot extendable boom, and Robuschi USA 125 blower. The company also relies on locating equipment made by Vivax-Metrotech and Radiodetection as well as RIDGID

SeeSnake self-leveling pipeline inspection camera systems, Allen says.

"IF YOU TRY TO DO EVERYTHING YOURSELF, YOU CAN ONLY DO SO MUCH BEFORE YOU GET SPREAD TOO THIN."

Mark Allen

Ultimately, each of the company's three business sectors — each of which generate about a third of the company's revenue — feed off the other. For example, locating work leads to hydroexcavating (potholing) work. Better yet, Allen says his employees' locating work tends to be more accurate when they know their colleagues are following behind to do the potholing. "We do potholing based on marks done by other companies, and they're not as accurate," he explains. "That's because they don't have a horse in the race."

Accuracy is a big deal because if a utility mark is off by just, say, 6 inches, it can result in wasted time doing unnecessary potholing while technicians probe for an underground line that's not quite where the marks indicated it's located. "It's not like they're being lax or malicious," Allen says. "They're just handling large workloads. And even though their marks are accurate, according to standards dictated by law, being just a few inches off becomes extremely time-consuming."

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Directional drill operator Mike Canandy prepares to start horizontal directional drilling with a Vermeer D20x22 that's equipped with a DigiTrak F5 (Digital Control) locating package.

(continued)



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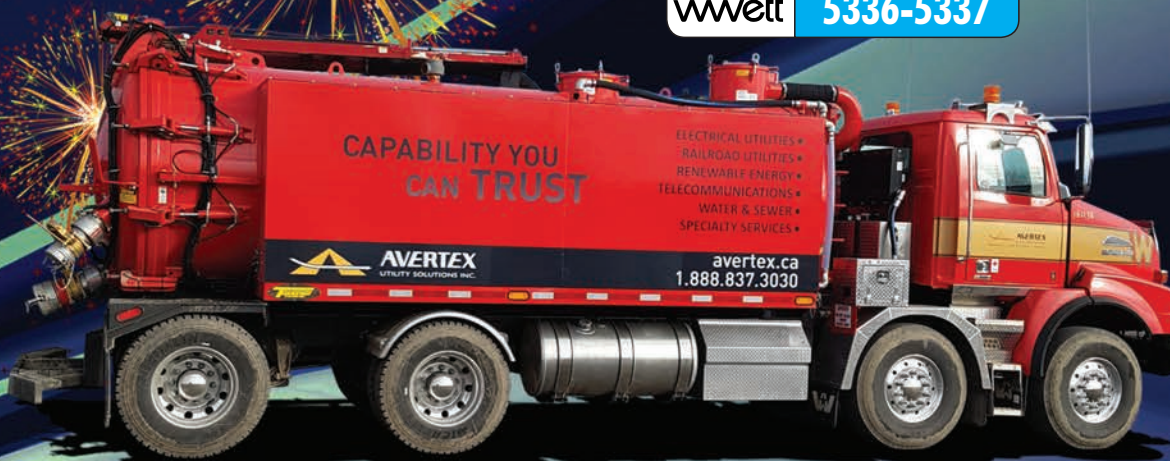
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Diversified Underground locator Branden Witt uses a DigiTrak F5 (Digital Control) to track the location of the drill bit while drill operator Mike Canandy uses a Vermeer D20x22 horizontal directional drill to install electrical lines underground at a job site near Aurora, Colorado.

"WE HAD TO BORE LINE THROUGH THE ZOO TO THE HIPPO AND GIRAFFE ENCLOSURES. IT WAS INTERESTING AND CHALLENGING."

Mark Allen

STILL DOING DRILLING

Even though the company has grown significantly since Chuapoco started out and expanded its services, it still does a considerable amount of directional drilling. Most of the work centers on smaller projects for electrical contractors, such as drilling bores for running cables to street and parking-lot lights, or for irrigation systems at golf courses and for telephone lines, Allen says.

"If the pipe is 12 inches in diameter or smaller, we'll put it in the ground," he says. "Locating and hydroexcavating go hand in hand, but drilling plays in the ballpark with them only every so often. It's more of a separate entity. We don't bid on big projects because we just can't compete with companies that own 10 or 12 drills. They can do thousands of feet a day, while we can only do hundreds. But we've developed a good niche market."

The company doesn't shy away from more challenging jobs, either. That includes some big projects, such as the installation of four 4-inch-diameter, 300-foot-long conduits for electrical lines under a runway at Buckley Air Force Base in Aurora. Or drilling bores for more than 3,000 feet of new waterlines at the Denver Zoo. "We were there on and off for almost three months," Allen says. "We had to bore line through the zoo to the hippo and giraffe enclosures. It was interesting and challenging — a lot of after-hours work."

Looking ahead, Allen sees more growth potential because Denver is one of the fastest-growing cities in the country in terms of commercial and residential development. "The housing market is booming and Denver is just blowing up, so things look good for our industry," he says. "In the long run, I'd like to add two to four more hydro-vacs and four to six more locators. I think there's enough of a market to support that."

Moreover, after the company moves into its new facilities, it'll have enough space to hire more office staff and sales managers, which will provide the resources to go after more contracts. As for adding more services, Allen says the company has the tools and equipment — pipeline inspection cameras and hydroexcavation units — as well as the know-how to get into pipeline inspections and jetting drainlines. "It's certainly not out of the question that we could utilize the equipment we have on a subcontracting basis," he says. And make the name Diversified Underground even more fitting. ▼



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Drilling Through Rock

MANUFACTURERS GIVE THEIR INSIGHTS INTO WHAT TYPE OF DRILL BITS CONTRACTORS SHOULD BE LOOKING AT FOR THE TOUGH DIGS

BY GILES LAMBERTSON

Rock is not so tough after all when matched up with some of today's drill bits. The bits are taking horizontal directional drilling probes to places previously untried and at gratifying speeds.

A tricone is probably the most universal bit employed to cut through rock. The design of the bit dates to Howard Hughes' oilfield tool company and features three angling discs with teeth that interact to crumble rock. The toothy discs revolve on bearings and range in size from 3 inches to 3 feet.

"A driller can always use a tricone," says Steve Quisenberry, sales manager at Drillhead. He contributed to the design of the company's latest tricone model. As of four years ago, the company produces its own products but has always done a lot of private-label manufacturing. "A tricone is field-proven and can take a beating."

Jeff Davis, product manager of HDD tooling at Ditch Witch, also calls a rotary disc bit an industry staple — but it may not be for long. "The rotary disc still is very, very important, but one thing that has come out of late is the PDC bit. It came from oilfield technology and has crossed over into HDD drilling. We are seeing multiple, multiple users being very successful using PDCs."

A PDC, or polycrystalline diamond compact, bit is a more conventional working end on a drill string. It features three or more raised cutting teeth with diamond-hard buttons that maximize rates of penetration and drilling intervals. It indeed is growing in popularity among drillers. "PDC bits," echoes Quisenberry, "are hot on the tail of tricones."

Another traditional choice is the plate bit, a flat piece of tempered steel cut in different shapes and edged in a variety of ways. "It is the most universal for most rock," says Jason Zylstra, Vermeer product manager. "There are hundreds of plate designs, outfitted in a number of ways, with hard-facing or carbide inserts or rotary teeth. People have come up with a lot of ideas on how to alter the plate." An imaginative example is Drillhead's new Rok-Klaw Xtreme,



Vermeer introduced the Lance Pro bit at the 2017 CONEXPO-CON/AGG, shown here on the D40x55 directional drill. The bit was first designed for the company's plate family of bits, but it was reinvented as a scoop bit for cobbled rock.

which looks like three sharp fingers emerging from a furry claw to scratch at medium-hard rock.

LOOKING AT THE ROCK

Different types of rock call for different bits, of course. "Are you going to find soft or medium-soft, medium-hard or semihard, or hard or very hard rock?" Davis asks. "The

bit you choose is going to be about hardness — and solidness. Is the rock a solid formation or a layered formation or cobblestone? You choose your bits accordingly." One example: Vermeer introduced at the 2017 CONEXPO-CON/AGG its Lance Pro bit, which was first designed for the company's plate family of bits. It was reinvented as a scoop bit for cobbled rock.

But even the best bits won't get a driller where he wants to go if he doesn't use them well. Manufacturers have seen plenty of poor drilling techniques. They offer tips.

