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INSTALLER PROFILE: Making the Grade By Scottie Dayton

ON THE COVER:
Three generations of the Rozendaal family install and inspect onsite systems, provide farm drainage and excavation, and perform demolition tasks for the rural folks around Monroe, Iowa. Tim Rozendaal is shown with a JCB backhoe in the background at Norm Rozendaal Tiling. (Photo by Mark Hirsch)

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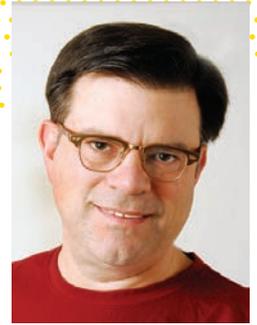
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Jim Kneiszal



Make Your Customers Love You

Learn how can-do small-business owners turn happy customers into their biggest cheerleaders

Everyone has car problems from time to time. And I've had a variety of nagging issues recently, probably related to my pattern of trying to keep vehicles on the road as long as possible. I forget how much time has passed and here I sit with cars reaching their teen years and nearing 200,000 miles on the odometer.

A byproduct of driving older cars is becoming real familiar with my mechanic. Unfortunately, it seems like lately I've visited Craig and his wife, Diane, who works the counter at their shop, more often than the monthly visits to my friendly barber (or should I say hair stylist?), Lisa.

Don't get me wrong; Craig and Diane are pleasant enough folks. But like I hope it goes with the doctor and dentist, I'd rather keep in touch with them about once a year to maintain my fiscal well-being.

Loving Local Businesses

I know you don't care about the failing starter on my SUV, but I wanted to write about Craig and Diane because their actions tell us something about small businesses developing lifelong customer relationships — maybe even multigenerational customer relationships, something especially helpful for onsite installers who don't necessarily get a lot of repeat business.

In my many trips to the garage, Craig and Diane routinely show why people love to deal with a local family-run business. They are small enough to know and care about their customers. They are quick to react to emergencies by juggling the day-to-day workload. They want the satisfaction of their customers as much, if not more, than their money.

One recent example of their great service jumps out at me. A few weeks ago I called to set an appointment to fix a nagging ignition problem. Craig assessed the situation and called me back.

"You could bring it in tomorrow and we could fix the problem for \$200 to \$300," he said. "But I have a better idea. I'll give you the name of a locksmith and he could probably rebuild the ignition for \$75. And he'll come right to your house."

Sure enough, Brian the locksmith came out and fixed my problem, but for only \$50. He was another honest small-business owner and a Desert Storm veteran to boot, who stood behind his work, assuring me that if I had more problems, he would come back and credit me the \$50 toward any repairs.

Like the garage owners, Brian was challenged and enthusiastic about finding the best and least-expensive solution to my problem. His demeanor and his clean van with all the tools and technology necessary to handle

complex problems showed me that Brian is turning the locksmithing trade into a bona fide profession.

Set the Example

In the afterglow of these great customer service experiences, I'd like to reflect on a few ways installers can show their priority is helping homeowners and promoting a clean environment. If you are already doing these things, good for you. You're helping build the image of the onsite wastewater industry.

A great sense of helplessness and vulnerability accompanies an onsite crisis, and the way you react may build amazing loyalty or great resentment from the customer. ...
Save the day and they'll be singing your praises to friends and neighbors.

Answer questions — for as long as it takes.

Education is a huge part of quality customer service. The options for handling onsite wastewater are more complicated than ever. So sitting down with customers, discussing their needs and the solutions you can provide, is critically important. Don't assume someone shopping for a new or replacement system is going to understand industry terminology or the depth and breadth of local regulations you must follow. Give them enough information to make sure they are comfortable with a major home improvement decision. When you think they understand your proposal, ask them to make sure.

Remember they're people, not open wallets.

To some of your customers, money is no object. No matter how high the cost of the system you're proposing, some customers are spending more on the bathroom fixtures for their new house. But most homeowners are budget-conscious and looking to save money whenever they can. Heck, I'm sure you're the same way when it comes to buying an excavator or tools for your crews. Ask customers about their expectations and do whatever you



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can to come up with the most effective solution for the money. Running a small business is all about making money to support your family and your workers' families. But you need to strike a balance between profits and the needs of your customers.

Provide service after the sale.

With the complexity of new onsite technologies, we're quickly moving away from the "set it and forget it" mentality of the gravity systems of yesterday. Through operations and maintenance, you will build more long-term and regular customer interactions. Homeowners will become accustomed to paying for the added convenience of routine system care and we all need to embrace that new service norm. Don't wait for them to ask you to clean filters or check the control panel. Offer those services up front, before they sign the contract to install the system. Your reputation as a contractor depends on new advanced systems and components working properly for the long term. When a customer calls with a problem, fix it now and talk about their maintenance needs later.

Consider every customer a referral generator.

Remember the problem customer who you couldn't satisfy no matter how hard you tried? Your relationship reached a tipping point where you wish they never contacted you in the first place. As bad as things got on that job, you had to resist the urge to come down hard on them. A customer who's had a negative experience can take future work away from you by complaining to friends, relatives and neighbors. The same is certainly true of a customer who's had a good experience with you. A customer who considers you a friend and advocate for their onsite system will spread a positive message that will land you more customers in the future.

Show compassion in an emergency.

When a panicked customer calls, put yourself in their situation and think about how you'd like to be treated. Like my mechanic Craig drops everything and responds when someone's car won't start on a cold winter morning, you must act quickly to a call about a failing septic system. A great sense of helplessness and vulnerability accompanies an onsite crisis, and the way you react may build amazing loyalty or great resentment from the customer. They are relying on you as an industry expert. Save the day and they'll be singing your praises to friends and neighbors, who will then call you when they have a problem.

Forward Thinking

While he was working hard to diagnose my ignition problem, something Brian said really stuck with me. His goal was to solve my problem as efficiently as possible without charging me for parts and labor that were unnecessary. My budget was more important than his bottom line. But he knows that doing his best for me will ultimately help his business. His attitude will cultivate more customers in the long run.

Do you have lessons to share about making customers for life? Send them to me at editor@onsiteinstaller.com and I'll share them right here.



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HARD LESSONS

Don't Test Your Luck

Getting complacent about safety when working with excavating equipment makes you an accident waiting to happen. But people learn from their mistakes, make improvements, and their business ends up stronger. Read about two accidents that Norm Rozendaal Tiling will never let happen again.

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CASH FLOW PROBLEMS

Be Cautious When Using Credit

Whether you're trying to grow your company or overcome a surprising setback, having cash on hand is imperative. But it can be difficult to ensure you have the liquid assets you need. One answer is opening a line of credit, but it's important to review the pros and cons of this option first. Here's what you need to know.

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COMMERCIAL SYSTEM OPTIONS

Tank Considerations

When it comes to managing commercial flows, there are numerous tanks and varying configurations to choose from when designing onsite treatment systems. In this exclusive online story, instructor Sara Heger breaks it all down for you.

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Overheard Online

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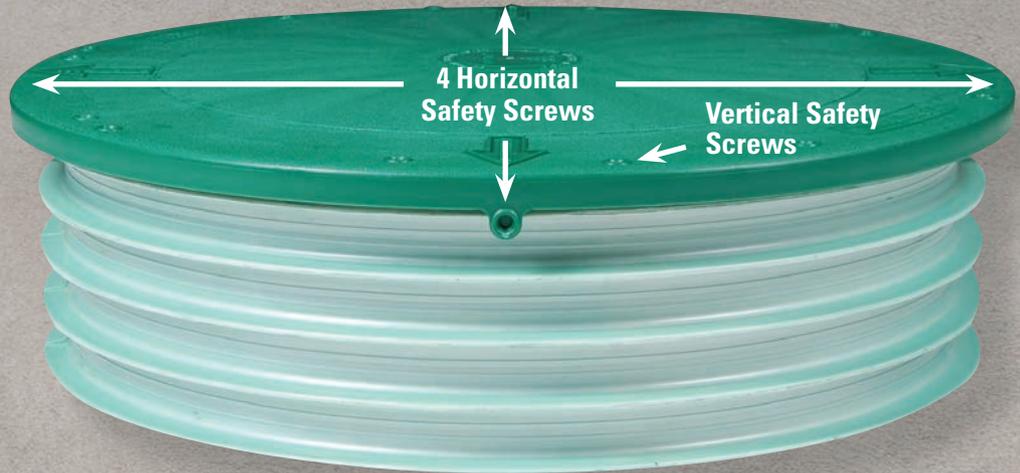
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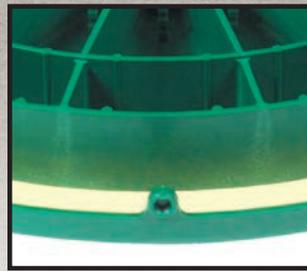
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- Simple to install
- Easy to clean

6" Sanitary T-Baffle™

- Injection molded
- Fits 4" Sch. 40 and SDR-35 pipe
- Simple to install
- May also be used as Outlet Tee with Solids Deflector

INSTALLER PROFILE



MAKING THE GRADE

Three generations of the Rozendaal family have carved out niches in onsite installations, inspections, farm field tiling and structure demolition in rural Iowa | By Scottie Dayton | Photos by Mark Hirsch

Standing on concrete all day working as foreman in a tool and die department convinced Tim Rozendaal that he wanted to be free of time clocks by age 40. His wish was granted ahead of schedule. In 2005, his father, Norm Rozendaal, asked him to join Norm Rozendaal Tiling, the company he had begun in 1976. Tim, then 35, returned to Monroe, Iowa, and embraced his future.

