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REBUILDING A *LEGACY*

*A new generation of leadership
builds on family heritage and
pushes plumbing firm out of
crisis toward a brighter future*

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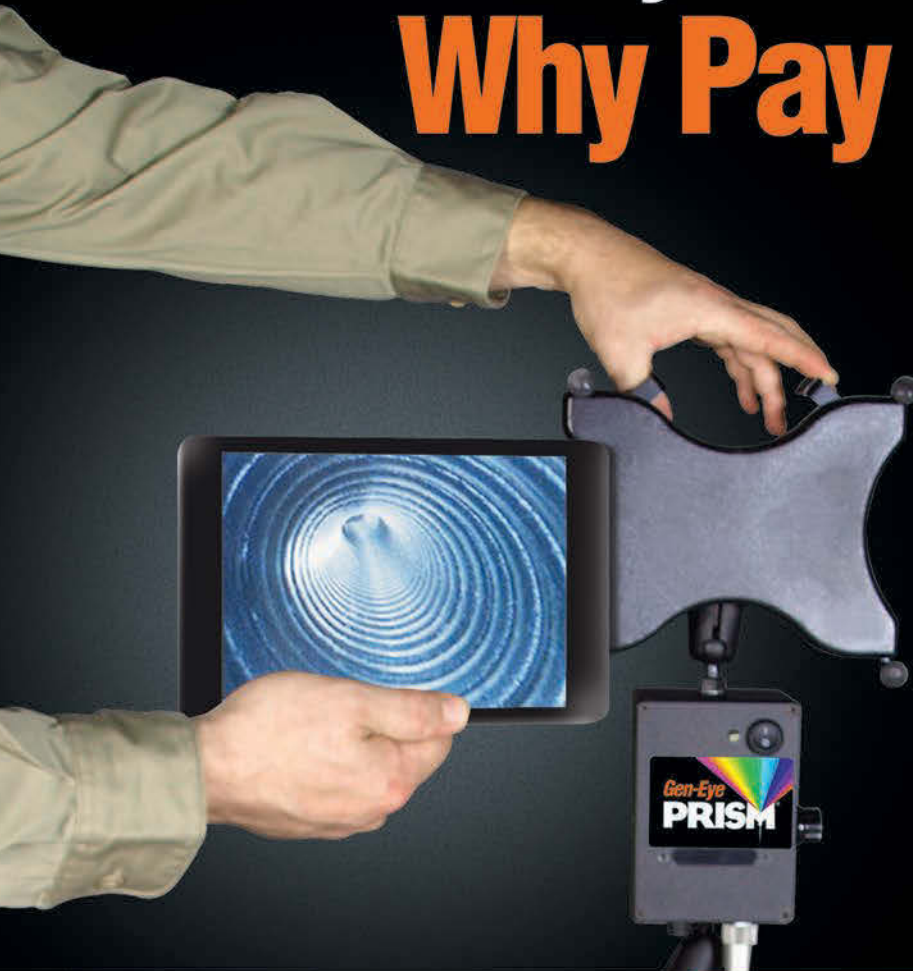
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Chris McNulty, general manager of Dippel Plumbing, outside the company shop in St. Louis.

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Profile: *Rebuilding a Legacy*

A new generation of leadership builds on family heritage and pushes plumbing firm out of crisis toward a brighter future.

By Marian Bond



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Plumber Matt Koenig of Dippel Plumbing solders a multi-valve connection in his service van before installing a new dishwasher for a residential customer. (Photo by Jerry Nauenheim Jr.)

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REDEFINING GROWTH

Growing with the industry doesn't mean your business has to keep getting bigger

By Luke Laggis

Growth isn't necessarily about getting bigger. Sometimes it's as much about advancing and evolving as it is about adding people and expanding.

Education and training, new technology, new services — all can keep your company growing and healthy, regardless of whether it gets any bigger.

Dippel Plumbing, profiled in this month's issue of *Plumber*, is a good example of a company that has found a comfortable size and has continued to grow and evolve, even though it has chosen not to get any bigger.

After the recession of the late 2000s reduced Dippel's crew from 12 to a mere three plumbers in the field, General Manager Chris McNulty spent four years building the crew back to a healthy 11, including six plumbers and five technicians (three working as apprentices). The company was involved in everything from excavating to remodeling, and things looked good until McNulty began to realize they were going in too many directions and were losing the kind of control he sought.

At the end of 2014, McNulty began putting more focus on the primary plumbing services, gradually transitioning away from services like remodeling and excavating, which had become excess baggage. He saw the opportunity to improve profit margins by trimming the plumbing staff and moving away from the traditional apprenticeship model.

Dippel Plumbing is leaner and more efficient now, with two experienced journeyman plumbers, and the company is still always booked a solid week ahead.

Yet even while Dippel was cutting its workforce, it was still growing. The company eliminated ancillary services, but it added cured-in-place pipe rehabilitation to the menu, and secured a license with Nu Flow.

Cured-in-place pipe, a significant piece of the pipeline repair and rehabilitation market, which is the theme of this month's issue, wasn't always the realm of the traditional plumber. Pipe rehabilitation used to be a very specialized market, but early on, the pioneers in trenchless rehabilitation saw its value and more and more plumbers began providing the service for their customers.

Today, it's a pretty common line of service among plumbers. The technology has come a long way, and while it can be expensive to get started, the tools, equipment and training needed are more accessible than ever. Dippel's entry into the market with Nu Flow represented a new direction for the company and provides a great example of how it is growing. Dippel isn't getting bigger, but it is getting better. The focus isn't on the number of people, but the quality of people and how to operate as smoothly and efficiently as possible — improving profit margins, cutting waste, becoming more efficient.

Your company may share some things in common with Dippel Plumbing. It may not. Regardless, the way Dippel has approached its restructuring and fostered a rebirth holds lessons that hold true for everyone.

Staying on top of technology, improving your business operations and keeping pace with the industry will all help you keep your business healthy. They'll all help you grow. But you need to expand your definition of growth. Enjoy this month's issue. ■

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ONE FOR THE AGES

ORIGINAL PIECE OF EMPIRE STATE PLUMBING UP FOR AUCTION

A water pump gauge, part of the original plumbing from the Empire State Building, went up for bid in February. Brian Purcell, foreman on the 1980's retrofit of the pump room built in 1930, received the gauge as a memento from the engineering department. The gauge was from Pump No. 5, which pushed water to the top floor of the New York City landmark.

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THE CUTTING-EDGE

SMART PLUMBERS ARE CATCHING THE NEW WAVE OF PLUMBING FIXTURES

From cellphones to text messages, technology is changing the way we do business. Master plumber and syndicated columnist Ed Del Grande offers his insight on how touchless faucets, scented toilets and wired showers can help you grow your business.