"Not selecting the proper bit is an ineffective drilling habit. That causes a lot of problems and is very expensive for the driller," Davis says. "And drill-

"THE BIT YOU CHOOSE IS GOING TO BE ABOUT HARDNESS — AND SOLIDNESS. IS THE ROCK A SOLID FORMATION OR A LAYERED FORMATION OR COBBLESTONE? YOU CHOOSE YOUR BITS ACCORDINGLY."

Jeff Davis

ing fluids — it's very, very important that a driller understand the difference in drilling fluids and use them properly."

Quisenberry suggests drillers "choose a bit for a little harder rock than you actually expect to drill in. People select a bit for average hardness, but when they meet something harder, it's difficult to keep the hole going." He also frequently sees bits wearing out prematurely because drillers are spinning the bit too fast, exhausting bearings without speeding up penetration. "You should make a hole by spinning the bit at 40 to 65 rpm and applying 2,000 pounds of thrust. You'll see a dramatic increase in production."

Zylstra's tip is one word: patience. "That's the best overall advice for rock drilling. Too many drillers get frustrated and make aggressive moves that sometimes are more than what a machine is designed to do. Usually there is damage to your pilot tooling."

CONSTANTLY INNOVATING

Rock drill bit manufacturers press ahead with new bits: some designs springing from their own laboratories, and others resulting from customer feedback after in-the-field experience. "We listen to our customers," Davis says. "When they tell us what might work best in the industry where they are, we design a product for them."

The bit makers believe there are engineered solutions still awaiting discovery. "We are constantly inno-

vating," Zylstra says. "We are focused on incorporating new cutting tools and cutting parts, using different materials, different placement of carbide and teeth, and things like that. We constantly are learning."

Ditch Witch was a pioneer in all-terrain drilling and bit design. Davis acknowledges continued progress is key to competition. "We are the leaders in the field. We are still going at it pretty darned hard in our design of new products to stay out in front of the gang." Its latest bit is the RockMaster back-reamer with patented edge protection and wear resistance. ▼



Drillhead's Qui-Kone XL TCI is used in 40,000 psi rock on the north slope of the Brooks Range in Alaska.

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THE RIGHT STUFF

VIRGINIA CONTRACTOR MOVES BEYOND PLUMBING AND DRAIN CLEANING, ADDING HYDROEXCAVATION TO BE A ONE-STOP SHOP FOR HIS CUSTOMERS


STORY: GILES LAMBERTSON PHOTOS: JAMES ROBINSON

A small business doesn't successfully grow its services for almost four decades without doing something right. Next year, Wayne Norman will celebrate 40 years for his Virginia company — Capital City Services. How has he succeeded? By doing things right.

"He is a no-nonsense, honest individual, whose middle name is integrity," says Thomas Arezzi, Capital City Services' director of business development. One might discount such praise from an employee. However, Arezzi got to know Norman when Arezzi was a property management company manager in Richmond, Virginia, and overseeing 10 properties. Norman and his company were his go-to resource in utility emergencies. He says Norman never misled him then about whether he could do a job and treats every customer the same way today. "So I have a unique perspective. I worked with him before I worked for him."

Norman was born in eastern North Carolina before gravitating north with his family to Shanghai in eastern Virginia. He ended up in the Richmond area where he eventually launched his plumbing and drain-cleaning business before adding heating and air-conditioning services and then storm sewer and sewer services. This was the beginning of an open-ended business plan. Here's the plan: The company takes on whatever kind of work Norman decides to pursue.

In other words, Norman not only wants things done right, he's very open to trying new things. "These jobs were all opportunities and challenges that came up, and nobody else was doing them," he says, simply. So he undertook them. Successfully. His willingness to consider new business challenges subsequently led Capital City Services to offer culvert and pipe cleaning, underground utility locating, and hydroexcavation.



"I'VE ALWAYS WANTED TO BE
ABLE TO SOLVE PROBLEMS.
**THAT'S THE ONLY STAPLE IN
ALL THIS: WE SOLVE PROBLEMS.**
THROUGHOUT THE YEARS, WE'VE
BUILT A REPUTATION ON THAT."

Wayne Norman

Capital City Services operator Frank Ward uses a Mud Dog 1600 hydroexcavator (Super Products) to dig holes for bollards being installed around a state building in Richmond, Virginia. He is assisted by laborer Jacinto Tzoc.



Jacinto Tzoc (left) and Frank Ward pack up the hydroexcavator after completing a job in Richmond.

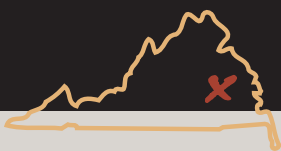
Capital City Services Mechanicsville, Virginia

OWNER: Wayne Norman

SERVICES: Hydroexcavation, TV pipe inspection, pipe relining, pipe repair and installation, pipe and sewer cleaning, culvert cleaning, thrust boring, manhole rehabilitation, lift station repair, pipe fusion, utility locating

SERVICE AREA: Throughout the mid-Atlantic region

WEBSITE: www.capitalcityservices.com



A GROWING MARKET

Norman's first stab at hydroexcavation was 20 years ago when he contracted to uncover a line on the grounds of Richmond's 13th Judicial Circuit Court. The digging needed to be accomplished neatly so Norman employed an industrial vacuum unit and water. Being Norman, he got the job done, of course, but soon switched to combination sewer cleaning rigs for his pressure digging. Two years ago, he upgraded to a Mud Dog 1600 hydroexcavator (Super Products), a 16-cubic-yard unit on a Peterbilt chassis with a 2,000-gallon capacity water tank.

"Hydroexcavation is a growing market for us," Norman says. "The more utilities you put in the ground, the more you need a hydroexcavator." Norman himself is apt to be where the rig is excavating. He's not an office executive. That's him in whiskers and a red hard hat on the Capital City Services website. "I'm in the mud," he admits. "The joke is, once you step in it, you can't get the smell off you. I do enjoy the work."

Hydroexcavation contracts account for 25 percent of the company's projects, according to Norman, with thrust boring and pipe bursting pulling in another 15 to 20 percent of the work.



Capital City Services crew members (from left) Mario Flores, Pedro Xum, Reveriano Allendee and Jose Avila install bollards while company owner Wayne Norman holds the bollard in place with a compact excavator. David Conken sits nearby with a load of rock fill while Javier Sileo begins manual backfill.

Three years ago, he purchased a Pow-r Mole Trenchless Solutions PD6, which can install a pipe either by directional thrust boring or pipe bursting, with its plunger pushing ahead underground at a rate of up to 7 feet a minute. Norman uses it for both bursting and thrusting tasks.

He described a recent pipe-bursting job that was performed in a setting of close tolerances: "It was 600 feet of 8-inch terra-cotta pipe and another 500 feet of 4-inch PVC and clay pipe. Some of the pipe ran under the plant. Seven utility lines crossed the pipe we had to burst and replace. Seven. We had a 1/4 inch of clearance between those pipes and the utility lines. One 1/4 inch."

A little bit of this and a little bit of that

Capital City Services offers so many niche services — from environmental remediation to fixing leaking water pipes — that company founder Wayne Norman finds it difficult to identify the most essential piece of equipment in his yard. When asked to do so, he half-seriously responds, “My telephone.”

His difficulty to pin down a key machine lies in the regular usage of heavy machinery across projects. An example is how he frequently resorts to using two key machines to complete tasks: his hydroexcavator and pipe-bursting unit. “I get a pipe-bursting job, and I need a hydroexcavator to expose a pipe or set the pipe burster. I do a hydroexcavation job, and I see a pipe that I need to burst. Not long ago, I had a pretty extensive pipe-bursting job, and I had to hydroexcavate a pit every time I placed the pipe-bursting unit. Some holes were 15 to 20 feet long, 8 feet wide, and 6 to 8 feet deep.”

As a consequence, Norman not only finds it difficult to identify a most used machine, he can’t pin down what type of projects dominate his work schedule. Yes, a quarter of his work requires a hydroexcavator but often in concert with other machinery. “It’s such a mix. We do a lot of this, and we do a lot of that. Recently, we’ve been really lucky to get a job with the electric power company here in Virginia. We’ve been involved with that company a lot. We started off hydroexcavating; then, we did some sewer cleaning for them; then, we did some foam injection on some joints.