“Dad took the field drainage work because the tiling season lasts about 40 days in the spring and fall,” says Tim. “During the summer, he’d install two or three aerobic treatment units per month and maintain the service contracts. I was to assume responsibility for the septic branch and expand it.”

Guided by the principles of installing quality products for longevity and the correct system for the soils, Rozendaal built on the company’s history of serving local communities. Today, his team installs 35 to 45 residential systems annually and holds 130 maintenance contracts from different ATU manufacturers. In 2014, Rozendaal’s son, Justin, joined the company after graduating from college and certifying as an installer.

“It’s been rewarding for Dad and me to see the third generation secure the company’s future,” says Rozendaal. “Justin has a passion for the work and cares deeply about what he does. We’re grooming him to begin making major decisions.”



◀ From left, Tim Rozendaal, Justin Rozendaal and Rick Beyer are shown at a work site with a Freightliner dump truck and JCB backhoe.

Happy Customers

Rozendaal entered the business understanding grade from installing tile with his father, but mentor and onsite installer Keith Davis shared his secrets for success. According to him, almost everyone was looking for quick and easy, but those who searched for the most productive system with the greatest longevity would reap success.

“I was very interested in pressurized sand filters because our most recent revised septic code recommended them as a second-choice option,” says Rozendaal. “Furthermore, pressurization enabled me to move systems to wherever homeowners wanted them. I was making customers happy and giving them the best value for their money. However, I wasn’t making a profit because I was always the low bidder.”

Davis encouraged Rozendaal to evaluate his situation and charge what he was worth. “I realized I didn’t need more practice installing sand filters,” says Rozendaal. “The septic branch had a full service board, the office phone rang, referrals came from customers and contractors, and I landed every quoted job — all without advertising.”

Raising his rates enabled Rozendaal to schedule the replacement of equipment and choose homeowners committed to an onsite design.

“Education is key,” he says. “I visit sites with clients more than once to ensure they understand what components are required, where they will go, and what can be moved during the design phase.” Once homeowners accept the plan, they and general contractors appreciate that Rozendaal’s initial quote remains unchanged more than 95 percent of the time. It enables homeowners to budget, and contractors to schedule the money allocated to their bid for building homes.

Davis had convinced Rozendaal that sand filters were the best solution for the area’s loamy soils with occasional heavy clay, and those systems comprise 75 percent of his annual residential installations. The work is 80 percent new construction and 20 percent repairs.

Rozendaal uses chambers or EZflow drainage bundles (Infiltrator Water Technologies) in the sand filters. When specified, advanced treatment units are usually Whitewater models (Delta Environmental Products). His installation team includes Justin Rozendaal and laborer Rick Beyer. The company’s other five



Norm Rozendaal Tiling

- Location:** Monroe, Iowa
- Owners:** Norm, Coretha and Tim Rozendaal
- Years in business:** 40
- Employees:** 8
- Services:** Onsite installations, inspections, excavation, drainage tile installation, demolition
- Territory:** 65-mile radius
- Associations:** Iowa Onsite Waste Water Association, Land Improvement Contractors Association
- Website:** www.rozendaaltiling.com



▶ Rick Beyer joins together PVC pipes making up a low-pressure residential system.

➤ Justin Rozendaal, left, and his father, Tim Rozendaal, roll out a fabric covering for the EZflow drainfield, a component of a replacement residential onsite system.



KNOCKING THINGS OVER

Onsite work and laying drain tile dominate the service board at Norm Rozendaal Tiling in Monroe, Iowa, but occasionally demolition jobs find their way into the rotation.

"It comes with the territory," says co-owner Tim Rozendaal. "Often trees or tree stumps are in the way of the wheel trencher. Silos become obsolete or are attractive nuisances on deserted farms. We answer the call when they have to go."

He works with dynamite expert Alan Beyer. He blows up the target, then Rozendaal and his team move in with backhoes and dump trucks to remove the rubble. If possible, organic materials are bulldozed into a trench, covered, and left to decompose.

Their most challenging and dangerous demolition project was razing the Sully Coop wood feed mill in August 2007. "Alan told me it would be a 10-day job, but we were there for 60 days," says Rozendaal. "The building was 140 feet tall with the main structure 80 feet above the pavement. We knocked it down bit by bit to prevent the structure from collapsing into the surrounding buildings or endangering people. It was harvest season, and the yard was a constant state of activity with trucks coming and going. The work was very tricky."

employees include Norm Rozendaal and his drainage crew, and the office staff. Norm's crew also installs two to five onsite systems a year.

Different Perspectives

For many years, state regulators regarded chambered drainfields as the definitive onsite wastewater solution, provided they weren't installed deeper than 3 feet. Rozendaal, however, was leery of this view and he didn't believe in percolation tests. "When I was installing drain tiles 4 feet deep, I often saw three different soils from the top down," he says. "I learned which soils didn't drain because I was putting tiles in them."

Rozendaal's practice of occasionally hiring soil scientists to take core samples at some sites quickly advanced to sampling every site. He relies on James Carroll, P.E., from the USDA-Natural Resources Conservation Service, and Mark McMurphy, P.E., from Abaci Consulting.

"Jim and Mark tell me the depth of the limiting layer and seasonal high water table," says Rozendaal. "Then they give me an excavation depth and the chambers go 3 feet above it. Now we know we've done our best to avoid early system failures."

Poor soils cause most systems to fail their time-of-transfer inspections. When they became law in 2009, Norm and Tim certified together.

“Doing inspections is not a moneymaker, but it opens the door to septic work if handled correctly,” says Tim. “Homeowners with failed systems ask many questions, including, do we install? I inspected 39 systems in 2016, four were in failure, and three bids were accepted.”

Fine-Tuning Simplicity

Inspections not only increased repair work by 10 percent, they often proved educational for Rozendaal and his crew. “Seeing many different systems and other installers’ work has changed the way we install and the products we buy,” he says. “Occasionally, it has even motivated us to try something new.”

While not related to inspections, one example of trying something new improved the ease and ability to maintain pump stations. Instead of mounting

the water level floats and alarm floats on the pump pipe, Rozendaal listened to CEU instructors when they suggested using float trees.

“I liked the idea, but couldn’t see buying float trees when all we needed was PVC pipe,” says Rozendaal. “We mount the floats on one pipe and the alarms on another, then adhere the pipes inside the riser away from the pump pipe. On the pump pipe, we use PVC unions instead of Fernco flexible couplings because they aren’t pressure rated. This approach makes diagnosing problems and maintenance easier.”

Rozendaal also switched from using pumps to siphons (Fluid Dynamic Siphons). Although done mainly for ease of installation, removing as many mechanical components as possible made systems simpler and easier for homeowners to maintain. “Siphons increase the sand filter’s square footage slightly, but they are giving really good results,” he says.

continued >>

“Education is key. I visit sites with clients more than once to ensure they understand what components are required, where they will go, and what can be moved during the design phase.”

Tim Rozendaal



▲ Rick Beyer cements Schedule 40 electric sweeps for future maintenance and troubleshooting on a new system.

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▲ Rick Beyer uses a Caterpillar 247B3 skid-loader to cover a drainfield.

▼ Justin Rozendaal wires a Minuteman alarm post with two 20-amp circuits during an installation. The company uses Tuf-Tite lids and risers for tanks.



Diversifying Workload

When needed, Rozendaal still does drainage work, which comprises 50 percent of the company's annual revenue. Septic makes up the other half.

In 2005-'06, the drainage branch reached a milestone when it was subcontracted to install underground drainage to divert runoff from roofs to storm sewers. Norm, Tim, Rick and laborer Denny Sergeant worked at DuPont Pioneer, a large producer of agricultural hybrid seeds. "We had to take their safety training and abide by OSHA rules while on the property," says Tim Rozendaal. "The lessons we learned made us think about safety methods and how important it is to go home to our families every night."

Foremost on the Pioneer job was renting a trench box, something the crew hadn't used before. Back home, Rozendaal bought a Speed Shore Corp. box and fabricated a trailer for it, then offered the mobile unit to nearby cities for free. "We'd watched a video about cave-ins and had discussions with people involved in them," he says. "I didn't want that happening to anyone."

Residential installs are the company's bread and butter, with commercial systems comprising only 5 percent of the work. Those systems are for facilities storing specialized industrial equipment. The units have a restroom and maybe a small office, but people rarely work in them for long. Consequently, flows are low.

"We typically installed a 2,000-gallon, three-compartment precast septic tank with effluent pump pumping to a 600 gpd Ecoflo Coco Filter (Premier Tech Aqua)," says Rozendaal. "Treated effluent surface discharges more than 100 feet to a dry retention pond. The challenge on these sites is working around all the underground utilities."

Rozendaal also maintains the systems and sends the effluent for testing twice a year. The latest results revealed a system installed a year ago wasn't achieving proper treatment. "On-demand pumping was channeling effluent

continued >>

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▲ Justin Rozendaal and Rick Beyer install EZflow bundles for a new drainfield system.

too quickly through the biofilter,” he says. He installed a time-dosing control panel to slow the flow.

Skilled Equipment Operator

Another source of income comes from the Rozendaal family’s work and equipment being well known in the small communities surrounding Monroe. When residents on municipal sewers have wastewater problems, their friends often refer them to the guys with the backhoes. The most common occurrences are root intrusion in the lateral or the pipe failed. Many do not have clean-outs.

“Seeing many different systems and other installers’ work has changed the way we install and the products we buy. Occasionally, it has even motivated us to try something new.”

Tim Rozendaal

A subcontractor inspects and cleans the line, then gives Rozendaal the location of the obstructions and depth of the pipe. “Now I can help homeowners make informed decisions,” he says. “If possible, we repair the affected area and install a PVC clean-out. Sometimes we replace the lateral because an 80-year-old maple tree is sitting on bell clay or Orangeburg tile.”