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ONE GOOD DEED DESERVES ANOTHER TEXAS PLUMBER PERFORMS ACTS OF KINDNESS

A chance meeting between a plumber and a police officer turned into a random act of kindness for an elderly Texas man. For the past year, Shane Blackmon has been handing out \$25 gift certificates to officers as a way to say "thank you" for their service. When officer Danny McWilliams saw "plumbing" on Blackmon's truck, he told the plumber about an 85-year-old man in the neighborhood who was without water. Asked if he could stop by for an estimate, Blackmon did one better and offered to replace all the waterlines for free.



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OVERHEARD ONLINE

"Some crisis situations are not preventable or even on the radar (like potential criminal employee activity). But by having a plan in place that covers most known problems, businesses can focus on repair activities rather than getting caught off guard without any plan or steps to follow."

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REBUILDING A *LEGACY*

*A new generation
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on family heritage
and pushes plumbing
firm out of crisis toward
a brighter future*



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EMPLOYEES 10
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The Dippel Plumbing team includes (from left) Zach McFarland, Erik Dixon, David Bruns, Carla McNulty, Chris McNulty, Matt Koenig and Eric Turner.



By Marian Bond

Photography by Jerry Naunheim Jr.

When Chris McNulty was presented with the opportunity to bring an iconic St. Louis plumbing company back to its former glory, he was determined to be successful.

McNulty's great-grandfather, Arthur J. Dippel, founded Dippel Plumbing in 1945 and eventually passed it on to his daughter (McNulty's grandmother, Karen Marks) and a cousin. McNulty

joined the company in 1995 and became manager in 2002, with high hopes for adding to the Dippel legacy.

The recession hit the firm hard, however, and their crew was reduced from 12 to a mere three plumbers in the field by 2010. Nevertheless, they struggled through and found that with many other firms going out of business, their phone continued to ring.

Over the next four years, McNulty built the crew back to a healthy 11, including six plumbers and five technicians (three working as apprentices). The company was involved in everything from excavating to remodeling and even became a Nu Flow licensee. Things looked good until he began to realize they were going in too many directions and were losing the kind of control he sought.

At the end of 2014, McNulty began putting more focus on the plumbing division, gradually transitioning away from some services like remodeling and excavating, and trimming the staff.

OLD SYSTEMS, NEW TECHNOLOGY

Dippel Plumbing secured the Nu Flow license in 2013, and while McNulty believed lining would be a good move for the company, he wanted it to stand on its own as a separate operation under the Dippel umbrella.

"My belief was that installing a relining product under the Dippel name was not as dynamic as having the Nu Flow St. Louis designation. This has given customers more confidence and allows for more potential expansions. While we operate as two separate companies, when the schedule requires, employees can cross over on basic procedures."

As Nu Flow St. Louis, their presence in the community does go beyond the family firm and reaches a more extensive client base. They have a broad foundation for their relining services, covering all of Missouri and parts of southern Illinois.

Over the years, Dippel Plumbing frequently excavated and replaced failing lateral lines, but the problems that arose with those jobs — homeowners deciding the concrete at the retaining wall wasn't replaced quite right, or the basement floor is not exactly how it was prior to the job — convinced McNulty he would rather offer relining.

He spent a good bit of effort educating the public on the advantages of relining, going so far as offering seminars to real estate firms, insurance companies and plumbing contractors. McNulty saw relining as essential to growth. For many years the company offered sewer patching, but he could see that he needed to provide other options. He also decided to add a pipe bursting system from Pipeline Products, believing it would present new opportunities for waterline replacement.

FINE TUNING

On the plumbing side, things had to take a different turn. Dippel has always been (and still is) a union shop, but McNulty saw the opportunity to improve profit mar-



◀ Plumber Matt Koenig shuts off a water supply line (top) before removing a garbage disposal (bottom) to make room as he prepares to install a shut-off valve for a new dishwasher.



gins by trimming the plumbing staff and moving away from the traditional apprenticeship model. He currently has two experienced, licensed journeyman plumbers who have his full confidence to take control and handle the unique issues they face in the field.

The restructuring included getting out of remodeling and supplementary services, which had become excess baggage. The company is leaner and more efficient now, and Dippel Plumbing is still always booked a solid week ahead.

“It took about a year to make the transition we wanted,” McNulty says. “When you look at the number of customers we turned away as we shifted, someone could have opened two or three companies off of that business. But frankly, with our two plumbers concentrating on the finer points of plumbing while servicing homes that are primarily 80 to 100 years old, we are seeing a larger profit margin than we did nine months ago. Actually, it took us about one year to turn the corner. It has proven to be a good move.”

On the Nu Flow St. Louis side, they are booked out at least one month. McNulty operates with a two- to three-man crew, serving a much larger client base across the entire State of Missouri and parts of southern Illinois. They currently have a total of 10 employees in the two divisions.

Some of the clay, cast iron and Orangeburg pipes in their service area were installed over 100 years ago. Cracks are common, and the cast iron often rots out from the inside. They also contend with the always-present issue of root intrusion.

As Nu Flow St. Louis, their presence in the area goes beyond the family firm. Their Nu Flow St. Louis-lettered equipment on the road includes a box truck, a pickup truck and signage on two trailers.

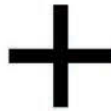
There are usually two vehicles on relining job sites — one signed with Nu Flow St. Louis and another with the Dippel Plumbing logo. To McNulty, this job site presence is the best form of advertising for both divisions.

When they’re not on the job site, the trucks — two Ford E-250s and two Ford E-350s — are kept at the company’s 2,000-square-foot shop. Crews in both divisions are expected to take care of their vehicles and keep them fully stocked with parts and supplies. The plumbing vans carry around \$7,500 to \$10,000 worth of inventory.



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To help maintain proper inventory, plumbers and technicians note every item they take on a form, and ordering is then handled by employee Erik Dixon, whose job is to keep that important inventory in control. Dixon checks the list daily and orders two or three times each week, depending on the need. Dixon also works closely with McNulty's wife, Carla, who is the company office manager.

The company's JM 2512 Typhoon trailer jetter from General Pipe Cleaners and cameras from General, RIDGID and Ratech are among the most important tools, but the vans also carry some lesser used but helpful items like a TK-9A backflow test kit (Watts Water Technologies).

SELECTIVE SERVICE

As a union shop, McNulty says they have been told numerous times they are too expensive, but clients keep calling. He attributes this to their experienced plumbers who are adept at fixing the challenges unique to the territory.