“And that’s the way it is. We are all over the place. As soon as I start thinking we are doing a lot of this kind of work, we start doing a lot of that kind of work.”

Wayne Norman, owner of Capital City Services, started the company in 1978 providing plumbing, drain cleaning, and heating and cooling services. Today, the company works in all areas and phases of general construction, utility work, mechanical and infrastructure, and water and wastewater industries.



He calls the precision project a “very good job with a lot of challenges.” Asked if the dicey conditions of the project might also have been described as a headache, Norman dismisses the thought. “Some people call them opportunities.” He recalls another pipe-bursting project at Virginia’s Colonial Williamsburg when he replaced a 4-inch PVC waterline buried 30 inches deep. It required following the diagonal plane of the pipe next to a retaining wall. He used high-pressure air to excavate a working area for his Pow-r Mole Trenchless Solutions PD6. Again, the overall challenge was welcomed by Norman.

Capital City Services eventually expanded its array of services further to include water treatment plant maintenance and repair, camera inspection of pipes, and turnkey project management of pipe installations. That’s a partial listing. The company also fixes leaky pipes, does point repairs on stainless steel pipes, injects foam to seal bad joints, performs historic restoration work, repairs lift stations, dredges ditches, and — come winter — is on call to remove snow from parking lots.

“I didn’t really plan to expand into any of those areas,” Norman says. They were just opportunities that arose and he took advantage of them. “I’ve always wanted to be able to solve problems. That’s the only staple in all this: We solve problems. Throughout the years, we’ve built a reputation on that. Our company slogan is, ‘Solutions only experience can provide.’ That’s how we work. If we can’t do it right, we aren’t going to do it.”

GETTING EXPERIENCE AND EQUIPMENT

Advertising a company’s experience is only possible after acquiring experience, of course, which Norman did over 39 years by mastering an array of utility-mechanical-industrial tasks. He was asked how he characterizes his company now that it certainly is not the plumbing shop it started out as. He pondered the question. “I’m licensed as a general contractor, but I don’t know

“HYDROEXCAVATION IS A GROWING MARKET FOR US. THE MORE UTILITIES YOU PUT IN THE GROUND, THE MORE YOU NEED A HYDROEXCAVATOR.”

Wayne Norman

how to answer that.” He does acknowledge that being a full-service, many-services company is a “good hedge” against downturns in any one segment of company business. “Doing so many specialty services has helped us a lot.”

The company’s diverse skill set has grown Capital City Services from one employee (Norman) and a stepvan to a dozen employees, an annual business volume of \$2-3 million, and a 4-acre equipment yard containing more than 20 pieces of heavy machinery. The variety of equipment attests to the range of projects Norman is willing to undertake. Besides the aforementioned Mud Dog and Pow-r Mole Trenchless Solutions machines, parked in the yard are a pair of Camel sewer cleaning combination trucks (Super Products), two Vactor

2100 sewer cleaners, a fleet of street flush and pumper trucks, backhoes, dump trucks, several trailered jet sewer cleaning units — and the only Microtraxx radio-controlled culvert cleaner operated by a private contractor in Virginia.

The Microtraxx SL 436 is a 10-foot-long, remote-controlled machine manufactured by Rohmac. It has a 1/3-cubic-yard bucket that can lift 1,500 pounds and will pivot 360 degrees on its track undercarriage. It can operate in 4-foot box culverts or 5-foot round culverts. The fumes emitted by its 30 hp diesel engine are not a problem for an operator in a confined space because, of course, the operator is standing outside in the open air.

Norman began employing a Microtraxx in 2005 for a work situation in a culvert under Interstate 64 near Colonial Williamsburg. Ponded water had breached a dam, and the ensuing flooding had filled the double-barreled culvert under the trafficway. Each of the culverts was 5 feet square and ran for 400 feet.

Norman was working at the site with a contractor who experienced ventilation problems — carbon dioxide buildup threatened his workers. When a worker crushed his hand during an early phase of the work, the already frustrated contractor pulled out — and Norman pulled in with the radio-controlled scoop unit. “It took us eight days to clean that culvert with the Microtraxx,” he recalls.

More recently, when a 2016 storm produced major flooding in western Virginia, Norman’s remote-controlled unit was contracted to clean out a debris-filled 6-by-6-foot culvert under an interstate. After the governor declared a state of emergency, Capital City Services stayed in the storm-drenched area for several months, working in moving creek water to clear debris and silt from other culverts.

“WHAT DETERMINES GROWTH IS WHO YOU CAN HIRE TO WORK WITH YOU. YOU NEED TO HAVE COMPETENT PEOPLE, AND FINDING GOOD EMPLOYEES IS REALLY DIFFICULT.”

Wayne Norman

FINDING OTHER OPPORTUNITIES

Capital City Services also takes on what it describes as “specialty repairs.” For example, the placement of a cap on the iconic milk bottle-shaped corner of the Richmond Dairy building. The cap, or roof, of the unique structure was leaking, so Norman’s crew fabricated a lid out of steel and roofing material, hoisted it up, and welded it in place. Norman sees such one-of-a-kind projects as just another “opportunity” for his company. If there is a downside to the company working across so many kinds of specialty tasks, it is that Capital City Services undertakes fewer stand-alone turnkey project management jobs these days. “Specialty stuff keeps us too busy for that,” Norman says.

The 72-year-old company founder is not slowing down. When he was interviewed, he had just hired two people and was looking for more. Unfortunately, he is encountering the same workforce problem experienced by other U.S. contractors. “I would like to have twice the crew that I have now or three times the crew. But what determines growth is who you can hire to work with you. You need to have competent people, and finding good employees is really difficult. It’s easier to buy equipment than it is to get capable people to operate it.”

After all these years, Norman says he is not losing his desire to stay on the “cutting edge” of technology to find innovative solutions for his residential, commercial and governmental customers. Norman’s latest interest is the use of drones. He believes he sees an application for his company. “We recently had a job at a power plant trying to find a drainline that contained steam and hot water,” he says. “We used our locator and eventually found it, but if we had a drone with an infrared camera, we could have found it in minutes.” ▼

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The Capital City Services crew includes, from left, laborers David Conken, Javier Sileo and Mario Flores; operator Frank Ward; owner Wayne Norman; and laborers Jose Avila, Pedro Xum, Reveriano Allendee and Jacinto Tzoc.



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The Search Continues

VARIOUS RECRUITMENT TOOLS ARE AVAILABLE FOR EMPLOYERS TO FIND WORKERS, BUT FINDING THE RIGHT ONE CAN BE TOUGH

BY JOAN KOEHNE

Let's face it: In today's tight job market, it's hard to find the technicians, drivers, and general laborers who are the backbone of the digging industry. Business owners like Steve Grueber of Odyssey Environmental Services use a variety of employee recruitment tools to find the right people for the job. Grueber and his staff know they will invest a good deal of time and money into the training of a new worker, so they want to hire candidates who will stay on the job long-term.

John Kelly, owner of Kelly Business Advisors, recommends using a multifaceted recruitment approach that includes social media postings, online job boards, career fairs, and employee incentives.

EMPLOYMENT RESOURCES

Odyssey Environmental Services, an environmental remediation company, typically relies on employment agencies to find candidates and run background checks and drug screenings. Odyssey Environmental Services also works with nonprofit veteran organizations to find workers, a partnership that has been especially beneficial.

"They're dedicated people, and the government has already put in a million dollars of training for our veterans," Grueber says. "I've been real lucky with them."

The Youngstown, Ohio-based company covers a three-state area and hires 10 to 15 employees a quarter. Odyssey Environmental Services finds some candidates through Craigslist, but in Grueber's experience, temp agencies haven't worked because the candidates haven't been screened properly.

"Newspapers are pretty much useless," he adds.

OFFERING INCENTIVES

Word-of-mouth can be a powerful way to attract employees, and Odyssey Environmental Services takes advantage of this approach by offering incentives to current employees. Employees can earn a \$25 bonus if they bring in a good candidate who stays on the job at least 3 months.

Odyssey Environmental Services wants its recruits to stick around, and one way to ensure this is to pay them well. "The pay scale goes up quite a bit once they receive all their training, stay with us, and are dependable," Grueber says.

A steady paycheck is not the only incentive for today's job seekers, Kelly says, a serial entrepreneur and Wisconsin-based business consultant since 2004.