Despite a full service board, Rozendaal made time to join the Iowa Onsite Waste Water Association, become a board member and finally its president in 2015. That year also marked the first time he served as assistant installer trainer with Sara Heger, Ph.D., of the University of Minnesota. “I lost count of the nights I spent memorizing the PowerPoint slides and practicing the accompanying script,” he says. “I was pleased to see myself improve as a trainer with each two-day session.” He did two more in 2016.

Rozendaal is a firm believer in attending the annual IOWWA conference and WWETT Show for their educational value, but he isn’t beyond having some fun. In 2014, he won first place in IOWWA’s Roe-D-Hoe competition and set the state record of one minute, seven seconds. A month later, he

competed against 11 other finalists at the National Backhoe Roe-D-Hoe in Indianapolis. “I came in seventh against Avery Zahn’s combined time of 55 seconds,” says Rozendaal.

Bright Future

Besides septic work and drainage tile, the third element in the Rozendaal corporation is the 400-acre operation raising mostly row crops. The farm is home to the company’s shop with three service bays and office. Equipment and components are stored in two Morton pole buildings and two Cover-All hoop buildings.

Septic components include Tuf-Tite products, 1/3 hp and 1/2 hp Barnes (Crane Pumps & Systems) pumps, Roth Global Plastics plastic septic tanks, and a grade laser (Spectra Precision).

Equipment includes:

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- John Deere 160 track hoe
- Caterpillar 247 B3 and 257 skid-steer loaders
- Two John Deere 850 bulldozers
- Caterpillar D5 bulldozer with six-way blade
- Freightliner F70 dump truck with HilBilt dump body
- Sterling dump truck
- Caterpillar 304 mini-excavator
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- B & B 14,000-pound skid-steer loader trailer
- Kiefer 14,000-pound skid-steer loader trailer
- Trail King 24,000-pound trailer
- Jet 40,000-pound trailer

The future looks bright for the Rozendaals. The onsite branch expanded by 40 percent since 2010, and even greater growth is on the horizon. “Housing developments in the bedroom towns of Adel and Waukee west of Des Moines have gone crazy,” says Rozendaal. “I don’t mind driving 60 miles one way because the competition can’t handle all the work. They’ll be plenty to go around and everyone will prosper.” □

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A Picture is Worth 1,000 Words During an Install

With the ease of using digital cameras and smartphones, it's a no-brainer to keep a comprehensive photo record to document your work

By Jim Anderson and David Gustafson

Back in time when we started to work together there was no such thing as a smartphone and, in fact, no such thing as a PowerPoint presentation. Some of you right now are thinking how good that was, not to have to sit through one of those presentations! Well if you attended one of our workshops back then, you would see us bouncing between an overhead projector showing diagrams of onsite system components to a series of slides in a slide projector depicting what was being discussed.

Every trip to the field and every system site evaluation or installation we were involved with resulted in literally hundreds of photographs, of which only a few were of a quality that could be used to depict what we wanted. Regardless, we knew it was important to try and document what went on at the job site through photographs.

Neither of us would try to give instruction on how to take photos or frame shots, as people who viewed our slides would tell you. Rather than wait for a bundle of photos to arrive from the developer, in this day and age of digital cameras and smartphones you can see and evaluate how well you did on a photo and take another one until you get it right. You're never going to be surprised when your thumb got in the way of the most important shot!

Today's technology makes it easier than ever to show what happened at your job site and leaves no room for excuses for not having photographic documentation. These photographs are useful if you need to go back and look at what happened at the site if there is a question about proper system location or construction details. So we will share a few ideas about what we think you should be photographing.

Take Notes Too

Photographs should be clearly labeled and filed by site location, as well as time and date of activity. It is not a bad idea to make notes or provide information on the weather conditions at the time. If possible, photos should be taken of the lot features before installation. If you are performing the site evaluation work, all aspects of that work should be photographed with notes made about the location of soil pits, soil borings or percolation test holes. A note here: Photographing soil pits is difficult, but the attempt should be made, especially if there's a potential for differing interpretation of soil characteristics. A photograph of the staking should be done to identify the drainfield area.

Site preparation work before the installation should also be documented. In the case of above-ground systems like mounds or at-grades, it is

We always recommend visiting the site about a month or six weeks into operation to check on things. Photos should be taken at this time to show what the site looks like and notes should be taken to document any special areas of concern.

particularly important to document surface preparation from the perspective of the overall site and how well the soil surface is scarified.

All components of the system should be photographed beginning at the house connection. Installation of the supply piping and any clean-outs as well as the bedding of the supply pipe to the septic tank should be documented. It is important to include the elevations of the outlet from the house and the elevation going into the septic tank.

Tanks and Drainfield

Setting any sewage tanks should be photographed. This includes excavating for the tank, bedding for the tank, backfilling the tank, and with documentation of the elevation at the outlet. All aspects of the pump tank and pump should be part of the record, including the wiring, control panel, pump with notation of the size and capacity, all floats and their settings, and then how the whole pump tree setup is located in the tank.

Similarly, supply piping from the septic tank to drop boxes or distribution boxes should be photographed along with the boxes set in place. Trench excavations should be recorded and then the placement of the rock, chambers or other drainfield media. When photographing rock, have a close-up with a scale to verify the correct size and photos showing that it is clean rock.

For above-ground systems, sand and rock placement should be documented along with photos showing the proper elevation of both. If chambers or other non-rock products are used, take photos showing how they were installed and properly blinded to keep them in place.

Placement of the drainfield piping or placement of holes and the gluing process in a pressure distribution system should be documented. If the

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pressure distribution system is tested before completion, images of the test should be included. In some areas this is a required activity, however it should also be done in areas where it is not required.

One system we worked on had an improper glue job, so when the system was pressurized, water squirted out of the joints and — needless to say — distribution was anything but equal! If the test had not been conducted, the installer would have been back there in a few weeks excavating to repair the distribution system.

Follow-Up Photos

When the system is backfilled and the site is finished, more photos should be taken. This includes the type of equipment used and how the site was finished. If the area was mulched and seeded, take photos of this as well.

Finally, we always recommend visiting the site about a month or six weeks into operation to check on things. Photos should be taken at this time to show what the site looks like and notes should be taken to document any special areas of concern. This should provide a comprehensive record you can refer to in the future if there are questions on the part of the homeowner, the regulatory authority or anyone else about how things were done during the installation. □



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Florida Recommends Bypassing Water Softener Discharge Away From Onsite Systems

By Doug Day

In a memo to county health departments, the Florida Bureau of Environmental Health Onsite Sewage Program said it is now recommending that brine waste from water softeners not be discharged into an onsite wastewater system. This is a reversal of a position first taken in 2003, based on further research since then.

The memo states, “While more recent studies indicate that an ‘efficiently run’ water softener should not impair the OSTDS (onsite sewage treatment and disposal systems) and may enhance treatment, these appear to be the best-case scenarios. In worst-case scenarios, this practice results in the discharge of excessive amounts of salt and/or volume of backwash water into the system, which can affect the ability of the contents of the septic tank to properly settle, leading to increased solids bypassing the outlet filter and improper formation of the scum layer, as well as hydraulic overload of the system. It is also known that the soil structure of fine-textured soils can be affected by high sodium levels (decreasing) soil permeability, which can result in drainage problems. It is also possible to have leaks in the water softener unit, which can result in the discharge of hundreds of gallons per day of excessive water. Any excessive water being discharged over a sustained period will have an adverse effect on the OSTDS.”

The agency is recommending against the practice for the following reasons:

- The volume from the water treatment system brine recharge has not been calculated into the estimated sewage flow, including using on-demand versus timed-recharge functions.
- The effects of the volume and content of brine on an individual system cannot be predetermined based on regulations.
- Accounting for lack of appropriate maintenance as well as inefficiently operated water softeners is beyond the scope of the permitting, use and maintenance of a septic tank system.

A proposal to charge a half-cent sales tax to clean up the Indian River Lagoon passed easily in a November vote in Brevard, Florida. The tax passed with 62.3 percent of the vote. It will provide \$340 million over 10 years to clean the body of water, including removal of nitrogen and phosphorus that have been feeding algae blooms over the last five years, resulting in the deaths of manatees, dolphins, pelicans and other marine animals. About 66 percent of the money goes toward dredging muck and silt. Another \$10.8 million will go toward stormwater projects, \$9.4 million for sewer plants upgrades, and \$41.7 million for septic system removal and upgrades.

Maryland

New construction in Maryland will no longer be required to use the Best Available Technology (BAT) for septic systems statewide. BAT with enhanced nutrient removal has been required across the state since 2012, adding around \$10,000 to the cost of building a new home. Gov. Larry Hogan announced the rollback of the regulations by the Department of Environment last fall. BAT is still required in critical areas, defined as within 1,000 feet of tidal water. Such systems also require a service agreement for operations and regular maintenance. Local governments can still require BAT outside of critical areas.

Proponents of the BAT requirement say it helps protect water quality in the sensitive Chesapeake Bay, while opponents have said it harms economic development in the state. According to the MDE, there are about 420,000 septic systems in Maryland, with 52,000 in critical areas. The Bay Restoration Fund Onsite Sewer Disposal System grant program has upgraded more than 8,000 septic systems to include technology that removes nitrogen from the effluent.

New Jersey

The New Jersey legislature may fight the proposed relaxing of rules governing the number of septic systems allowed in the Highlands region, stretching for 60 miles along the Atlantic Ocean that provides about 70 percent of the state’s drinking water. The current standard is one individual septic system for every 25 acres of non-forested areas and one for every 88 acres of forested land. The new density standard, announced in spring 2016, establishes three zones and would increase the number of allowed septic systems by about 12 percent: developed communities (32,896 acres) — one system per 11-acre lot; agricultural and woodlands (54,555 acres) — one system per 12-acre lot; lands important to water quality protection (327,449 acres) — one septic system per 23 acres.