"In this area of older homes we see some complicated plumbing issues with old pipes in the walls: numerous water and drainpipes leaking; poor water pressure and continuous blockage in the drains; gas pipes leaking. All these different factors must be considered. Sometimes we need to cut into walls. This upsets the client. We have to have people who can get

in there and figure out where to go and how to get there, and then solve the problem.

"We see people buy a mansion with seven bathrooms and plumbing that is 100 years old. If two people live in the house, one of those rarely used bathrooms will undoubtedly cease to perform as expected. Surprise. Back to the drawing board."

McNulty says they will find the stacks starting to dry out. The cast iron will have cracks. Soon everything may start leaking.

"In a commercial building, water may be bubbling up on one side of the building. The customer asks, 'Why is there water here and not a few feet away?' We have to answer and fix it."

McNulty says his two plumbers, Ben Bippen and Matt Koenig, have full authority to do their job, but they frequently contact McNulty or send photos to share some of the interesting situations they discover. On the rare occasion when they're working on a newer home, it's like going on vacation compared to their typical duties.

SHARE THE FARE

Providing 24/7 service is yet another challenge with only two plumbers. To compensate for the small staff, Dippel networks with other plumbing companies in their jurisdiction to cover evenings and weekends. While his two plumbers take turns for some of the work,



▲ Chris McNulty, general manager of Dippel Plumbing, outside the company shop in St. Louis.

they provide their invoices to other firms who cover for them. The customer gets the Dippel invoice and writes the check to Dippel, and then Dippel settles up with the other contractor.

Dippel also works for other contractors in some instances, and Nu Flow St. Louis often gets calls from plumbing firms that have encountered obstructions or other problems with line replacement jobs.

Working in a 60-mile radius around the city also poses another challenge: scheduling. Maintaining efficiency across a relatively large service area is difficult with only two plumbers, so they coordinate and schedule work within certain zip codes, eliminating unnecessary travel time. Emergency situations present additional challenges, but Dippel makes it work.

“Managing this company for my grandmother has been a tremendous challenge, but it has also been very satisfying for so many reasons. For a while, if there was something to do we would be in it. Now we’re back to basics. We’re confident we have truly found our niche.” ■

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YOU CAN'T CURE THEM ALL

***Knowing the next steps can save the job
when cured-in-place liners fail to cure properly***

By William Heinselman

Trenchless pipe lining is an effective way to rehabilitate underground pipes, but nothing is ever 100 percent perfect, in life or in plumbing. All property renovation projects are vulnerable to error, whether it's roofing, electrical work or pipe lining.

If you line pipes, sooner or later you'll have a liner that doesn't cure properly or one that gets washed away during the application process; it's a risk in any project. When this happens, what's important is identifying the best next steps for solving the problem.

When a liner cures incorrectly, there's no going back and starting over, but it's not necessarily as bad as you might first think. It's still possible to reline the pipe without invasive — and expensive — digging. Before this can be done, however, the first step in repairing a faulty or partially cured liner is pinpointing the cause.

THE CAUSE

Generally speaking, there are two main reasons a pipe liner doesn't fully cure. Either:

- Water flow within the pipe disrupted the curing process and washed away lining material mid-application; or
- The compounds in the liner resin were incorrectly mixed, resulting in an incomplete final product

Video inspection should always come first in diagnosing the cause of the problem. The same processes and technology used initially to identify damage in a pipe are also valuable in pinpointing why a liner didn't cure correctly. Video inspection is the most reliable method of identifying a pipe problem, whether it's a partially cured liner or a full-blown pipe collapse.

With video inspection tools, we can diagnose the problem by checking the state of the resin (or the complete lack of resin, for that matter). If there's little or no resin remaining, it's likely that some source of water flow washed away the resin before curing.

On the other hand, if the liner looks overly saturated and the resin will not cure with conventional methods, the resin compounds are probably mixed incorrectly. Either way, the next steps depend on how much of the liner failed to cure successfully.

PARTIAL FAILURE

If the lining material did not successfully cure in only a specific segment of pipe (often when lining fails due to water interference), there's no need to reline the entire length of the pipe. Instead, you can use a sectional point repair process to reline the affected segment, which is a much more affordable solution than relining the entire pipe.

When using sectional point repair for this purpose, an inflatable bladder is used to reline the affected segment. Since the repair is confined to the specific affected area, the overall process can be completed in a few hours. Sectional point repair is also ideal for dealing with root intrusions and other pipe damage limited to a specific segment of pipe.

THE FULL FIX

If an entire liner does not cure correctly, as is often the case when resin compounds are incorrectly mixed, the first step in resolving the problem is attempting to pull the faulty liner out of the pipe with a cable. If the faulty liner can be removed this way, relining is as simple as starting the process from scratch. If the bad liner can't be removed, however, the best option may be to simply line over the existing liner. This can take longer but will ultimately solve the problem.

In the worst-case scenario, the pipe may have to be excavated using traditional dig-and-replace methods. This is unfortunate, but also 100 percent reliable. Due to the costs of each of these methods, trenchless point repair or relining should always be tried first, with excavation saved as a last-resort option. ■

William Heinselman is the owner of Express Sewer & Drain in Rancho Cordova, California.



GET PAID FASTER

Better invoicing practices can improve cash flow and relationships with customers

By Judy Kneiszel

I recently discovered a longtime client was two invoices behind in paying me. This had never happened with this particular company before, so I shot off a quick email to the office manager asking if those invoices had been paid. Because, to be honest, usually when I think a client has missed a payment, it's an error on my part and I just forgot to enter the payment into my accounting software before depositing the check, or the check got buried under a pile of papers on my desk. (Don't judge. This month's theme is not office tidiness.)

The other common scenario is that on the very day I get around to asking a client if they've paid an overdue invoice, the check magically appears in my mailbox and I have to send an embarrassing "Never mind, I got it" email. In the case last week, however, it was not my mistake. The checks weren't on my desk or in the mail that day.

My mistake wasn't in the asking, but rather the person I chose to ask. I got a tersely worded reply to my inquiry saying that the checks would be mailed that day and it wouldn't happen again, but if it did I should ask her, the owner of the company, because she handles the finances.

Suddenly I felt like I was in the middle of some office politics. The business owner didn't want the office manager to know something — either that she was behind in paying the bills or that she suffered a

memory lapse. Anyway, it got me thinking about my invoicing procedures and wondering if I'm doing everything I can to speed up the process of getting paid. Here are some invoicing best practices I found to both adopt and share:

DETERMINE WHO CUTS THE CHECK

In the scenario above, it would have been helpful for me to know who actually processes my invoices. Then I could have asked her directly about the missing payments and awkwardness would have been avoided.