WHAT TODAY'S EMPLOYEES WANT

"Employers need to understand that the younger generations don't think the same way they do," Kelly says, referring to the young adults in their 20s and 30s who make up the millennial generation.

"What millennials specifically want is to work for a company they believe in, and they want to do work that's meaningful to them," Kelly says. Plus, they're looking for a work-life balance that gives them time for family, friends and hobbies.

"To target millennials, you need to communicate why you do what you do and educate the workforce to have them align with you. Social media helps you relate to them," Kelly says.

ONLINE JOB TOOLS

He recommends using an online employment tool like www.indeed.com, which allows you to easily manage job applications. Craigslist is another good resource for employers. When posting a job to Craigslist, employers should spend time developing an effective headline, he says. Face-to-face interaction can also boost your recruitment results, Kelly says.

"Look around your region for a technical school that offers training in the trades you need, and attend their job fairs to recruit students. Be involved in trade associations in order to grow your business and potentially find new key employees," he says.

Employers should look for incentives that will give them an edge. "Employers for seasonal work may want to consider giving bonuses at the end of the season to reward the employees for remaining with the company," Kelly says.

LABOR SHORTAGE

Today's low unemployment rates create a tight job market, which makes it more difficult for employers to fill vacancies. Unemployment in the U.S. has

been at 5 percent or below in 2016 and 2017, according to the U.S. Bureau of Labor Statistics. Certain sectors of the digging industry are especially susceptible to turnover because of the labor shortage.

"CDL drivers are in high demand, so they can leave me tomorrow and find a job that same day," Grueber says. One way to keep them committed is a quarterly bonus if they have no recorded absences.

A HARD DAY'S WORK

But today's excavating company managers are dealing with more than just a labor shortage. They say they're

finding more and more often that individuals aren't willing to put in a hard day's work. This phenomenon has prompted Grueber to become remarkably direct with the job candidates he interviews.

"I explain to my people, 'This is the dirtiest, nastiest work that you're ever going to apply for, so if you're afraid of work, we don't need to go any further,'" he says.

Odyssey Environmental Services looks for candidates who have a valid driver's license and successfully pass a drug test — two conditions that Grueber says eliminate plenty of today's applicants. He has no generalized description for what makes a candidate right for the job, except for a willingness to show up every day and work hard. ▼

"I EXPLAIN TO MY PEOPLE, 'THIS IS THE DIRTIEST, NASTIEST WORK THAT YOU'RE EVER GOING TO APPLY FOR, SO IF YOU'RE AFRAID OF WORK, WE DON'T NEED TO GO ANY FURTHER.'"

Steve Grueber



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Seeing the Importance of Eye and Face Protection

OPERATORS SEE EYE TO EYE ON THE NEED FOR SAFETY GLASSES AND FACE SHIELDS

BY BRENDA SILVA

As hydroexcavator operator Joe Harp walked up to his co-worker to aid him on a job site, he suddenly felt like he had been shot with a BB gun.

"I turned my face away from the wand and immediately shut the water off," Harp says. He was running the wireless remote to the unit while his co-worker was running the dig wand. Harp knew he had just been hit by a rock. "I was thinking that it just went under my shield, but after looking, I noticed a hole that was in my face shield that was in the same area where I was hit on my chin."

Harp wasn't seriously injured — no blood or broken teeth — but he knew that it could've been different if he had put down his face shield before approaching his co-worker.

"If it wasn't for my face shield slowing that down or possibly changing the trajectory of the flying debris, I would have had a long explanation and even longer paperwork on why I wasn't using my PPE," Harp says.

STANDARDS FOR SAFETY

Just as important as the heavy equipment to any project is the safety protection gear for any operator who will use the equipment. To guard against the impact of flying debris, safety glasses and face protection are tested to the ANSI Z87.1-2015 standard, which is designed to make the difference between a day that ends successfully and a day that ends in the hospital.

"Spectacles (glasses) are tested for high impact by using a 6.35-mm steel ball traveling at 150 ft/s, and face shields are also tested for high impact at 300 ft/s," says Michael Myrick, marketing product trainer and analyst at MCR Safety, located in Collierville, Tennessee. "According to the standard, there is no testing method for PSI."

He also points out, "Generally, high-impact glasses — in conjunction with a high-impact face shield — would work best for an application like excavation. The face shield would act as secondary protection for the eyes, and the glasses would act as the primary protection. As such, the coverage of the glasses should completely encapsulate the orbital area around the eye. In the event of hydroexcavation, the use of an indirect vented goggle that is tested to the ANSI Z87.1-2015 standard for water droplets and rated a D3 would work best."

ALREADY WEARING GLASSES

Sometimes, though, prescription glasses are already being worn by the operator.

"If the person wears prescription glasses, it's recommended they use a prescription safety glasses company to either supply them with prescription glasses or goggle inserts," Myrick says. "Also, the use of an over-the-glasses, high-impact-rated safety glass could be used over standard prescription glasses. In either



Joe Harp's fractured face shield after he was hit by flying debris on a job site. The shield prevented any major injuries.

PHOTO COURTESY OF JOE HARP

"IF IT WASN'T FOR MY FACE SHIELD SLOWING THAT DOWN OR POSSIBLY CHANGING THE TRAJECTORY OF THE FLYING DEBRIS, I WOULD HAVE HAD A LONG EXPLANATION AND EVEN LONGER PAPERWORK ON WHY I WASN'T USING MY PPE."

Joe Harp

Find out the steps to selecting the right eye protection at digdifferent.com

case, they need to use something along with a high-impact-rated face shield."

Echoing Myrick's comments is Tony Spearing, vice president at Brass Knuckle Protection, located in Alpharetta, Georgia. He suggests existing options and alternatives for eyeglass wearers.

"Some goggle styles allow prescription glasses, or prescription (Rx) inserts, to go underneath (inside) them," Spearing says. "Also, some safety eyewear styles also come with Rx inserts, while others provide diopter options, which are already molded into the lens. Often, full prescription safety glasses are available either through the employee's optician or a vision program offered by the employer in conjunction with a manufacturer."

PROTECTION PROVES PRUDENT

The importance of safety glasses and face shields can never be underestimated — especially in extreme environments that have rigorous project demands. At those times, safety gear items can become one of the most important factors to project completion and cost-effectiveness.

"In extreme environments like vacuum excavation, one would need to use glasses with superior anti-scratch and anti-fog properties," Myrick says. "When selecting the right glasses for the wearer, you should answer the following concerns: comfort, coverage and protection level. Over my 22 years in the industry, I found that if the glasses are not comfortable, the employee simply will not wear them."

Harp encourages his fellow hydroexcavator operators to make sure they are wearing the proper PPEs, and he has even gone on social media to tell the story of his close call.

"To sum everything up, PPE in the world of hydrovacating is an essential part of what we do," Harp says. "Although it can be a nuisance and seem like it's slowing you down, it does do its job — which is to make your job safer. Never become complacent with your PPE and safety plans because it could save your eyes, your teeth and your time." ▼



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THE LATEST: News

John Deere expands hurricane relief support

Deere and Company announced it will make a \$1 million cash donation to support Habitat Hammers Back, a long-term recovery initiative organized by Habitat for Humanity International to help repair and rebuild communities ravaged by hurricanes Harvey, Irma and Maria. Habitat for Humanity International's three-phase disaster response focuses on immediate relief, community stabilization and long-term recovery.

Hydra-Flex wins award for Ripsaw

Hydra-Flex was named the winner of the Best New Product Design category in the 2017 Minnesota Manufacturing Awards for its Ripsaw rotating turbo nozzle. Hydra-Flex was also a finalist in the Best in Class and Sustainability categories, and CEO Jaime Harris took home the Executive of the Year award.

Muncie Power Products announces new director

Muncie Power Products announced its new senior executive director of people strategy and general counsel, Damon Elmore. His responsibilities will include overseeing acquisitions, strategic planning, human resources, succession planning and adult learning.



Damon Elmore

ALLU Group opens new North American facility

ALLU Group announced it has opened a new facility in Brunswick, New Jersey. The new location will create additional warehouse capacity for aftermarket parts and factory space to increase product inventory by local assembly. The facility will also provide expanded office and service training space.

Toro dealer expands territory

Southern Drill Supply, Toro equipment dealer, announced a new location in Biloxi, Mississippi, which will provide sales and service primarily to the Florida Panhandle, Alabama, Mississippi and Louisiana.