The state Senate held a hearing to question state and federal officials about the methods used to establish the new limits, and a bill has been introduced in the Assembly to block the new rules.

Rhode Island

A referendum allowing a community septic system loan program in North Kingstown Township passed with 67.4 percent approving (9,454 votes) and 32.5 percent against (4,554 votes). The referendum allows the town to set aside \$2 million for loans to residents and homeowners to upgrade their septic systems to rid the town of cesspools. While new cesspools have been banned since 1968, a 2015 law requires all of them to be disconnected within 12 months of the sale of a property. □

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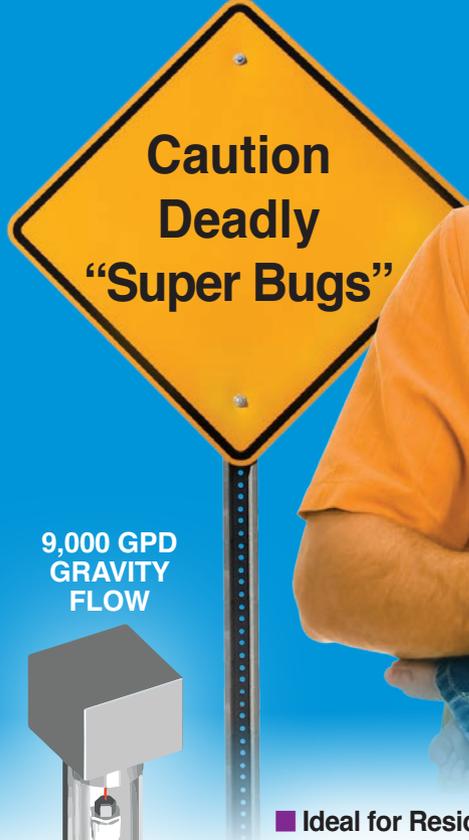
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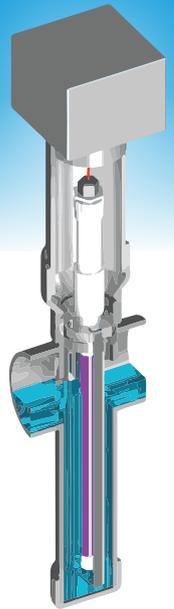
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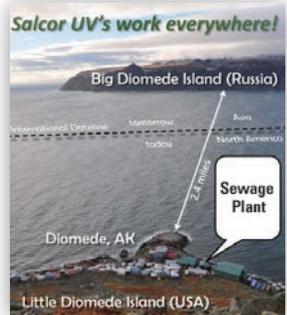
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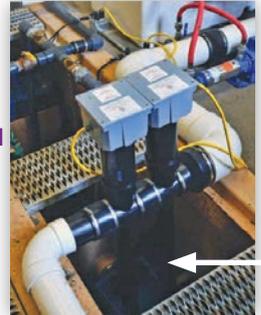
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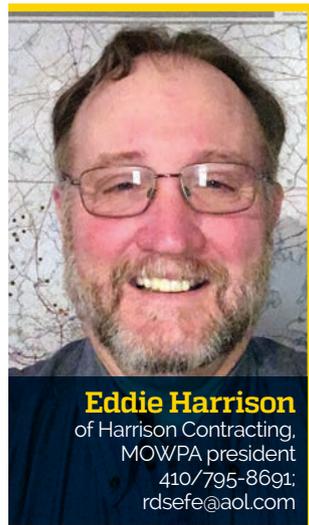
The Wastewater Industry Copes With Maryland Regulatory Flip-Flop

A new governor draws back on statewide advanced system requirements, prompting market changes for contractors and manufacturers

By Doug Day

Nitrogen removal is no longer required for every septic system installed in the state of Maryland. The best available technology (BAT) regulation has been unpopular in rural areas of the state that saw it as a barrier to development because of the approximate \$10,000 added cost for building a home.

Republican Gov. Larry Hogan announced the rollback of the regulations by the state Department of Environment in August during a speech to the state's Association of Counties, calling it a "cost-prohibitive burden on Maryland homeowners and businesses."



The change became effective in late November after a rulemaking process by the Department of Environment. The new regulation allows conventional septic systems outside of the Critical Area, defined as within 1,000 feet of tidal water, and such systems require a two-year service agreement for operations and maintenance, and must be inspected annually. Local governments can still require BAT outside of critical areas in order to protect public health or water quality, and all systems with design flows of 5,000 gpd or more still require BAT.

In 2012, Hogan's predecessor, Democrat Martin O'Malley, began requiring that all new septic systems reduce nitrogen releases by 50 percent.

Eddie Harrison, Maryland Onsite Wastewater Professionals Association president, says it was no surprise that Hogan overturned his action. "Not to anybody that's been aware of things. When Mr. O'Malley put it in, there was a very strong kickback amongst the rural voters that voted in Mr. Hogan."

Hogan's 2014 win over the then-Lt. Governor in the heavily Democratic state was seen as a big upset. Hogan campaigned on a theme of blocking taxes and regulations from the O'Malley administration. "O'Malley implemented it for political reasons and Hogan pulled it out for the same reasons," says Harrison of the BAT requirement. "Neither one did it for the environment or anything to do with the (onsite) industry, it was about satisfying a political agenda."

Potential Impact

According to the MDE, there are about 420,000 septic systems in Maryland, with 52,000 in critical areas. The Bay Restoration Fund Onsite Sewer Disposal System grant program has upgraded more than 8,000 septic systems to include technology that removes nitrogen from the effluent as part of the efforts to clean up Chesapeake Bay.

On the Department of Environment website, MDE Secretary Ben Grumbles published a statement saying the agency was committed to clean water and meeting the state's goals for cleaning up Chesapeake Bay.

"This is a measured step to reduce regulatory burden and build public support for a smarter and more effective septic program across the state," he wrote. "We are customizing the statewide requirement to meet local watershed needs more effectively while still insisting on excellent environmental results. Innovation and collaboration at the local level, rather than locking into one particular technology, will lead to more success in protecting and sustaining Maryland's precious environment. We will work hard to make sure it happens through regulatory reform, education, compliance assistance and enforcement."

Harrison says for the most part, members of MOWPA agree with Hogan's action to overturn the BAT requirement. A survey of members showed about two-thirds, mainly installers and local regulators, were in favor of it and a third, equipment manufacturers and some installers, were opposed.

"It was sold as 'Save the Bay,'" Harrison explains. "Any person with a basic knowledge of septic knows that the nitrogen (from septic systems outside Critical Areas) is never going to make it to the Bay." He adds that other benefits of BAT, such as protection of wells and groundwater, and longevity of the systems, was not promoted when the requirement was added. "When you get a bad taste in your mouth about something, it's hard to convince you that it's good."

While there is support for the BAT rollback, some installers may be lamenting the costs they incurred in meeting the 2012 law. "People had to invest a lot of money in training and materials to satisfy the change," says Harrison. "They spent, cumulatively, millions of dollars for equipment that is just going to be parked with weeds growing out of it. Most of our membership is glad it rolled back, but for a sector of our membership, it hurt them pretty bad."

Harrison says counties are adjusting to the new regulation. "Counties are handling it differently as far as modifying existing permits. Some counties

are still leaving BAT as an option to put in depending on their soils and site conditions. There are some counties that like it (BAT) and still want to put them in. But they can't require them everywhere; they have to come up with a good reason to have it."

Nothing is Final

Politics being what they are, Harrison says the future of BAT regulations in Maryland is uncertain. "The (onsite) manufacturing industry really got upset. They've started their own movement to bring it back. They were upset that they were forced into the business. But once they made the investment, they're upset that they spent all that money for a few short years and now the bottom has dropped out of it."

"O'Malley implemented it for political reasons and Hogan pulled it out for the same reasons. **Neither one did it for the environment or anything to do with the (onsite) industry, it was about satisfying a political agenda.**"

Eddie Harrison

started have passed, the legislature may — there's a chance that they will pass it for political reasons," he continues. "It's a Democratic legislature and a Republican Governor, so it may come back."

Because of the mixed feelings of its membership, MOWPA hasn't taken an official position. "It's all about politics; it's not about science. And it's very frustrating for those of us in the industry," Harrison continues. "Stay tuned." □

There is also a chance the legislature, controlled by the Democrats, may get involved, though that has failed in the past. Democrat Gov. Parris Glendening (1995-'03) was the first who tried to get in passed into law without success. "O'Malley had tried earlier through legislation and it wouldn't go because the rural legislators' constituents wouldn't stand for them voting for it, so he did it by regulation right before he left office," says Harrison.

"Now Hogan has pulled it back through regulation. But now that it has already been in and all the pains of getting it

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Gravity Is the Game for Iowa Housing Project

The onsite system serving an Iowa subdivision was designed so most wastewater continues to flow downhill, eliminating pumps and mechanicals

By David Steinkraus

▲ Individual tanks at the dwellings near Solon, Iowa, all lead to one of several final treatment systems that look like this. At the bottom is the 300-gallon distribution tank feeding a cluster of Ecoflo biofilters near the top of the photo. (Photos courtesy of Trevor Dickerson and Jason Laing)

▼ This is one of the 300-gallon distribution tanks installed at the subdivision. Each tank was custom-built with three or four outlets depending on the number of biofilters attached, and a single 4-inch inlet pipe bringing wastewater collected from dwellings. Flow equalization to the biofilters is handled simply. Each outlet pipe has a cap with a 1-inch hole drilled off-center. Twisting the cap allows more or less water to flow through the hole.