It can also help to know who cuts the checks so that you can occasionally thank that person by name. If you take the time to get to know the person who handles your invoices, your invoice might mysteriously float to the top of the pile when that person is paying bills in the future. Honestly, haven't you made people you like or companies that have treated you well a priority over nameless, faceless payees when you've had a stack of bills to deal with?

INVOICE FASTER

You've got to make invoicing a priority, no matter how busy you are with other tasks. Not taking time to send invoices will disrupt cash flow, and not having cash flow can hurt, or kill, a company — even a busy one. For jobs completed in a short time frame like an emergency repair, bill immediately. For ongoing jobs, send invoices in frequent, regular intervals. Not only will this maintain your cash flow, but customers are also less likely to question several small invoices than one huge invoice at the end of a long, ongoing project.

KNOW THE BASICS

I thought anyone in business knew what to put on an invoice, but then I received one from a so-called professional that was handwritten on a piece of lined paper torn out of a child's school notebook that didn't even have the name of the business on it. So I'll get down to basics. Make sure you include the date and the name and address of your business, as well as your name, phone number and email address so the recipient can contact you if they have questions. Also include your company's invoice or job number, whom the



check should be made out to, a detailed explanation of charges (more below), the total amount due, your payment terms (payable upon receipt or payable in 30 days, etc.), and a brief thank-you message. Also include a purchase order (P.O.) number or vendor number if the company supplied one to you. And while I don't put my tax number on the invoice for the world to see (or steal), if it's a new client, I make sure to call and provide them with that and any other information they need to set me up as a vendor.

INTRODUCE YOURSELF

As I said earlier, if the person processing the invoices knows you, you might get paid faster. With a new client, ask for their name, phone number and email address. This will prove helpful if you ever have questions regarding outstanding invoices. That initial call to get set up as a vendor is a great time to get this information. You might also benefit from asking the person who pays you if there's anything you can do to make their job easier. Does it matter to them, for example, if the invoice is an emailed PDF, a Microsoft Word document, or (gasp) printed out and snail mailed? Is there a vendor or P.O. number you should include? If it's a big company, ask if they would prefer to pay electronically, which would be efficient for both of you. Also, to help you stay organized, ask them to include your invoice numbers on the checks if they are not already doing that. This is especially helpful if you are sending a partial bill for an ongoing job.

STAY ON TOP OF THINGS

Most companies have a predictable payment schedule. Don't be afraid to politely question if a payment is later than usual. It's usually an easily correctable oversight. But also watch for subtle changes in how quickly you are paid. If a client pays immediately the first time, but gets slower and slower with each subsequent invoice, it could be a sign of trouble. Or, it could simply mean that they've hired a new accounts payable person, or any number of other scenarios. Don't be accusatory. Simply ask if they have received your invoice and when you can expect to be paid.

BE NICE, BE PRECISE

Make your invoices look professional and stand out. Make sure your company name is large and readable, and include your logo. Design or select a layout that is attractive and easy to read. And again, somewhere include a message thanking the recipient for the business. Accounting software and countless other



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applications are available for automating the invoicing process and most allow you to customize invoices.

When it comes to invoice content, itemizing takes time but can help avoid misunderstandings with clients about what they are being charged for. Seeing details in black and white can eliminate their need to call and ask questions, thus getting you paid in a timelier manner.

Look at the invoice as an opportunity to let clients know just how much bang they are getting for their buck. Do this by explaining every charge on your invoice, using language anyone would understand, rather than industry or business jargon.

DO IT WELL


Remember, you are in business for no other reason than to make money. To do that, you've got to invoice your customers. There's no way around it. It can be considered the single most important thing you do. So do it well. ■

Writer Judy Kneiszel has operated her own small business for 20 years and is familiar with the many rewards and challenges of business ownership. Write to her with questions, comments or topic suggestions at thewordhouse@ameritech.net.

ALWAYS ON DUTY

Nevada plumber's day off with family turns into an emergency situation

By Paul Nicolaus



COMPANY	Duke's Plumbing, Heating & Air Inc.
OWNER	Duke and Margie Gutierrez
LOCATION	Gardnerville, Nevada
FOUNDED	2009
SPECIALTY	Plumbing, heating and air conditioning
WEBSITE	www.dukesplumbing.com

With family in town over the Thanksgiving holiday, Duke Gutierrez, owner of Duke's Plumbing, Heating & Air in Gardnerville, Nevada, headed to a salon with his wife, Margie, a cousin and her three daughters. With the ladies in back enjoying a pedicure, Gutierrez sat in the waiting area, enjoying a bit of calm on a day off. But a plumber's job is never finished, as he was soon reminded.

"All of a sudden my wife starts yelling for me," Gutierrez says. "So I run to the back, and there's water dripping from the ceiling." What began as a drip turned to a gush in under a minute, he adds, noting that low temperatures over the holiday weekend created the issue. "It froze overnight, and the pipe split."

When he noticed that the water appeared black, Gutierrez quickly assumed it was from the water sprinkler line. As soon as he went outside he heard the fire sprinkler alarm going off, so he ran toward the noise, which was at the opposite end of the building. After determining that the alarm was located within a nearby FedEx shipping facility, he was able to shut the water off and mitigate the amount of water damage.

From there, Gutierrez and his family members all volunteered to pitch in with the cleanup effort. "We created a nice little dam with towels to prevent the water from spreading any farther," he explains, noting that the building was large and long — roughly 3,000 or 4,000 square feet. This helped isolate the water and prevent it from spreading throughout the building.

Brooms were used to push water out the door, and when firefighters arrived on the scene they used squeegees to do the same. A



▲ Even though he was enjoying a day off, David "Duke" Gutierrez, owner of Duke's Plumbing, Heating & Air in Gardnerville, Nevada, jumped into action when water started pouring through the ceiling of a local business he was visiting.



▲ The Duke's Plumbing team includes (from left) service technicians Jesus Martinez and Mike Lewis, owner David "Duke" Gutierrez, and technicians Kirk Fliegel and Giovanni Gutierrez.

local fire sprinkler company was called in to service the issue and get it back up and running. Gutierrez also notified COIT, an emergency service and restoration company, so that extraction machines, dehumidifiers and fans could help dry out the impacted area.

Had he not stepped in immediately, the damages would have likely been a whole lot worse, Gutierrez says. If the water started spraying in the attic, for example, the ceiling could have come down. "It would have been a nightmare," he says.

Because of the speedy assistance, however, there were no obvious signs of damage. "I knew that they had just opened this business five months ago, so I wanted to help them get their business restored and back up and running as soon as possible," Gutierrez explains. "By doing that, that would allow them to get back on track sooner rather than later."