StoneAge names new vice president of sales and marketing

StoneAge announced the appointment of Barbara Beaubien to vice president of sales and marketing. She previously worked for Flowserve's corporate headquarters, developing strategy and marketing for their pump, valve and mechanical seal divisions.

VMAC named finalist in BC Export Awards

VMAC was named a finalist in the BC Export Awards' Manufactured Products category. The awards are presented annually by the Govern-

ment of British Columbia and the BC Division of Canadian Manufacturers & Exporters.

Vac-Tron Equipment announces new Arizona dealer

Vac-Tron Equipment introduced Empire CAT as its new dealer in Arizona. Empire Southwest is a third-generation, family-owned Caterpillar dealership. Founded in 1950, it sells, rents and services heavy equipment, tractors, and power generation equipment to contractors throughout the state. ▼

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	 See ad page 7	Yes				Yes
See ad page 43	GapVax Inc. 575 Central Ave., Johnstown, PA 15902 888-442-7829 814-535-6766 Fax: 814-539-3617 inquiry@gapvax.com www.gapvax.com					
	 See ad page 19	Yes	Yes	Yes	Yes	Yes
	John Brooks Company Limited 2625 Meadowpine Blvd., Mississauga ON L5N 7K5 888-881-6667 905-867-4642 Fax: 905-567-4330 jthomson@dynablast.ca www.dynablast.ca					Yes
	Transway Systems Inc. 314 Lake Ave. N, Hamilton ON L8E 3A2 800-263-4508 905-578-1000 Fax: 905-561-9176 sales@transwaysystems.com www.transwaysystems.com					Yes
See ad page 15	Vac-Con 969 Hall Park Rd., Green Cove Springs, FL 32043 888-491-5762 904-493-4969 Fax: 904-284-3305 vns@vac-con.com www.vac-con.com					
	 See ad page 5					
See ad page 9	Water Cannon, Inc. 4300 W Lake Mary Blvd., Units#1010-424, Lake Mary, FL 32746 800-333-9274 Fax: 888-928-9274 sales@watercannon.com www.watercannon.com			Yes		Yes

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Clearing the Line

OPERATORS OVERCOME A MYRIAD OF CHALLENGES WHILE REMOVING 25 YARDS OF CONCRETE FROM SEWER SYSTEM

BY JARED RANEY

When concrete slurry poured into sewer mainlines in a coastal condo development near Los Angeles, the crew had no idea they were about to block all the sewage flow from nearby Marina del Rey.

During ground stabilization work on the development, the general contractor bored into an unmarked sewer line. After unknowingly piercing the 10-inch line, the crew proceeded to pump a mix of cement and natural aggregates into the ground under pressure. It wasn't until they had already poured more than 25 cubic yards of the slurry mix into what they thought was just very aerated soil that the mistake was realized.

The slurry flowed into adjacent 15- and 18-inch sewer lines, hardening into an impassable blockage between the marina and the wastewater treatment plant.

The contractor struggled to find viable solutions short of complete replacement — which would have meant redoing stabilization work and essentially starting the project from scratch, not to mention the inordinate effort of replacement itself. Eventually, a call was made to Pacific Sewer Maintenance in hopes that its new high-pressure jet cutting system from IDTec could provide a quick fix.

But there was one catch: The company had only taken delivery of its new truck a day before. The team was mostly untrained and completely unpracticed on the equipment.

"We had received almost no training by the time we got started because the training was meant to commence following the commission of the truck," says Scott Gayman, owner of Pacific Sewer Maintenance. "But the contractor understood that; we were absolutely clear with them."

Luckily, as Gayman says, "the equipment itself is fairly straightforward — not terribly difficult to learn. The thing that takes awhile, as with all equipment, is learning finesse."

LEARNING CURVE

His operators struggled for the first few weeks, including a few beginners' mistakes resulting in downtime for equipment repairs.

"Total time on the project was about 2 1/2 months," Gayman says. "Because the equipment was new to us, and we were — or are — new operators, we didn't really understand the finesse of the machine."

Inexperienced operators trying to maneuver the unit through and around the abrasive chunks of cement took a toll on the hose that supplied water to the high-pressure nozzle. Eventually, they were forced to find a different type of hose that was more fitting for the situation.



A cleaning crew vacuums small debris from a downstream manhole during the concrete removal process.

PROJECT: Removal of concrete from 10-inch sewer line
CUSTOMER: Concrete contractor
CONTRACTOR: Pacific Sewer Maintenance
EQUIPMENT: High-pressure jet cutting system (IDTec; 503-504-8474; www.sr-series.com)
 Jet/vac truck (Vactor; 800-627-3171; www.vactor.com)

RESULTS: The team from Pacific Sewer Maintenance successfully cleared all the concrete from the Marina del Rey main, earning approval not only for a growing segment of their business, but also for a promising new solution in the sewer cleaning industry.

DOWN & DIRTY

"We were cutting through our hose on a regular basis," Gayman says. "There were a few weeks — maybe near three weeks out of that 2 1/2 months — where the equipment was down because we had damaged something."



ABOVE AND RIGHT: Crews used a Vector jet/vac truck to suck up small debris while a catch basket in the manhole took care of larger chunks. Some pieces were so big that workers had to maneuver them out manually using hooks and other tools attached to long poles.

Being new to the equipment also caused difficulties during repairs. Crew members had to learn the equipment's parts and components, as well as how to replace them, on the fly.

"In the long run ... with the damage that we did to it because of the situation we were in, we learned a massive amount of information regarding repairs, maintenance and care for the equipment," Gayman says. "In 2 1/2 months, we went through the crash course, learning about a year's worth."

DESPERATE MEASURES

An unknown system run by an inexperienced team may seem risky, but site factors ruled out other options, including complete replacement, and compounded the need for a better solution.

With only one other system of its kind in the U.S. at that time, the jet cutter was an unknown, but after a demonstration, the contractor was willing to take a leap of faith.

The job provided many challenges and learning experiences for the fledgling crew, including obstacles of the bay area sewer system. "The pipe itself is under sea level most of the time, so it's regularly got salt water flowing through it, and we're working in a very harsh environment," Gayman says.

Geography wasn't the only tricky factor: Four bypass pumps shared the manhole they were working out of. "We were at a manhole on the far end of the obstruction, trying to get the cement removed upstream from the manhole we were at while all of the pumps were also running inside the manhole," Gayman says.

The Pacific Sewer Maintenance team wasn't even the only crew working out of the manhole because the process required a separate cleaning crew to remove the concrete once it was broken up.

"The most difficult part of the job was coordination," Gayman says. "Organizing when the pumps needed to be on and off, and then organizing our work against when the pumps needed to run, the job site crews that needed to be on site, and the cleaning crew — balancing all of those was difficult in the first few weeks."



Pacific Sewer Maintenance owner Scott Gayman monitors progress as his crew jets concrete from a sewer line.



"THE PIPE ITSELF IS UNDER SEA LEVEL MOST OF THE TIME, SO IT'S REGULARLY GOT SALT WATER FLOWING THROUGH IT, AND WE'RE WORKING IN A VERY HARSH ENVIRONMENT."

Scott Gayman

Crews alternated first breaking up the concrete with the jet cutter and then using a Vector to suck up small debris while a catch basket in the manhole took care of larger chunks. Some pieces were too big even for that, so workers had to maneuver them out manually using hooks and other tools attached to long poles.

"Once we kind of got into the work and became a more cohesive unit, the job became much easier," Gayman says.

A BETTER SOLUTION

While concrete spills aren't an everyday issue for utilities, they aren't uncommon, either. Historically, there has been no way to remove concrete from pipelines, leaving only two options: complete replacement — a costly and time-consuming prospect — or do nothing.

"It's an unsolvable problem without digging, so until they can get a better solution, which is what we hope to do, they just have to do regular service on it and hope everything works out," Gayman says. "They can't do anything about it, and it just becomes part of the system."

One such blockage that had been "part of the system" for four years in a neighboring town was cleared easily with the 14,500 psi jet cutter. That job took only three days.

Since taking delivery of the truck in April, the company has used the system on three contracts, and it is already planning on purchasing a second truck to expand service to northern California, possibly farther. Gayman says he anticipates using it for everything from root removal and calcium deposits, to lateral reinstatement and lining prep.