The Iowa project was a new subdivision for year-round homes, and the task was to maximize the number of homes while not impacting a nearby creek and ultimately the major river it flows into. The team from MMS Consultants in Iowa City, Iowa, and Lynch's Excavating in West Branch, Iowa, installed a cost-saving solution consisting of biofilters combined with standard septic tanks.

"The river didn't have a direct effect on designing the system, but it was a limiting factor as we figured out how many systems we could put on the site," says Trevor Dickerson, the septic designer at MMS Consultants. The MacBride Pointe development is located in Solon, Iowa.

A few hundred feet north of the subdivision is Hoosier Creek, a tributary of the Iowa River. Once it is fully built, the subdivision will have the year-round homes of people who can live near the recreational area around Lake Macbride State Park and have a short commute to work in Cedar Rapids or Iowa City.

Pumping as needed

Dickerson used a combination of STEP and STEG installations because of the rolling landscape. All homes have tanks for primary treatment, and wastewater from each of the 24 housing lots is sent to one of eight jointly owned outlots where final treatment takes place.

Each of the 17 single-family homes on the site has a concrete tank from Wilkinson Precast of Riverside, Iowa. The development also has



▲ Matt Smith, left, and Aaron Lynch, right, install one of the Ecoflo biofilter clusters at the subdivision near Solon, Iowa. Effluent from the biofilters discharges to the surface. In the background is a Spectra Precision laser level to keep the job lined up.

►► To simplify operation, all the final treatment systems at the subdivision are gravity-fed. Here, Aaron Lynch, left, and Pat Lynch, right, connect the Ecoflo biofilters visible at the bottom of the photo to a 300-gallon distribution box visible at the top of the photo.

seven duplexes, and each of those has two tanks. The size of the tanks is governed by the size of the home and the need for a pump. Four-bedroom homes have 1,500-gallon tanks. Five-bedroom homes have 1,750-gallon tanks. Capacities are split with two-thirds of the volume assigned to the first compartment and one-third to the second.

A 4-inch pipe carries effluent to each home's tank. Tanks provide anaerobic primary treatment. The first compartment separates fats, oils and grease, and settles solids, and the second compartment provides initial treatment. On lots where a rise in the ground prevents gravity flow into the collection pipes, technicians set a 1/2 hp pump, usually from Goulds Water Technology, a Xylem brand, that provides enough head pressure so effluent can reach the collection pipe and flow by gravity the rest of the way. In these cases a 250-gallon pump chamber is a specified addition for the home's tank.

Most of the pipe was 4-inch Schedule 40. In a couple of cases pipes crossed the safety zone around a well, and that pipe is Schedule 80, says Jason Laing, foreman at Lynch's Excavating. In some cases the crew used 6-inch pipe as a main collector to cross under a street.

Collection pipes from a group of three or four homes carry wastewater to a custom-made 300-gallon concrete distribution box from Swales Precast, of Strawberry Point, Iowa. These boxes were created with either three or four outlets depending on how many biofilters serve each cluster of dwellings. Biofilters are Premier Tech Aqua Ecoflo units using coconut fiber as the filter medium. Water from the biofilters is discharged to the surface. Premier Tech Aqua's claimed 10 mg/L of both BOD and TSS meet the Iowa threshold of 25 mg/L for surface discharge.

Lynch's technicians set standard manholes in green areas for access to the collector pipes. Those are 48-inch-diameter made by County Materials in Iowa City.

System Profile

Location:	Solon, Iowa
Facility served:	Macbride Pointe subdivision
Designer:	MMS Consultants Inc., Iowa City, Iowa
Installer:	Lynch's Excavating, West Branch, Iowa
Type of system:	Ecoflo coco filter biofilter
Site conditions:	Clay soils
Hydraulic capacity:	21,750 gpd

Technicians did the subdivision job with the company's Caterpillar 314 excavator, Case TR320 skid-steer, and Case 580 Super N backhoe. When the job was done they brought in a Caterpillar D6K bulldozer to knock down the dirt piles. A Spectra Precision laser level was used to keep everything in alignment.

Check once, measure twice

It took time in the field to work out placement of the units, Laing says. Technicians made careful measurements to make sure the Ecoflo units and distribution boxes were in the right place, to ensure elevations were sufficient to avoid extra grading yet provided enough elevation for proper and equal flow to the biofilters, and to make sure the biofilter lids were at the proper elevation. The first two distribution boxes went in slowly as the crew worked out its method, but the other boxes were set faster, Laing says.

Because MMS created the entire development plan, the treatment outlots could be drawn for maximum utility, Dickerson says.

"They are shaped to allow for replacement systems if they're ever needed, and to allow for gravity flow into the biofilters. Aside from mechanical simplicity, this system avoided the complications from using a lot of big pumps and shared tanks, which automatically raises issues about tracking



◀ A finished treatment field of Ecoflo biofilters. Lots holding the systems are jointly owned by landowners in the subdivision. These outlets were also custom-drawn for maximum usefulness. They provide sufficient grade to feed the biofilters by gravity, and there is enough room to install replacement systems should those ever be necessary.

usage and allotting payments. We wanted to make it as easy as possible for the homeowners association.”

The streets were a challenge to the project.

“The streets were already in when we arrived on the site. And the water system was already in, so we had other lines to be careful of as we did the work,” Laing says.

Boring took care of the street problem. A total of four bores done by another contractor were needed to run lines beneath a street and to the north side of the property where the biofilters are placed.

Inside the distribution boxes, Laing handled the need for flow adjustment with a simple solution. Each 4-inch pipe flowing out of a box is equipped with a cap that has a 1-inch hole drilled off-center. Adjusting the flow through that pipe is a matter of rotating the cap.

“Although the recommendation is for some kind of mechanical controller, this is much simpler than

any sort of valve. There is much less to go wrong,” Laing says.

“They are shaped to allow for replacement systems if they’re ever needed, and to allow for gravity flow into the biofilters.

Aside from mechanical simplicity, this system avoided the complications from using a lot of big pumps and shared tanks.”

Trevor Dickerson

Designing for the market

A challenge for Dickerson was sizing a system for a subdivision that didn’t exist, and where people can build what they wish. He looked across the street and at area properties for guidance. He found a subdivision designed about a decade ago and with a shared septic system based on three- or four-bedroom homes.

“And that’s just not what people moving into the area now are building. They’re building four-, five- and even six-bedroom homes,” Dickerson says. So he assumed five bedrooms for each single-family home and eight bedrooms (four per side) for each duplex.

The Ecoflo biofilters were not the original choice for the site. Based on the soil analysis, the county originally preferred sand filters. But as quotes came in, a contractor in the bidding calculated biofilters would be significantly less expensive.

“Due to the quantity of units involved, and the simplicity of installing the Ecoflo filters, the developer saved more than \$100,000 on this system compared to sand filters,” Dickerson says. After a discussion, the county allowed them.

Each Ecoflo unit holds 1,891 cubic inches of coconut fiber to treat 750 gpd, and the manufacturer recommends replacing that every eight to 10 years, although use will determine the real interval. Replacement cost and annual maintenance is figured into the fees of the homeowners’ association, Dickerson says. Included in the maintenance is annual pumping of seven to eight septic tanks. All tanks will be pumped on a four-year cycle although individual owners may be required to pump tanks that they fill before the scheduled time.

The subdivision isn’t complete, but thanks to careful work future residents will have no worries that their wastewater will damage the environment of eastern Iowa. □

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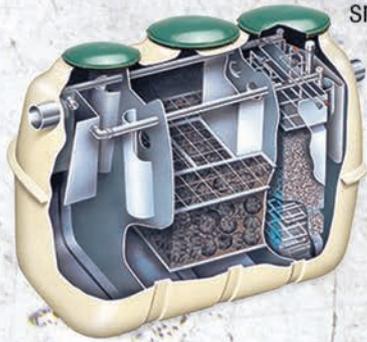
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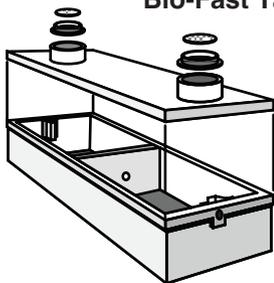
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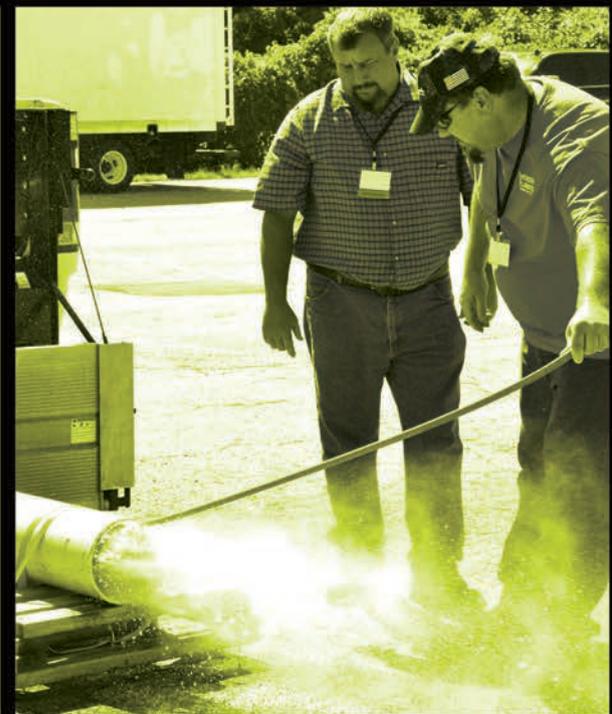
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Stop Relentless Rust From Eating Your Fleet

Trucks and equipment are your biggest capital investment. Try these solutions to prevent corrosion from costing you a bundle.