Plumbing never sleeps, he points out, and issues arise 24 hours a day, seven days a week. Like EMTs, police officers and firefighters, this situation was a great example of what plumbers can do to help tackle a surprise head on, mitigate potential damages and help resolve the issue at hand.

"In an emergency, you need somebody who knows what to do and how to solve the problem," Gutierrez adds. "I just did a good deed, I guess you could say." ■



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NO MESSING AROUND

Utah plumber's service vans are configured to boost profits and efficiency

By Ken Wysocky

For plumbers who frequently have that nagging feeling that they should be more profitable and productive, Lawrence Snow has two words of sound advice: Get organized.

“Running well-organized trucks is one of the best things you can do to make more money,” says Snow, the owner of Valley Plumbing and Drain Cleaning in Sandy, Utah, and a former business coach for Quality Service Contractors, part of the Plumbing-Heating-Cooling Contractors National Association (www.qsc-phcc.org).

Here’s his rationale: Organized truck interiors minimize time-sucking searches for parts and tools. They can also hold more parts, which reduces profit-killing trips to supply houses. Moreover, carrying more parts on board — kitchen and bathroom faucets, for example — gives plumbers more opportunities to upsell customers on replacing items rather than repairing them.

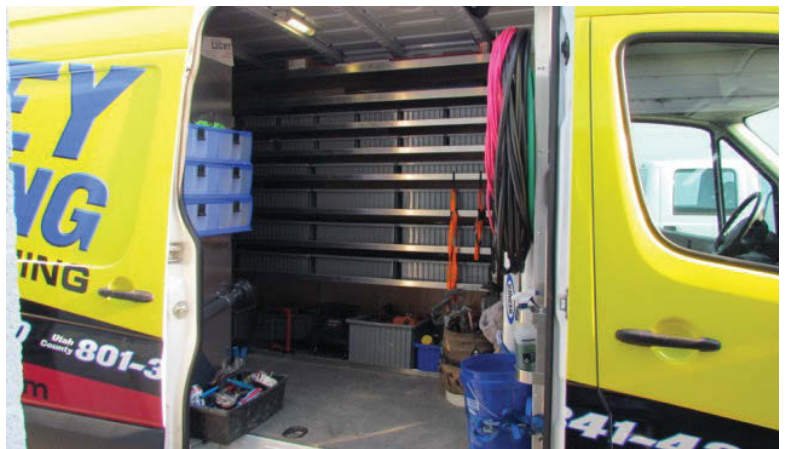
“Plumbers will sell what they know they have in their trucks,” Snow observes. “If they don’t have a water faucet, they’ll fix the old one instead of installing a new one. But installing a new one provides higher profit margins and makes customers happier, too. So don’t stock up your truck with crap you won’t use. Instead, find stuff you’ll use and stock it.

“Plumbers with messy trucks who start to manage their inventory can increase sales by 20 to 25 percent a year — and that doesn’t even include the profits gained by making fewer supply house trips,” he adds.

Valley Plumbing runs nine Sprinter vans made by Mercedes-Benz. Each truck is outfitted by J & M Truck Bodies with an aluminum rack storage system with plastic bins that enable technicians to carry about \$5,000 worth of parts inventory. “We opted for aluminum because it’s lighter, which improves gas mileage, but it’s still very sturdy,” Snow explains.



- COMPANY** Valley Plumbing and Drain Cleaning
- LOCATION** Sandy, Utah
- VEHICLES** 9 Mercedes-Benz Sprinter service vans
- FUNCTION** Transporting drain cleaning equipment and plumbing repair parts
- FEATURES** Shelving/parts bin organization system manufactured by J & M Truck Bodies; 188 hp diesel engine; each truck carries drain cleaning equipment made by General Pipe Cleaners, a Central Pneumatic air compressor made by Harbor Freight Tools, and a RIDGID SeeSnake pipeline inspection camera system
- COST** About \$43,000 each



▲ Valley Plumbing runs nine Mercedes-Benz Sprinter vans each outfitted identically with aluminum rack storage systems by J & M Truck Bodies. The vans carry about \$5,000 worth of parts inventory, saving time and money by eliminating extra trips to the supply house.



▲ A 50-gallon gas water heater and three General drain cleaning machines are kept near the rear doors for easy access. A 1,000-pound electric winch, made by Superwinch, helps technicians load and unload the heavy drain cleaning machines.

The bins in most of the trucks are numbered, and each number corresponds to a particular part; the same numbering system is used in every truck. (Some of his newer trucks don't have numbered bins because veteran employees know the numbering system by heart, Snow says.) "That way, no matter who's driving the truck, everyone knows where everything is," Snow says, pointing out the efficiency effect. "It's great for our apprentices who rotate helping out on different trucks."

Snow says that as a business coach, he often encountered contractors who were unwilling to spend extra money on a larger service van with a good parts storage system. But in the end, they spent just as much money as they saved — if not more — by making unnecessary supply house runs.

"In terms of a monthly payment, there might be a \$250- or \$300-a-month difference between a Sprinter and, say, a \$30,000 service van," he says. "But if you go to a supply house even just one more time a month than is necessary, you're effectively losing that same amount of money in terms of nonproductive time spent driving instead of charging billable hours, not to mention vehicle wear and tear and fuel costs. We figure one extra trip to a supply house a day costs us about \$3,600 a month.

"You're also losing out on doing more jobs per year," he adds. "Our average invoice is about \$700, so if you can do an extra four jobs a week as a result of well-managed inventory, that's about \$2,800 a week per truck — and that's significant revenue over the course of a year."

Valley Plumbing technicians average about two trips to supply houses a week, if that, Snow says. The net gain: an average of one more job completed per day. From his business coaching experience, he says it's not unusual for many plumbers to make six to eight trips a week, which is definitely a productivity killer. "And then guys wonder why they're not making money," he notes.

Snow lauds the Sprinters for their spacious cargo area (the interior is 14 feet long) and higher-than-normal headroom. The former allows technicians to carry more equipment and parts and find things more easily, while the latter offers a creature comfort that makes walking in the trucks easy as opposed to a head-banging experience.

The Sprinters have a side door and rear-opening doors, but technicians only use the side door for entry because a 50-gallon gas water heater and drain cleaning machines block the rear, where they're stored for easy access. A 1,000-pound electric winch, made by Superwinch, helps technicians load and unload the heavy drain cleaning machines and minimize the risk of injury.

Each truck carries three drain cleaning machines made by General Pipe Cleaners: a Super-Vee hand-held model, a Mini-Rooter XP for pipelines ranging from 1 1/4 to 4 inches in diameter, and a Speedroooter 92 for lines ranging from 2 to 10 inches in diameter. Other standard onboard equipment includes a RIDGID SeeSnake pipeline inspection camera and locator, a RIDGID wet/dry vac, and a Central Pneumatic air compressor (Harbor Freight Tools).