INITIAL SUCCESS

Though untrained, Gayman and his team successfully cleared all the concrete from the Marina del Rey main, earning approval not only for a growing segment of their business, but also for a promising new solution in the sewer cleaning industry.

"Once the process becomes really known, we feel that there's going to be a high demand," Gayman says. "It is something that is more common than you hear about, but it's been one of those unsolvable issues — up until now." ▼

Essential Upkeep

CONTRACTORS SHOULD FOLLOW REGULAR MAINTENANCE GUIDELINES TO KEEP HYDROEXCAVATOR DIGGING COMPONENTS FUNCTIONING IN TOP FORM

BY MARYBETH MATZEK

Maintaining hoses, dig tubes and the digging wands are essential to keep vacuum excavators working the best they can. Located at the working end of a hydroexcavator, those three pieces of equipment take on a lot of wear and tear.

When those parts are in good condition, the hydroexcavator runs more smoothly, allowing contractors to accurately complete their jobs in a timely manner. When hoses, dig tubes and digging wands are not cared for properly, the excavator's overall performance declines, says Mike Selby, inside sales manager for Vac-Con.

"If half of the filter is blocked with material, plan on it affecting your vacuum efficiency by a half," Selby says. "You spend more time vacuuming than needed if your filters are dirty."

By not following standard maintenance guidelines on new equipment, a contractor also may void any warranties in place, Selby added. That means he will have to pick up the bill for a repair or part normally covered under warranty.

To keep hoses, dig tubes and digging wands in peak condition, manufacturers share this advice:

1

CHECK WEAR

It sounds simple, but looking for signs of wear is vital in maintaining the equipment at the working end of the excavator. "Holes in hoses caused by wear allow outside atmosphere to enter the vacuum hose, causing a reduction in vacuum capacity," Selby says. "To reduce wear or evenly distribute it, rotate the hoses on your hydroexcavator so that the wear points are never in the same spot."

Contractors should regularly rotate the excavator's hoses to evenly distribute the wear.

Tubes take a lot of abuse since they come in direct contact with the hydroexcavator materials. Chris Kay, marketing manager for Super Products, advises looking to make sure there are at least 3 inches of neoprene tip before the metal tube.

Dented tubes are another common problem. Dented tools can cause clogs and limit production since the material cannot fit through the tube. Wands provide the force that breaks up the material to be vacuumed, so keeping them in good condition is vital. All trigger assemblies should be inspected before a job to make sure they are in good working order since a faulty trigger can be dangerous.

"All triggers should be 'deadman' type, meaning the trigger faults to off if the operator were to drop the wand,"

Selby says. "Inspect nozzle tips. Make sure there is no material blocking the tip so water can spray out."

2

INSPECT THE WORK SITE

Before starting a job, go to the work area and locate project necessities, such as fuel, water source, the dumping site, spare parts dealers, and local service providers, Selby says.

Once you find that information, share it with operators, so if they encounter a need while on the job, they can easily find it and not lose time tracking down information.

3

FOLLOW MAINTENANCE RECOMMENDATIONS

This sounds obvious, but Selby says contractors sometimes ignore the information provided in the equipment's maintenance guide. "My three pieces of advice to all contractors are inspect, inspect, inspect," he says.



Maintaining hoses, dig tubes and digging wands is essential to keep vacuum excavators working the best they can. Contractors should check over these systems daily to ensure they are in working order.



Before starting a job, contractors should make sure they have spare nozzles, wands, tubes or anything else the project may call for. Having enough of those items plays an important role in making the job successful.

"MY THREE PIECES OF ADVICE TO ALL CONTRACTORS ARE **INSPECT, INSPECT, INSPECT.**"

Mike Selby

When operators work on a long project, they should frequently check how many hours the machine is accumulating, Kay says. If it reaches a maintenance interval, stop and perform the necessary maintenance — that short break can save a lot of time later on.

4

TAKE INVENTORY

Before starting a job, contractors should make sure they have spare nozzles, wands, tubes or anything else the project may call for. Having enough of those items plays an important role in making the job successful since less time is lost if something breaks, Kay says.

A little extra training can also cut down on wear. "Train the operator how to properly set up a machine to minimize wear. A little extra truck maneuvering could allow the operator to keep the boom straighter, reducing wear," Selby says. ▼

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.

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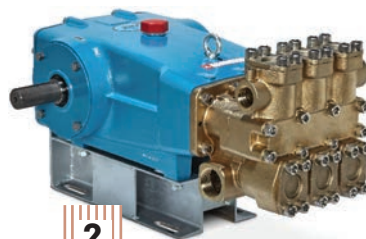
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THE LATEST: Products

1



2



3

1. McLaughlin EC075 and VX75 vacuum excavators

EC075 and VX75 midrange vacuum excavators from McLaughlin answer the demand from the underground utility market for a compact vacuum excavation system with a 5-inch boom option that focuses on performance and fuel efficiency. A 74 hp Deutz Final Tier 4 diesel engine powers a 1,200 high cfm vacuum blower, and the 8 gpm water pump is capable of 3,000 psi operating pressure. The larger boom pulls more material and reduces clogging to enhance job site production. The ECO75-500 can be mounted on a single-axle 26,000 GVW truck without the need for a commercial driver's license. The trailer-mounted VX75 features a twin-axle and heavy-duty I-beam construction that is compact and can be pulled by a 1-ton truck. 800-435-9340; www.mclaughlinunderground.com

2. Cat Pumps plunger pump Model 67070

The Model 67070 high-pressure plunger pump from Cat Pumps is ideal for sewer jetting and hydroexcavating market applications that require high-flow performance at higher pressures and intermittent duty operation. It is rated for 50 gpm at 2,000 psi. The drive-end of the pump is built from the 60-frame mechanical drive, and oversized, premium crankshaft bearings offer high loading capacity and prolong bearing life. The crank-case crosshead area is concentric with a 360-degree plunger rod support that features a drilled-through oil port to lubricate the front side of the crosshead area. 763-780-5440; www.catpumps.com

This Issue's Feature:

Full vacuum via remote

BY CRAIG MANDLI

One of the most time-consuming parts of a pumping or hydroexcavation job is running back and forth between the end of the hose and the control module on the truck. That's why **Imperial Industries** offers a fully **remote-controlled vacuum system**, designed to help operators dramatically cut the time they spend on the job site.

The remote control system made its debut last year on Imperial Industries' 4,000-gallon aluminum tank, mounted on a 2018 International truck body equipped with an National Vacuum Equipment 4307 blower. The remote offers full control of the tank's PTO and pneumatic valves, providing operators with the ability to switch between vacuum, neutral and pressure modes without ever leaving the end of their hose.

"It's going to be a huge timesaver, and in this line of work, time is money," says Kyle Haase, a sales manager with Imperial Industries. "By eliminating the need for operators to run to and from their truck several times during a single site visit, we're doubling down on safety — helping them protect against potential accidents."

The remote system is now available to be installed on any of Imperial Industries' stock service truck units, and it may also be added to truck and tank combinations that are custom fit to an operator's needs. According to Haase, the remote remains in operation up to 300 feet away from the truck-mounted receiver in ideal conditions.

"It's going to save a lot of wear and tear on the operator's body with not



Remote-controlled vacuum system from Imperial Industries

having to run back and forth nearly as much," he says. "Our goal is to keep the operator at the front end of the hose, where they have the most control over the work they're doing."

Haase says he sees the capabilities of remote technology growing in the future. As technology becomes more advanced, even more functions on a vacuum or combo truck will be accessible via remote.

"It's the wave of the future," he says. "We're going toward the idea of one operator being able to control everything on the rig from one stationary point."

According to Haase, the remote system was developed after several of the company's vacuum truck customers expressed interest. He sees a fit for the technology across many applications.

"It can be used anywhere you are using a vacuum truck with a small crew," he says. "With companies making budget cuts, a lot are trying to do more with less. This system makes those operators' jobs easier and is going to keep them safer."