By Peter Kenter

Given enough time, any object made of iron or steel exposed to oxygen or moisture will oxidize, or rust. Exposure to chemicals such as road salts or acids only accelerate the process. The good news is that there's a host of strategies — from chemical treatments to barriers — that can be used to beat rust at its own game.

The first question any work vehicle owner should ask is whether a corrosion treatment makes financial sense, says Leslie Wong, vice president of customer and dealer service at Unhaggle.com, a service designed to help buyers negotiate the best price for a vehicle.

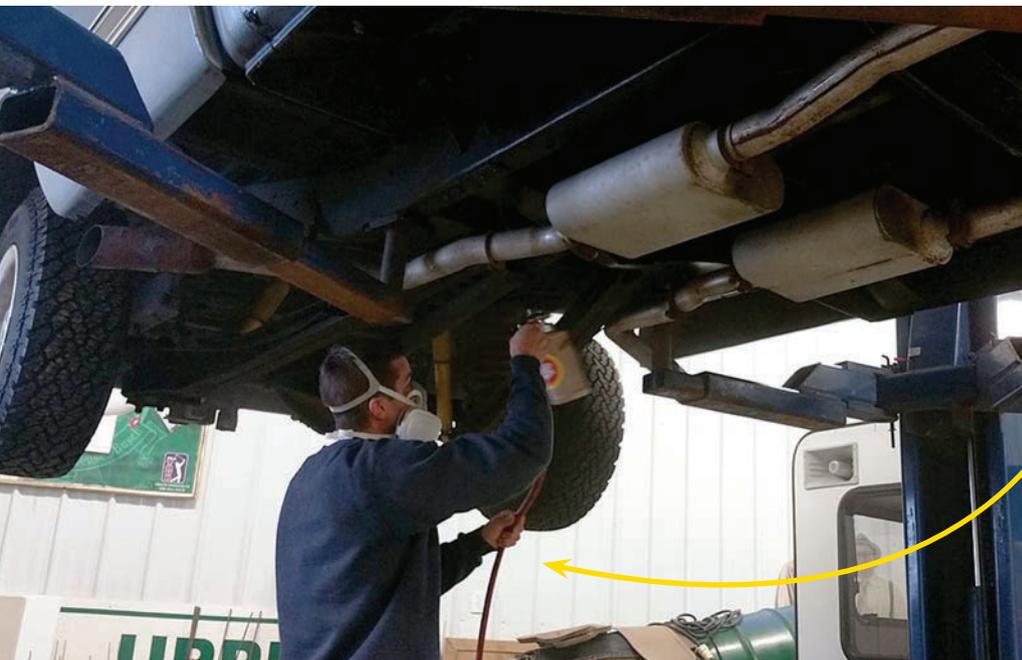
He notes that new pickup trucks, for example, offer warranties against rust perforation or surface corrosion. "If you don't intend to keep the vehicle beyond the point where the vehicle's manufacturer rust warranty runs out, then there is absolutely no point in paying for rust-proofing," he says.

Even GMC's own website notes: "Application of additional rust-inhibiting materials is not required under the corrosion coverage and none is recommended."

Many Choices

The home turf of the vehicle also plays a part. Locations experiencing heavy winters and lots of road salt offer more corrosion risk. So do coastal areas where salty sea spray eats metal. While rustproofing can make a big difference to vehicle longevity in salt-prone locations, simply washing the vehicle regularly is the best way to remove the salt that causes rust.

Most rustproofing treatments fall into several categories: undercoating with tar-based sprays, dripless oil sprays, drip oil sprays, rust conversion sprays and bed liners. Some of these treatments are available as do-it-yourself products while others are proprietary products that can only be applied professionally.



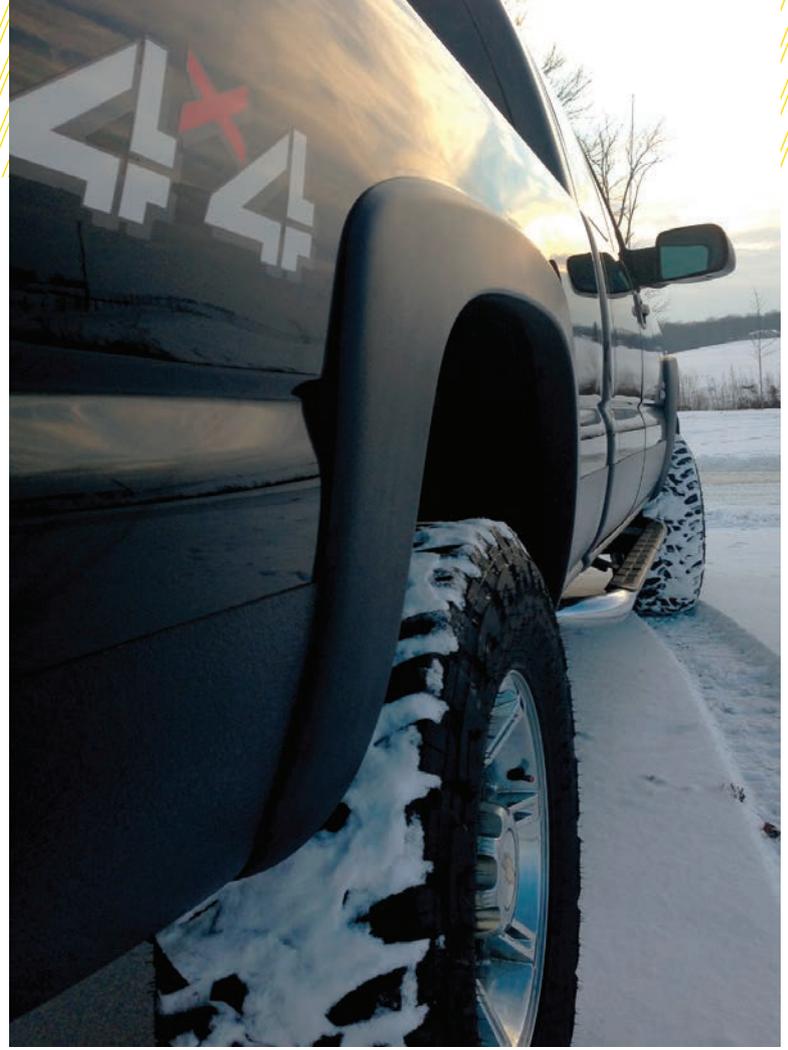
"I ... have a series of wands that you won't likely find in the average garage. ... With that equipment, I can be more thorough and much quicker. I had a customer in here with a pickup truck who rustproofed it himself last year. **It took him more than eight hours and it took me 90 minutes.**"

Mike Stansbery

« Mike Stansbery, owner of Wyandot RustProofing LLC applies an undercoating of Fluid Film, a lanolin-based rust inhibitor, to the undercarriage of a 1969 Chevy truck. (Courtesy of Wyandot RustProofing LLC)

➤ Rocker panels in northern climates are often subject to damage and corrosion. A black LINE-X coating has been applied to this truck. (Courtesy of LINE-X)

▼ The LINE-X truck bed liner protects against rust using a durable coating applied to truck metal. (Courtesy of LINE-X)



Undercoating with tar-based sprays

Using this method, tar-based sprays are applied underneath the vehicle and into wheel wells, and harden into a solid barrier. While the barrier remains intact the protected surface won't rust. However, undercoating should be inspected annually to ensure it remains intact. If the surface cracks or peels, moisture can penetrate the coating and migrate behind the barrier, forming unseen rust.

Dripless oil spray

Dripless oil sprays form a waxy barrier and generally cover more area than undercoating. It can be applied to wheel wells, hoods and rocker panels. To fully apply the product, holes must be drilled into door panels and other areas of the car.

Drip oil sprays

Drip oil sprays are thinner than dripless sprays, and are similarly applied through holes drilled into door panels and other sections of the vehicle. The upside: The thinner spray tends to reach the inner crevices of the car a little better than dripless sprays. The downside: The car will drip a little oil for a few days after application.

Rust converters

These chemicals can transform red iron oxide into a more stable form, ferric tannate, which can be painted.

DIY Approach

Theoretically, truck owners can buy products in each category and perform rustproofing themselves.

Pro Form Products Ltd., for example, sells a range of dripless oil products, wax-oil blends, rubber plugs to seal drill holes and anything else a truck owner might need for rustproofing.

However, Pro Form tech expert Robin Wason points out that many of the company's customers use the products for loving restoration and maintenance of cherished vehicles — not a quick rustproofing job for a company pickup.

"The largest part of our market is people who spend an inordinate amount of time taking their vehicles apart and putting them back together again," he says. "We sell these products with a complete kit with wands and applicators. The buyer would need to supply a wire brush and sandpaper to loosen any rust and typical protective gear for automotive work — nothing exotic."

On the other hand, Mike Stansbery, owner of Wyandot RustProofing LLC in Upper Sandusky, Ohio, believes that truck owners can benefit from the thorough work of a professional. He exclusively applies Fluid Film, a lanolin-based formulation applied under nonaerosol pressure and acting most like a dripless oil spray.

"I've rustproofed everything from farm machinery to pickups, dump trucks and semis," he says. "If it can rust, we'll do it."

Having a full range of equipment and rustproofing experience makes all the difference, he says.

"I have a gun specially optimized for spraying the product," he says. "I also have a series of wands that you won't likely find in the average garage. One of them is a 3-foot flexible wand with 360-degree spray head. With that equipment, I can be more thorough and much quicker. I had a customer in here with a pickup truck who rustproofed it himself last year. It took him more than eight hours and it took me 90 minutes."