So stop that nagging feeling in its tracks and take Snow's advice: Do the math — and get organized. ■

FEATURED EQUIPMENT INFORMATION

GENERAL PIPE CLEANERS
800/245-6200
www.drainbrain.com
(See ad on page 2)

RIDGID
800/769-7743
www.ridgid.com

J & M TRUCK BODIES
714/898-4259
www.plumbingvans.com

SUPERWINCH
800/323-2031
www.superwinch.com

KEEP IT ABOVE THE BELT

Drive belts have improved with better materials and designs, but they still require routine inspection and replacement

By Ed Wodalski

When is the last time you checked the drive belt in your service vans or machinery for signs of wear? And what should you look for?

If your vehicle is less than 20 years old, it is likely equipped with an EPDM (ethylene propylene diene monomer) synthetic rubber belt. Mark Lein, project development engineer at Goodyear Engineered Products (Continental ContiTech), says EPDM belts were installed by original equipment manufacturers in the late 1990s and introduced to the replacement market in 2002.

Prior to that, most vehicles had neoprene belts. Neoprene had a life expectancy of approximately 50,000 to 60,000 miles. They also cracked and lost chunks of rubber as they wore.

CRACKS ARE RARE

Old-timers might recall the “three cracks in 3 inches” rule of thumb for replacing such belts. If you have a neoprene belt on your equipment, be sure to check it regularly for signs of wear, as well as for grease and oil that can reduce service life.

The advantage EPDM belts have over neoprene is they rarely crack, even after 100,000 miles. As EPDM belts age, they gradually lose rubber — like tires on your truck. “With neoprene, you typically had cracks before that happened,” Lein says. “Now the belt is actually wearing away.”

Loss of belt rubber can cause noise and vibration, often signs of a more serious problem.

“If the belt is worn, if it’s making noise, there’s something wrong with the drive,” Lein says. “Typically, a worn belt is slipping. That either means the belt has run its course or you’ve got misalignment issues; you’ve got an idler bearing going out or a tensioner bearing going out or some other bearing going out on the drive.”

Lein says the main cause of belt failure is improper tension. “If anything needs to be taught to the individual installer and even the shops, it’s that proper manufacturer tension is recommended,” he says. “And when you ignore that, you have issues. Proper installation is critical on any belt application.”

James McGarity, ABDS product manager at Gates Corporation, recommends checking belts for wear whenever you do repairs, especially after 60,000 miles for on-road vehicles. “The actual O.E. manuals state to start checking at 30,000 miles,” he says. “But if you’re working and have it off, it’s best to check to make sure you have the correct amount of material so you’re getting traction on the grooves of the belt.”

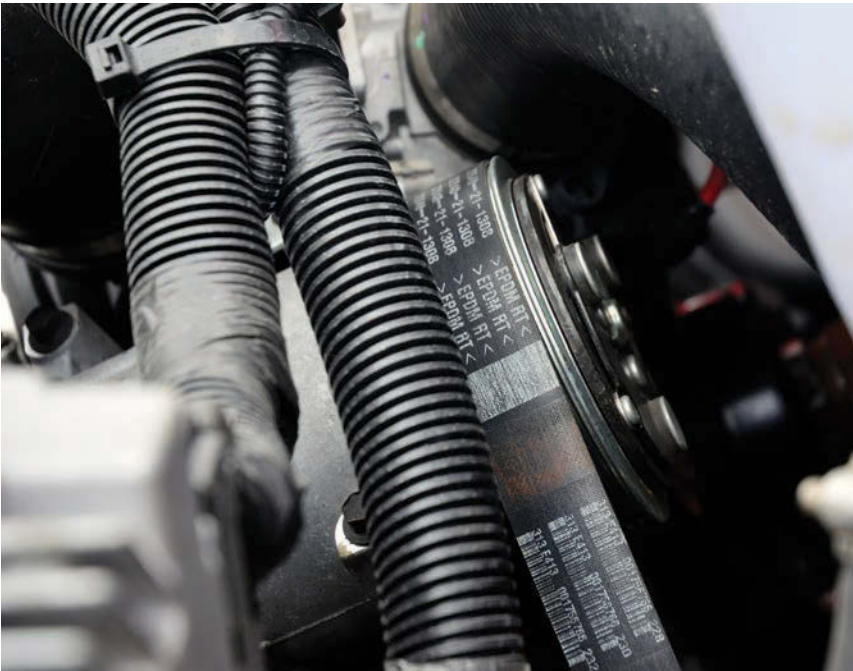
REGULAR CHECKUPS

A good time to evaluate belt wear is when your vehicle is in the shop having the water pump, alternator or other component repaired, especially if the vehicle is up in age. The average price for a Gates EPDM belt is \$63, while a new belt and labor can run \$80 or \$90.

McGarity says as little as 5 percent of material wear can cause loss of tension, affecting the overall performance of components and eventually causing failure. Be sure to follow your operator’s manual for off-



▲ Today’s serpentine drive belts are made of EPDM synthetic rubber that wears much like a truck tire. (Photo by Ed Wodalski)



▲ Properly performing belts should be free of abrasion. (Photo by Ed Wodalski)

road equipment. John Deere recommends checking belt tension every 50 hours.

The easiest way to check for material loss is to use a gauge that fits between the ribs of the belt. Manufacturers Gates and Goodyear offer such hand-held devices that can be used with the belt on or off the engine.

The Gates Belt Wear Gauge has a “pin” or strip of plastic that sits above the ribs on a good belt. A finger hole at the end of the gauge enables the user to place the pin into a straight section of the belt and feel if it’s above or below the rib. The gauge can also be used to check individual ribs. Changes in depth indicate misalignment or other problems.

Gates also offers a free PIC Gauge app that takes a picture of the grooves and evaluates the belt — green means the belt is still good.

Goodyear’s GatorGauge by Veyance Technologies offers three ways to inspect belts for wear. The first method works much like the Gates gauge. At the lower right are four small pins that fit into the grooves of the belt. Light between the gauge and the valley of the belt

indicates the belt is in good condition. No light means the belt is worn and replacement is recommended.

A 2-inch window in the GatorGauge is designed for measuring rib wear. If two or more cracks appear in the window, it might be time to replace the belt. Other signs of wear include two cracks side by side in the same rib, belt chunking, and cracks along the width of the belt.

A third measure of belt wear uses the slotted thickness indicator at the top left of the GatorGauge. If the belt slides into the slot, it’s time for replacement.

MISALIGNMENT A FACTOR?