800-558-2945; www.imperialind.com



3. Vacall - Gradall Industries step-in compartment for AllExcavate hydroexcavators

The new step-in compartment from Vacall - Gradall Industries for its AllExcavate hydroexcavators provides warmth and protection from inclement weather. The standard heater compartment is roomy and has floor drainage, racks to hang dry clothing, and another dry rack to store the high-pressure hand gun and extensions. There are larger compartments with extra room, among the available options. Along with LED lighting, the cold weather package includes extra insulation, heated cabinets for the hose reel and water pumps, and boilers that can heat water for more effective hydroexcavation in frozen ground. **800-382-8302; www.vacall.com**

4. Felling Trailers Turret Reel Trailer

The FT-10 R Turret Reel Trailer from Felling Trailers has a 360-degree rotating turret assembly so virtually no right-of-way or easement will prohibit the operation. To activate, pull to the side of the road, disengage the level-actuated locking pin, and rotate the reel to the direction needed. The turret can lock into any position in 15-degree increments. The optional 16-inch bronze tensioning brake controls the overspin of the reel and provides tension as the material is being pulled off of the trailer. The brake assembly has an infinitely adjustable manual brake caliper and up to 50,000 pounds of torque. **888-335-5464; www.felling.com**

5. Vactor next-generation HXX vacuum excavator

Vactor's new HXX vacuum excavator maximizes legal payload and improves operational efficiency. The placement of the debris body and water tank on the chassis ensures equal distribution of the payload on the axles, regardless of how much water is in the tanks. A new PrecisionFlow water pump system features a single-piston design that is capable of higher flow and pressures than a triplex water pump system for production and reliability. The vacuum system is rated at 6,200 cfm and 28 inches Hg, and the water pump system is rated at 30 gpm and 3,000 psig. Water tank capacity is 1,200 gallons, and the debris tank has a 16-cubic-yard capacity. **800-627-3171; www.vactor.com**

6. Vantage Trailers double-wall trailer

The Vertical Panel Smooth Side double-wall, end-dump trailer from Vantage Trailers is available in widths of 76, 85, 91, 96 and 102 inches. The

aluminum trailers come in different designs and can be custom built, including frameless, frame-type or quarter-frame. The standard smooth-side model consists of a single sheet, top rail and center rib. **800-826-8245; www.vantagetrailer.com**

7. Ditch Witch AT40 directional drill

The AT40 All Terrain horizontal directional drill from Ditch Witch has an inner-rod design that provides a flush system to improve tool-joint durability and steering in hard-rock conditions. It also features RockMaster housing, and the modular design makes it adaptable to two different drill bit sizes, allowing a 2.875 and 3.5 regular api connection. A 160 hp Tier 4 Cummins diesel engine offers 40,000 pounds of thrust and pullback. A two-speed, rotational drive system produces 5,000 ft-lb of torque, and the drill is equipped with a 70 gpm, 1,100 psi mud pump to increase fluid flow from the pump to the swivel. **800-654-6481; www.ditchwitch.com**

8. Vermeer SPX25 vibratory plow

The Vermeer SPX25 vibratory plow features a full-function remote control that provides a 360-degree view of the job site. It can install small pipes and cables at depths up to 12 inches and can bore underneath driveways and sidewalks using the optional Porta Bore attachment. The dual rubber tracks with a ground pressure of 3.7 psi deliver floatation in soft conditions and help reduce job site restoration after an install. Powered by a 25 hp Kohler gas engine, the lightweight plow offers a transport speed of 3.7 mph. The unit is equipped with a pivot-mounted plow with a 55-degree swing angle that automatically adjusts when turning. **641-628-3141; www.vermeer.com**

9. Case Construction Equipment CX30C mini-excavator

Case Construction Equipment's CX30C mini-excavator has an operating weight of 6,202 pounds, 24.8 hp Tier 4 Final engine, and bucket digging force of 4,520 pounds. It features a zero tail-swing, short-radius or conventional design; adjustable boom offset for improved maneuverability in congested areas; and an autoshift travel system for convenience in varying terrain. It has an auxiliary hydraulic system with standard proportional controls, shut-off valve, and selectable joystick control patterns. The CX30C can be towed with a pickup truck without a need for a CDL. **262-636-6011; www.casece.com** ▼

BY CRAIG MANDLI

Blower

National Vacuum Equipment Challenger 43 Series

The Challenger 43 Series hybrid blower from National Vacuum Equipment is available in the 4307, which moves 560 cfm, and the 4310, which moves 940 cfm. The sound enclosure allows this package to be compact, taking up only 36 inches of frame space, and makes it quiet to allow for pumping at night in residential areas. The blower doesn't require oil, and it will work at high vacuum levels continuously. It is designed to be easily frame- or top-mounted to accommodate most trucks, and it is completely serviceable from within the enclosure. Packages are offered in hydraulic, gearbox, or belt drive to work with a variety of transmissions, both manual and automatic. 800-253-5500; www.natvac.com



Dewatering/Bypass Pumps

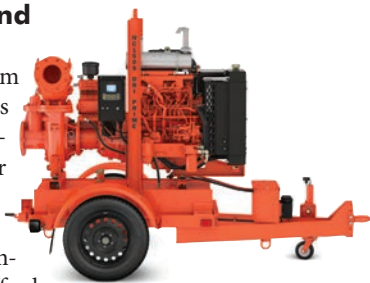
Boerger BLUEline Rotary Lobe Pump

The Boerger BLUEline Rotary Lobe Pump is a self-priming, valveless, positive displacement pump used for the conveyance of viscous and abrasive materials. There are 21 pump models in six series with pulsation-free operation, fully reversible rotation, dry-run capabilities and flow rates up to 7,500 gpm. They are stable and wear-resistant with MIP-design (maintenance in place) that allows for all wetted parts to be easily replaced through the front cover without the removal of pipe or drive systems. 612-435-7300; www.boerger.com



Godwin Pumps, a Xylem brand NC150S Dri-Prime Pump

The NC150S Dri-Prime Pump from Godwin Pumps, a Xylem brand includes self-cleaning, nonclog Flygt N-Technology and Field Smart Technology for remote monitoring and control. It delivers a low cost of ownership, thanks to 40 percent less maintenance time and simplified serviceability, 10 percent less fuel consumption, and a 20 percent increase in product reliability. An environmentally sustainable Final Tier 4 engine ensures 90 percent less emissions. 800-247-8674; www.xylem.com/smart



Gorman-Rupp PAH8A60-6090H

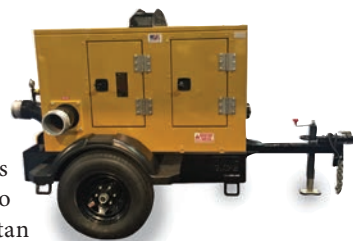
The PAH8A60-6090H from Gorman-Rupp is a heavy-duty, priming-assisted pump that's ideal for mining, quarries, bypass pumping, and other installations where high flow rates are a necessity. It offers flows to 5,000 gpm, has a TDH up to 340 feet and handles 3-inch solids. The 10-by-8-inch pump is driven by a 375 hp, Tier 3 John Deere 6090H charge diesel engine. 419-755-1011; www.grpumps.com



Diaphragm Pump

Myers Seth Pump DD-6 SAFE

The DD-6 SAFE (Sound Attenuated Fully Enclosed) high-volume, double diaphragm dewatering pumps from Myers Seth Pump reduces noise output by up to 50 percent, making it ideal for metropolitan and urban environments. Its Hatz 1D81Z 10 hp, air-cooled diesel engine along with its 80 to 90 max cfm, Enduro diaphragm and 3/8-inch steel construction make it reliable and durable in rugged environments. It can pump 600 gpm, deliver 28-feet of vertical lift, and move 4.25-inch solids. It can also run 24 hours on 6 to 7 gallons of diesel fuel for up to 12 days continuously, and it can run dry indefinitely. It combines the key duty points and features of a 4-inch double diaphragm pump, 6-inch piston pump, 6-inch auto prime centrifugal pump, and 8-inch rotary lobe pump. 904-389-6114; www.myerssethpumps.com



Submersible Pump

Hydra-Tech Pumps S6VAL

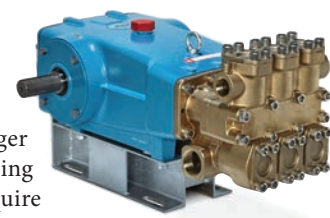
The S6VAL 6-inch hydraulic submersible wastewater pump from Hydra-Tech Pumps is lightweight, compact and able to pass large solids and stringy materials. It handles hydraulic inputs up to 30 gpm at pressures up to 3,000 psi, and it will continue to move water at heads up to 70 feet. Beyond water, it can handle semisolids measuring up to 5 inches. The pump volute is cast aluminum, and the impeller is stainless steel. When compared to the company's ductile iron model, the aluminum is 33 percent lighter, which aids in preventing lifting problems and injuries. When combined with HT50 to HT75 power units, it is capable of flows up to 1,600 gpm. 570-645-3779; www.hydra-tech.com