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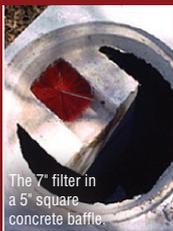


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Bed Liners

Some truck owners choose bed liners to rustproof their trucks using either do-it-yourself or professionally applied products.

Paul DeSmet, executive vice president at LINE-X, notes that his company's bed liner is applied using advanced equipment at high temperature by trained professionals to ensure a durable bond to the metal beneath, while do-it-yourself products are often rolled on.

"LINE-X could be considered a rustproofing treatment," he says. "Any existing rust would need to be removed and treated prior to the LINE-X application, but once LINE-X is applied, it will resist future corrosion."

The product is available in several formulations and is now often used beyond bed liners. In a formulation stable under ultraviolet light, it's used to coat exterior panels, floors or any part of the truck that requires corrosion and abrasion resistance.

"LINE-X has been applied to Bobcats, UTVs, forklifts, tractors, haulers, trailers and more," says DeSmet.

He notes that company techs have seen LINE-X coatings that have lasted as long as 15 years in the field. The one common factor that predicts longevity is the condition of the metal substrate.

As with most rust protection products, the best time to apply is before you see any rust at all.

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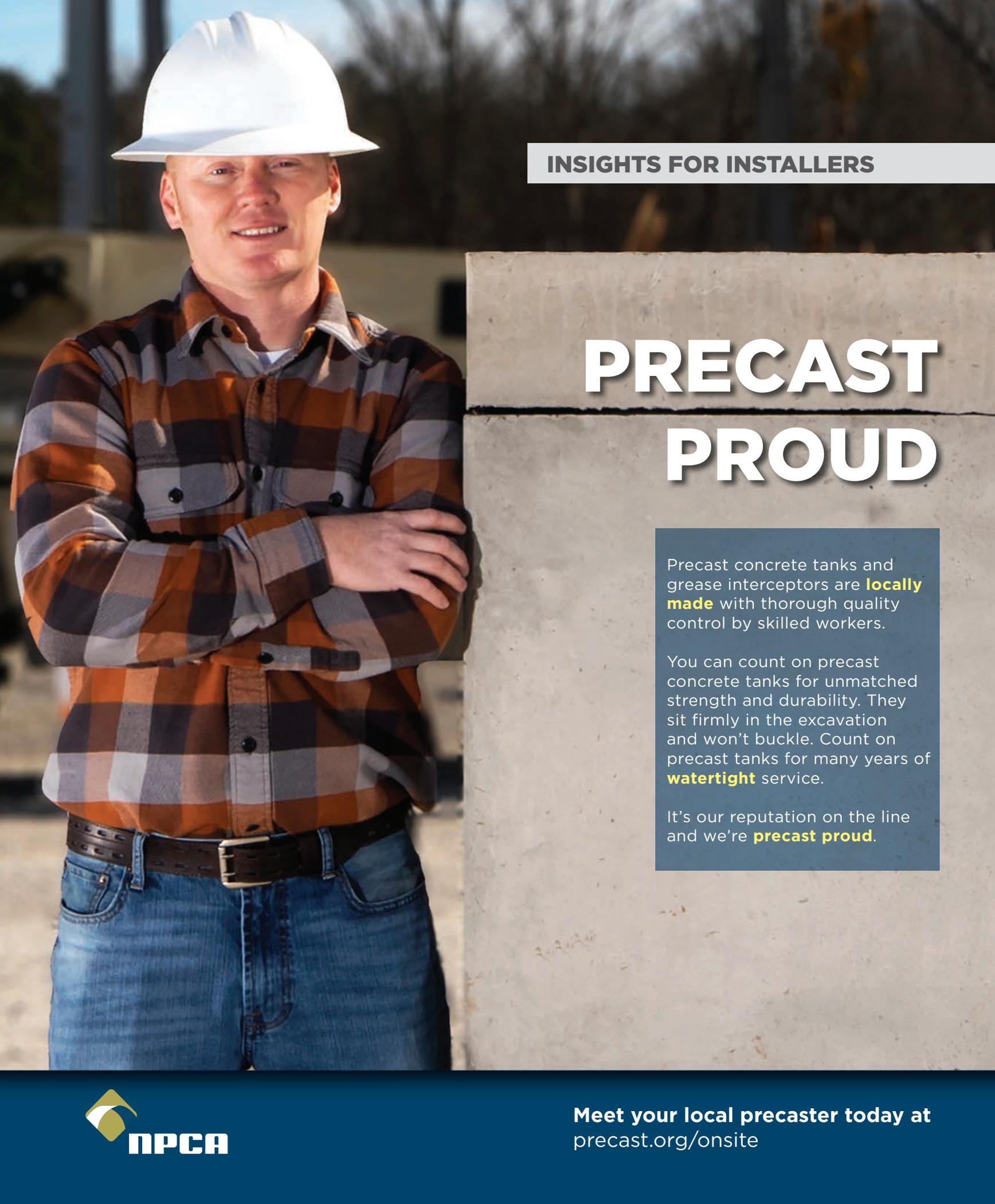
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Safety Violations in the Trench Prompt Massive Fines

OSHA is putting a lick on excavation companies that disregard shoring and other safety rules, going beyond fines and considering criminal charges

By Doug Day

They are preventable, yet still kill about 40 people every year. With all the rules to follow and guidance to help, there is no reason for fatalities or injuries in trench accidents.

Sometimes accidents just happen, but there are those times when people take shortcuts or even worse, ignore safety. There are good reasons for onsite installers to consider the business ramifications of following safety rules. Here are three examples from the last year where companies ended up paying large fines; two of the cases involved no injuries.

“Ground soil gives no warning prior to giving away, and a collapse can bury workers in just seconds.

One cubic yard of soil can weigh as much as a small automobile, making it almost impossible to avoid tragedy.”

Robert Bonack

Two workers were killed and another seriously injured in May in Boise, Idaho, when a trench about 11 feet deep caved in. The contractor had provided no cave-in protection or even a ladder for the employees working in the trench doing underground utility work. The company also did not have a competent person inspect the trench and had not trained its employees on the dangers of trench work. The three serious violations and one willful citation resulted in \$77,319 in assessed penalties: one serious — \$14,964 (lack of training, no ladder, no competent person); and one willful — \$62,355 (lack of protective system).

In announcing the fines, the area director of the Occupational Safety and Health Administration (OSHA), David Kearns, says the contractor, “made almost no effort to protect its workers, or even to understand the right ways to avoid the common hazards in this line of work. Hiring workers and assuming they know how to protect themselves is a sure path to tragedy.”

Nobody was hurt in a September incident in Stevens Point, Wisconsin, when OSHA inspectors found two workers in a 10-foot trench with no required protection and a ladder provided for escape more than 25 feet away. In addition, the required competent person was present but allowed

the workers to enter the trench without proper cave-in protection. The two serious and one willful citations carried a penalty of \$93,532: one serious — \$6,236 (ladder violation, competent person allowing workers to enter trench); and one willful — \$87,296 (no cave-in protection).

“Ground soil gives no warning prior to giving away, and a collapse can bury workers in just seconds,” says Robert Bonack, OSHA’s area director. “One cubic yard of soil can weigh as much as a small automobile, making it almost impossible to avoid tragedy.”

In March, three weeks after a Chicago plumbing contractor was cited for exposing workers to unprotected trenches, while also not wearing hard hats, it was again cited for allowing four workers into an unprotected 5.5-foot trench. Despite being told by an investigator to provide proper protection, the same workers were caught by an inspector doing the same thing the next day in a 6.5-foot trench at another location. As the inspector left the site, workers went back into the trench, only to scramble out as the inspector returned. A short time later, a large section of the trench collapsed in the area where the employees had been working.

The early March incident drew a penalty of \$69,300. Due to “wanton disregard” for worker safety in the later incidents, OSHA placed the company in its Severe Violator Enforcement Program and issued several citations with penalties totaling \$275,728: serious — \$8,231 (no hard hats on first day); repeat — \$123,458 (no means of egress or protective system on the first day); repeat — \$48,013 (no means of egress on second day); and willful — \$96,026 (no protective system on second day).

Also, under the Severe Violator Enforcement Program, OSHA may inspect any of the company’s facilities or job sites if it has reasonable grounds to believe there are similar violations. According to OSHA, the program “focuses on recalcitrant employers that endanger workers by committing willful, repeat or failure-to-abate violations.”

If the health of workers isn’t enough incentive, considering a company’s financial health may be. In addition, OSHA has teamed with the Department of Justice to pursue more felony criminal charges against individuals in safety and environmental issues. The effort was announced last December.

Misdemeanors under the Occupational Safety and Health Act are punishable with fines up to \$10,000 and six months in prison, which hasn’t increased since the law was passed in 1970. If charged as a felony, the same acts could draw much larger fines and from five to 20 years in prison. □

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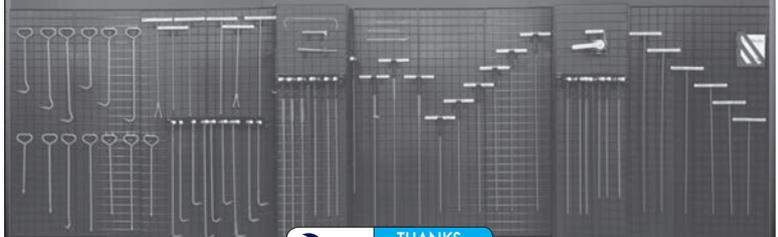


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Pumps

By Craig Mandli

AERATION PUMPS

Aero-Stream Aerobic Remediator

The retrofit Aerobic Remediator (ARU) from Aero-Stream is designed to help restore failed systems and provide simultaneous nitrification/denitrification. The diffuser is designed to lower TSS and BOD and can be installed through a 3-inch opening. The UL-listed device introduces oxygen into septic tanks, turning passive anaerobic environments into active aerobic environments. After conversion, the microorganisms reduce the organic matter in the tank by 80 percent and suspended solids by 60 percent. The cleaner effluent reverses the aging process and eliminates the clogging biomat; within weeks systems are restored to full functionality, according to the manufacturer. 877/254-7093; www.aero-stream.com.