Another way to tell if your belt needs replacing is visual inspection. Larry Gorski, a technician with Mid-State International Trucks of Wisconsin in Wausau, Wisconsin, says he looks for pieces of missing rubber and abrasion. “If it gets off the pulley, it will fray one of the edges,” he says.

Misalignment typically indicates internal components of the tensioner have failed and the assembly needs to be replaced.

Belt tensioning systems are most often used on vehicles with a single serpentine belt. Since 2004, manufacturers have been designing self-tensioning EPDM belts for select vehicles.

Stretch Fit (Gates) and Stretch Belts (Goodyear) maintain constant belt tension without a mechanical tensioner. Tensile cord inside the EPDM belt is designed to elongate and stretch. Once installed, the belt recovers its shape to maintain proper tension. Self-tensioning belts are slightly shorter than standard EPDM belts and cannot be interchanged. Self-tensioning belts also should not be reused. ■



▲ Worn backing means this belt has reached the end of its service life. (Photo courtesy Goodyear Engineered Products)



▲ A missing rib indicates it’s time for a new belt. (Photo courtesy Goodyear Engineered Products)

PRODUCT SPOTLIGHT

GROHE pot fillers eliminate need to reach over hot burners

By Ed Wodalski

SilkMove solid stainless steel cold-water pot fillers from GROHE eliminate the need to reach over hot burners. Designed to complement a variety of kitchen décor in residential applications, the pot filler's dual-pivot joint extends 20 1/16 inches for use over front or rear burners, then folds neatly out of the way.

Two quarter-turn level handles, one at the source and one at the outlet, provide safety and convenience.

Primarily used in commercial kitchens, GROHE introduced the pot filler to the residential market in the early 2000s. "It can be added as a remodel or as new construction in existing homes," says Ken Samson, product training manager, GROHE America.

The pot filler features a maximum flow rate of 1.75 gpm; 1/2-inch, 90-degree cartridge; single-hole, wall-mount installation; and swivel spout.

"GROHE offers two wall-mount pot fillers with single-hole installation and spout shut-off valves," he says.

The pot filler requires a 1/2-inch cold-water feed and mounts to the wall using a flange and four screws.

"If installing on plaster walls, appropriate reinforcement must be in place to ensure sufficient strength," Samson says.

The pot filler requires little maintenance beyond cleaning, greasing and replacing parts as needed.

"If the pot filler is left unattended, ensure both ceramic cartridges are in the closed position," he says.

800/444-7643; www.groheamerica.com.



JOMAC ALUMINUM SERVICE BODY

The all-aluminum service body for the Ford Transit chassis cab from JOMAC is designed for improved fuel economy and rust-free life. It has a payload capacity of up to 4,500 pounds and 30

cubic feet of additional storage space compared to similar models. 800/755-4488; www.jomactld.com.

MOEN ELECTRONIC FLUSH VALVE

Designed for commercial applications, the M-Power electronic flush valve from Moen features low-maintenance piston technology, precise flush volume, mechanical override and a brass

body. The 1 1/2-inch water closet valve delivers 1.0/1.6 gpf with an operating pressure of 15 to 120 psi. 800/553-6636; www.moen.com.





MAAX CORNER SHOWER KIT

The Athena 42- by 34- by 75-inch rectangular corner shower kit from MAAX Bath features a 3-inch threshold base for safe and easy access, reversible configuration for left- or right-

hand door and optional acrylic wall set. 877/438-6229; www.maxx.com.

AQUABRASS TIMEPIECE BATHROOM FAUCET

The Time 51014 single-hole lavatory faucet from Aquabross captures the look and style of a timepiece dial — rotate upward at 4 o'clock for cold water and 8 o'clock for hot water.

The aerated flow shuts off at the 6 o'clock position. The polished chrome faucet is available in eight custom colors (brushed nickel, white, black, purple, blue, green, orange or red). 855/943-2782; www.aquabross.com.



ROHL ART DECO FAUCETS AND FIXTURES

The Art Deco inspired Perrin & Rowe Deco Bath Collection from ROHL is made from solid brass, plated to resist wear, assembled by hand, water tested and hand polished. Avail-

able in cross and lever handles, the collection comes in polished chrome, polished nickel and satin nickel finishes. Designed for consumers looking to bring an artistic flair to the home bath, the collection includes faucets, tub fillers, shower kits, accessories and vitreous china. 800/777-9762; www.rohlhome.com.



ZURN PEX CRIMP RING

PEX QuickCap crimp rings from Zurn Industries feature a positioning end cap for connections in plumbing and radiant heating applications. The ASTM F1807 fitting system delivers a 360-degree seal for leak-free connec-

tions. Suitable for commercial and residential plumbing, the rings are available in 1/2-, 3/4-, 1-, 1 1/4-, 1 1/2- and 2-inch sizes. 814/875-1252; www.zurn.com.


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PIPELINE REHABILITATION AND REPAIR

By Craig Mandli

BURSTING

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The PD-7 static pipe bursting machine from **Pow-r Mole Sales** is designed to replace existing underground water, sewer or gas lines. It will operate from a pit only 72 inches long. Despite its small size, it has a pulling force of 112,000 pounds at 3,000 psi and a maximum pull rate of 7 feet per minute. This system uses a 2-inch-diameter rod with a tapered quick-connect thread in a length of 2 1/2 feet. It can be powered by a hydraulic power unit or from an auxiliary circuit on a backhoe. It can burst and install up to 12-inch I.D. pipe in most compressible soils. 800/344-6653; www.powrmole.com.



tension to achieve results. Compact soils, dresser couplings and even ductile iron can be defeated with the right bursting head armed with a loaded cable as ammunition and a rapid-fire hammer as the trigger. The hammer operates efficiently

with only 60 to 75 cfm of air at 100 psi. It is easily slipped into place after the PE cap is fused onto the replacement pipe. 888/883-8742; www.trictools.com.

EXCAVATING

HURCO TECHNOLOGIES VAC 250 AND 500

VAC 250 and 500 units from **Hurco Technologies** are a portable solution for potholing and exposing buried utilities. They use a Gardner Denver 14 Hg PD vacuum pump and a Giant 4,000 psi, 4.2 gpm high-pressure water pump. The pitched-angle tank eliminates mechanically complicated lift and dump systems for faster and more efficient debris unloading. The 97-gallon water tank sits under the debris tank, balancing the load over the center of the axle, resulting in little change on tongue weight and ensuring a safe towing configuration. All units can be configured to meet specific needs, including auxiliary hydraulics and water heaters. All are powder-coat painted. 800/888-1436; www.hurcotech.com.