Triplex/Plunger Pump

Cat Pumps Model 67070

The Model 67070 high-pressure plunger pump from Cat Pumps is ideal for sewer jetting and hydroexcavating applications that require high-flow performance at higher pressures and intermittent duty operation. It is rated at 50 gpm at 2,000 psi. The drive-end of the pump is built from the 60-frame mechanical drive, and oversized, premium crankshaft bearings offer high loading capacity and prolonged bearing life. The crankcase crosshead area is concentric with a 360-degree plunger rod support that features a drilled-through oil port to lubricate the front side of the crosshead area. 763-780-5440; www.catpumps.com



Vacuum Pumps

Fruitland RCF870

The RCF870 vacuum pump from Fruitland is available in clockwise and counterclockwise rotation with top- and side-mount, four-way valve locations. The pump is available with hydraulic, angle (gearbox) and belt-drive options. It can be mounted on all Eliminator-style packages. It is a true 4-inch pump with 4-inch pipe connections producing 512 cfm and weighing 575 pounds. It is fan-forced air-cooled with an available air injection cooling system for continuous duty at higher vacuum. It includes an integral oil reservoir with low-consumption oil pump, an integral final filter and vane-wear test ports. 800-663-9003; www.fruitlandmanufacturing.com



Moro USA PM80W

The Moro USA PM80W water-cooled vacuum pump is designed and built for low maintenance, long life, and trouble-free service in tough industrial applications. It is a 424 cfm pump with 28 inches Hg maximum vacuum and 29 psi maximum pressure capability. It comes with Kevlar vanes, visual inspection ports in the casing, and Viton oil seals. Its low rotating speed extends pump life. With sealed or oiled bearings, there are no grease points. The oiling system is direct-feed and sealed to reduce downtime for routine service and maintenance. 866-383-6304; www.morousa.com



Presvac Systems PV750

The Presvac Systems PV750 rotary vane pump is designed for continuous full-vacuum operation in extreme conditions. It offers 400 cfm at free air, 350 cfm at 15 inches Hg, a maximum vacuum of 27 inches Hg, and maximum pressure of 35 psi. Dual fans and twin ballast ports efficiently cool the pump. The solid housing with deep cooling ribs allows for greater heat transfer from the vacuum chamber. Aluminum fans and shrouding work like a heat exchanger to aid in heat reduction. Multiple manifold and drive options are available for every application: truck, trailer or stationary. 800-387-7763; www.presvac.com



Wallenstein Vacuum Pumps 753 Series

The 753 Series vacuum pump from Wallenstein Vacuum Pumps incorporates extra-wide vanes that allow up to an inch of wear, designed for longer service life and lower maintenance costs. It provides 422 cfm airflow at 1,200 rpm and is precision-machined to provide vacuum levels up to 28 inches Hg. Options include air, liquid or dual cooling systems where air injection is combined with liquid cooling. A pump-flushing port is included on the top valve for convenient routine maintenance. The quick-access housing end plate allows for easy internal inspection with no bearings to pull. Oil lubrication is via a mechanical piston pump driven by shaft rotation or available with a sight-feed valve oil regulator system using vacuum/pressure to draw oil with no moving parts. 800-801-6663; www.wallenstein.com



Washdown Pump

Water Cannon Inc. - MWBE RG Series Pump

The RG Series Pump from Water Cannon Inc. - MWBE is rated for either 3.96 or 5.5 gpm at 1,450 rpm, and it has a nickel-plated manifold rated for 3,600 psi. It takes the best parts from the RK, XW and SHP Series pumps and combines them into an all-around heavy-duty pump, according to the maker. The footprint is the same as the RW and XW Series ARNA pumps as well as the General 47 Series pumps. 800-333-9274; www.watercannon.com



Water Pumps

Dynablast Pratissoli Pumps KT28ASPF

The Pratissoli Pumps KT28ASPF high-pressure water pump, distributed by Dynablast, is ideal for hydroexcavating. It offers 18.4 gpm, 2,900 psi, 1,450

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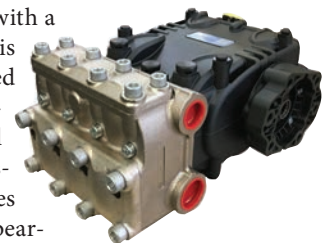


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rpm, and a 35 hp power end. It is available with a T13 female spline shaft and SAE B flange. It is a self-lubricating pump with no oilers required and has two bore-size ceramic for better protection from thermal shock. A symmetrical power end allows for the pump shaft to be easily reversed, and its crankcase with fins creates cooler operation. It also has a tapered roller bearing that helps improve lateral loading and an oversized inlet and softer inlet valve springs for tank feed applications. The wet end can be serviced without entering the crankcase. Ideal setup would be to reduce pump speed by 50 percent, which will reduce water flow to 9.2 gpm, and then to choose a dig nozzle and return a few gallons per minute back to the water tank. 905-867-4642 www.dynablast.ca



UDOR U.S.A. run dry water pump

UDOR U.S.A. run dry water pumps are manufactured with brass manifolds, heat-treated crankshafts, stainless steel check valves, industrial-quality bearings, solid ceramic plungers, and heavy-duty high-pressure seals. The ceramic plungers and improved machining technology allows them to tolerate changes in temperature — even those caused by running the pump dry. 651-785-0666; www.udorusa.com ▼



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2012 Ditch Witch FX60, 800-gallon tank, boom, wireless remote, hydraulic power beyond. Less than 500 hours, great shape. \$54,500. 740-357-1208 (P12)



2007 Western Star GapVax HV56:
450 Mercedes, Allison transmission.
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Roots Model 1021DVJ blower.
272,456 km (169,296 miles) 15,198
hrs. \$125,000 USD
zachg@springgrove.ca
Steve 905-261-0044, ON D02



2000 International 4700: International 7.6L diesel, 6-speed transmission.
192,347 km (119,520 miles),
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hrs. 85-gallon water, 550-gallon waste.
..... \$80,000 USD
zachg@springgrove.ca
Steve 905-261-0044, ON D02

Happenings

CALENDAR

Jan. 21-26

Underground Contractors Association of Illinois Annual Convention, Mauna Lani Bay Hotel & Bungalows, Kohala Coast of Hawaii. Visit www.uca.org

Jan. 30-Feb. 1

Underground Construction Technology (UCT) International Conference & Exhibition, Ernest N. Morial Convention Center, New Orleans. Visit www.uctonline.com

Feb. 21-24

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

Feb. 22-23

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

March 6-8

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

March 6-9

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

March 20-23

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

March 22-24

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

March 25-29

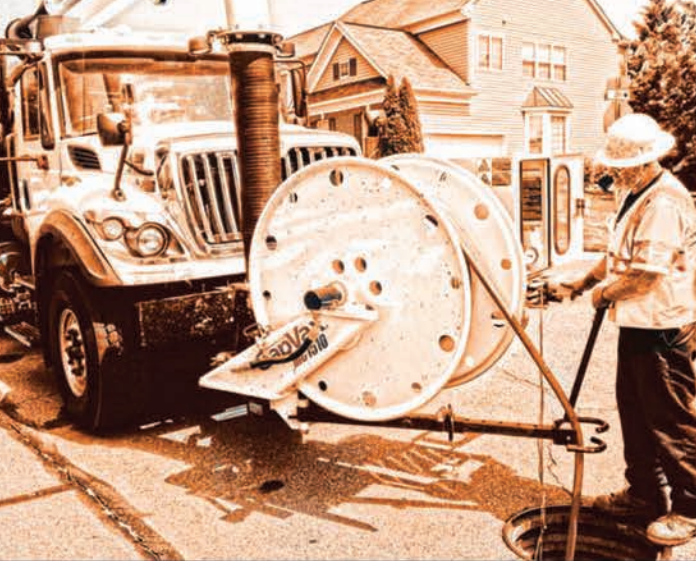
North American Society for Trenchless Technology (NASTT) No-Dig Show, Palm Springs Convention Center, Palm Springs, California. Visit www.nastt.org

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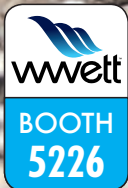
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