Jet Inc. 700++ Aerator

The flood-resistant 700++ Aerator from Jet Inc. is the only mechanical component in the 1500 Series BAT Media Plant, and works in tandem with the BAT Media to provide complete biological processing. The aerator shaft spins and combines fresh outside air with the wastewater in the treatment compartment. Air travels through the aerator and into the tank, providing oxygen for the treatment process. Foam is controlled by the foam restrictor. The aerator operation is nearly silent, as the 1500 Series uses a sealed aerator to protect it from damage by water. It is not designed to operate underwater for extended periods of time. 800/321-6960; www.jetincorp.com.



Septic Services Retro-Air Rejuvenator System

The Retro-Air Rejuvenator System from Septic Services provides a complete drainfield rejuvenation system designed to help return a failed septic system back to optimal flow and performance. It can be used in new or existing septic systems, and can be installed in single- or multiple-compartment septic tanks. It helps eliminate clogged drainfield biomat and is recommended in aeration systems that are prone to backup. It is easy to install and requires minimal maintenance. It is available in several models to fit various applications. 800/536-5564; www.retro-air.com.



EFFLUENT PUMP

Clarus Environmental effluent turbine pump

Clarus Environmental effluent turbine pumps are available in capacities from 11 to 85 gpm with heads up to 500 feet. Pumps range from 1/2 to 3 hp, with discharges of 1 1/4 inches for 11, 19 and 27 gpm models, and 2 inches for 35, 55 and 85 gpm models. Starting boxes are not required for pumps 1 1/2 hp and below, and are included with 2 and 3 hp models. It is recommended that pumps are installed in a filtered STEP vault or a pump tank receiving filtered effluent from a septic tank filter. 800/928-7867; www.clarusenvironmental.com.



GRINDER PUMPS

Ashland Pump AGP-HC200 Grinder Pump

The AGP-HC200 Grinder Pump from Ashland Pump has a radial portion that grinds waste into fine slurry, and a cutting-edge axial portion that cuts and chops stringy solids and other forms of nonhuman waste into pieces small enough to pass through the small-diameter discharge pipe. Fibrous materials get chopped/cut, while the soft solids become slurry, minimizing downstream solids and preventing clogging. The engineered design prevents wrapping at the inlet, which clogs grinders. The cutters are easy to sharpen and adjust clearances, and are made of case-hardened 440 stainless steel. 855/281-6830; www.ashlandpump.com.



Environment One Corporation Upgrade

The Upgrade replacement grinder pump from Environment One Corporation has a universal design for drop-in conversion and connection in most grinder pump wet wells. All solids including plastic, rubber, fiber and wood are ground into fine particles, allowing them to pass easily through the pump, check valve and small-diameter pipelines. The grinder is designed not to jam and for minimum wear to the mechanism. It comes with a self-contained level-control system, eliminating float switches. 518/346-6161; www.eone.com.





Franklin Electric IGPDS Dual Seal Grinder Pump Series

The IGPDS Dual Seal Grinder Pump Series from Franklin Electric uses two mechanical seals, coupled with sensor probe and seal leak detection circuitry in the panel, to provide added pump protection that can extend the overall pump life. If water enters the oil chamber, a light in the control panel indicates the first seal requires replacement. The second seal continues to protect the pump so it can maintain full functionality until the first seal is changed. After replacement of the first seal, the pump can be put back in service at peak performance levels. The series offers multiple pumps that can operate on nominal voltages ranging from 208 and 230 volts in one configuration (single- and three-phase), with multiple models in 460- and 575-volt three-phase options for applications where higher voltage is required. The cutter system offers 414,000 cuts per minute. 260/824-2900; www.franklinengineered.com.

Liberty Pumps ProVore

The ProVore grinder pump from Liberty Pumps is designed for residential applications where bathroom or other fixtures located below sewer lines requires pumping. It features the same V-Slice cutter technology utilized in Omnivore Series 2 hp grinder pumps. Powered by a 1 hp motor, it is designed to operate on a standard 115- or 230-volt circuit requiring a 20-amp breaker. No special wiring is needed. Compact factory-assembled systems are available in both simplex and duplex versions. 800/543-2550; www.libertypumps.com.



LIFT STATION PUMP

Flygt - a Xylem Brand Concertor

The Concertor smart, interconnected wastewater pumping system from Flygt - a Xylem Brand senses the operating conditions of its environment, adapts its performance in real time and provides feedback to pumping station operators. It can offer energy savings of up to 70 percent, reduced inventory due to flexible performance, clog-free pumping operation and clean wet wells. It offers a wide performance field from which to choose the right operating point, making selection simple, facilitating performance fine-tuning and reducing inventory. 855/995-4261; www.xylem.com.



SEWAGE PUMP



Vertiflo Pump Company Model 1312

The Model 1312 industrial, close-coupled, horizontal end suction pump from Vertiflo Pump Company can be used for general pumping, chemicals, wash systems, deionized water, process and OEM applications. It is designed for long life in tough services with heads to 160 feet TDH and flows to 240 gpm. It has back pull-out construction, a mechanical seal and semi-open impeller. Construction options include cast iron, 316 stainless steel fitted or all 316 stainless steel. Additional 1,750 and 3,500 rpm sizes are available. 513/530-0888; www.vertiflopump.com.

SUMP PUMP

Webtrol Pumps V-Series

The 1/3 hp V-Series sump/effluent pump with automatic operation from Webtrol Pumps has a recessed vortex impeller, reducing the load on the bearing and helping prevent clogging, extending the life of the pump. The motor is air filled and offers a continuous-duty rating. To protect the motor from water, it comes standard with a potted epoxy cord seal as well as a carbon-ceramic mechanical seal. Constructed from stainless steel, cast iron and glass-filled polymers, it can be used for residential or light commercial applications. 800/769-7867; www.webtrol.com.



SUBMERSIBLE PUMPS

Hydra-Tech Pumps S3T

The S3T 3-inch hydraulic-drive submersible trash pump from Hydra-Tech Pumps is designed for jobs such as construction sites and manhole pumping. It is able to fit into 12-inch openings and is used where lightweight, high-volume trash pumps are needed. If being used for a job with limited solids, a small-hole water strainer is available. When combined with HT11 to HT15 power units, it is capable of flows up to 380 gpm. The safe and variable-speed hydraulic drive can be used where electric power is hazardous or impractical. 570/645-3779; www.hydra-tech.com.





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Polylok PL-CPE4A

The Polylok PL-CPE4A is a submersible 4/10 hp, 115-volt single-phase effluent pump with a 2-inch NPT vertical discharge. It has a maximum head of 38 feet and a maximum flow of 56 gpm. The pump is designed with a 3,450 rpm oil-filled permanent split-capacitor motor and has an amp rating of 6.6 for 115 volts, a rugged cast iron housing and volute equipped with a cast iron vortex impeller capable of passing a 3/4-inch-diameter solid. The stainless steel shaft is supported by two single-row oil-lubricated ball bearings. The shaft seal is an inboard design with a secondary Exclusion V seal. It has a 20-foot UL/CSA-listed power cable suitable for submersible service and fitted with a three-prong plug. The unit is supplied with an integrated clip for the included piggyback mechanical float switch for automatic operation. 877/765-9565; www.polylok.com. □



CASE STUDY

Cutter pumps used to replace antiquated wastewater system

Problem: A Wisconsin technical college was looking to update its wastewater system. The current system was more than 40 years old and required the pumps to be manually alternated, which was done on a monthly basis. The budget allowed for only one of the 4-inch pumps to be replaced if the same type of pump was used. The school would then have to budget for forthcoming years to add the second pump.

Solution: The plumber called Jim Murray Inc. and set up a meeting at the job site. It was determined that the current system was antiquated and they would be better served by using submersible 2-inch Tsurumi cutter pumps and an SJE Rhombus duplex panel. The cutter pumps are designed to resolve clogging due to ragging and are used for schools, nursing homes, hospitals, hotels and other institutions. The SJE Rhombus duplex panel eliminates manual alternating of the pumps and has built-in alarms with auxiliary contacts that allow this system to be connected into the existing security system.



Result: This solution fit within the budget and allowed for immediate updating at a fraction of the cost of replacing just one of the original pumps. 800/234-5490; www.jimmurrayinc.com. □

PRODUCT NEWS

Annovi Reverberi pumps from Water Cannon

Water Cannon offers the complete line of Annovi Reverberi pumps. The RSV Series triplex plunger pump features a built-in unloader and downstream injector on the left side of the manifold. It has a 1-inch hollow shaft and is flanged for direct coupling to gasoline engines. It also has large, lightweight connecting rods, new long-life low- and high-pressure seals, roller bearings, and a forged brass manifold. 800/333-9274; www.watercannon.com.



ASV RT-75 compact truck loader

ASV's Posi-Track RT-75 compact track loader features dual-level suspension with suspended wheels and axles, allowing it to manage many types of terrain at faster speeds. The RT-75 comes standard with

18-inch-wide tracks, resulting in a ground pressure of only 3.6 psi. The tracks contain embedded co-polymer cords and are produced using a single-cure process, eliminating cure-point weaknesses that can lead to premature breakage. The RT-75 has a Cummins 2.8L turbocharged 75 hp diesel engine that produces 221 ft-lbs of torque. 800/205-9913; asvllc.com. □

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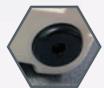
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