SPARTAN TOOL UNDERTAKER



The **UnderTaker** pipe bursting system from **Spartan Tool** can help replace existing sewer laterals with new, seamless, high-flow HDPE pipe from 2 to 6 inches in diameter. The system sets

up quickly without any tools and handles up to three 45-degree bends in the existing pipe. No component weighs over 70 pounds, so it's easy to quickly position for any job, with minimal disruption to the customer's yard or business, allowing the customer full use of their facilities quickly. 800/435-3866; www.spartantool.com.

TRIC TOOLS MINI-MAX

The **Mini-Max** pneumatic head driver from **TRIC Tools** fits inside either a 6- or 8-inch PE cap, and is both head driver and pipe puller in one. Taking full advantage of a pulling cable under load, it unleashes stored

HYDRA-FLEX RIPS AW

The **Ripsaw** rotating nozzle from **Hydra-Flex** blasts a straight water jet up to 3,200 psi while rotating at an optimized speed to form an 18-degree cone-shaped spray pattern. Its concentrated stream results in great impingement, allowing operators to dig fast while using less water. The heavy-duty, high-impact nozzles are



constructed with stainless steel housings and tungsten carbide wear surfaces to withstand harsh environments and provide long life. A non-conductive urethane coating on the nozzle body protects the user and sensitive underground assets. It is

available in 3- to 12-inch sizes, with repair kits available to extend the nozzle's life and lower overall operating costs. **952/808-3640; www.hydrflexinc.com.**

**PETROFIELD INDUSTRIES
TORNADO F2 SLOPE**

The Tornado F2 Slope model from Petrofield Industries holds 7 cubic yards of mud and more than 1,000 gallons of freshwater. They have a water tank from which you excavate, a mud tank to



which the excavated spoils are held, a water pump, a boiler to heat the water, and a positive displacement vacuum blower (2,600 to 6,400 cfm) to pull the spoils to the tank via a boom. The boom has a 342-degree rotation and a 22-foot reach. All critical components are housed in an insulated and heated aluminum van body. Its sloped floor design means operators do not hoist the tank to empty it, eliminating the dangers of dumping on uneven ground and overhead power lines. **877/340-8141; www.tornadotrucks.com.**



SOIL SURGEON

The Soil Surgeon hydroexcavating tool fits any sewer combination truck equipped with a telescopic 6- or 8-inch boom. The tool has a 1-inch water connection. The operator controls water pressure and power

with truck controls. It has a 6-foot Tuff Tube with handles to guide the unit down for potholing or side to side for trenching. Six jets boring inward cut the soil, while six boring outward bring the tube down. **949/363-1401; www.soilsurgeoninc.com.**

SUPER PRODUCTS CAMEL 1200

The Camel 1200 12-yard combination truck from Super Products is available with an optional hydroexcavation package that includes cartridge filters, dig tubes and specially designed water lances. Coupled



with powerful waterjetting and vacuum capability, these tools allow operators to safely and effectively expose utility lines, remove debris and clean out a variety of structures, dig in congested spaces and perform many other hydroexcavating ap-

plications. A Camel 900 9-yard version is also available. **800/837-9711; www.superproductslc.com.**

FITTINGS

**MATCO-NORCA HAV
STEAM AIR VALVES**

ISO 9001:2008 manufactured HAV Steam Air Valves from Matco-Norca are available in various patterns and sizes. For use with hydronic radiators and steam boiler systems, heating air vents steam valves control the release of steam in radiators and properly balance the system so that individual radiators produce heat appropriate for the space being heated. Constructed of brass with chrome plating, they come in angle, straight and adjustable options and various sizes - 1/8-inch (angle, straight and adjustable), 1/4-inch straight, and 3/4- by 1/2-inch straight. They have a maximum operating pressure range from 1 1/2 up to 6 psi. **800/431-2082; www.matco-norca.com.**



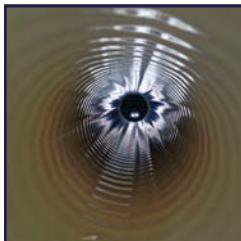
**WATCO MFG. CO.
UNIVERSAL NUFIT**

The Universal NuFit bathtub drain cover from Watco Mfg. Co., Div. of WCM Industries makes old drains look new in minutes. It fits over all bathtub drains (without requiring removal of strainer body), resists corrosion, is available in nine designer finishes, has a high-flow grid strainer to prevent hair clogs and is easy to install. It is available with foot-actuated (toe-touch) and push-pull stoppers. **816/796-3900; www.watcomfg.com.**

PIPE RELINING

ACE DURAFLO SYSTEMS EPIPE

The ePIPE pipe lining system from ACE DuraFlo Systems is aimed at restoring pipes in place. It is a fast-curing epoxy coating approved for small-diameter pressurized pipe systems. It uses existing access points to clean failing or aged pipes, then coats the interior of the pipes with a protective epoxy. In as little as two hours, this epoxy cures to form a strong barrier to prevent pinhole leaks, corrosion, discolored water, and lead and copper leaching. Lead-contaminated pipes can be brought into compliance in a matter of a few hours. The method rehabilitates service lines, mains, horizontal lines and vertical lines without having to dig up streets, sidewalks or landscaping. 800/359-6369; www.restoremypipes.com.



liner is inert as it has no chemicals that are going to impact the environment. It can be installed quickly, has a small installation footprint and uses little energy to install. It is chemical-resistant and uses low pressure, which reduces the chance of damage to the host pipe. 205/314-2498; www.dynalinerllc.com.

FLOW-LINER SYSTEMS NEOFIT

Neofit from Flow-Liner Systems is a noninvasive pipe lining system designed for small-diameter potable water service piping. It seals small leaks and pinholes in 1/2- to 2-inch copper, plastic and lead service piping. By cleaning the existing service line and installing the smooth bore thin-wall Neofit line, flow rate can be increased. It is ideal for lead replacement programs as it acts as a barrier between existing lead piping for potable drinking water. It is NSF-ANSI 61-G certified with a life expectancy of more than 50 years. The system is capable of lining lengths surpassing 300 feet. The technique necessitates minimal disturbance of surrounding ground, removing the risk of damaging other utility services. The absence of chemicals required makes it environmentally friendly. 800/348-0020; www.flow-liner.com.



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AVANTI INTERNATIONAL AV-100 ACRYLAMIDE

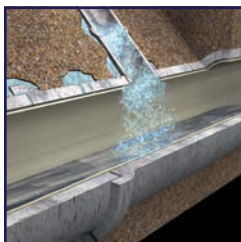
AV-100 Acrylamide from Avanti International is an ultra-low-viscosity, chemically reactive gel that has a similar viscosity to water. It can permeate anywhere water can travel and has adjustable cure times from five seconds to more than 10 hours. It is used to rehabilitate and sustain sanitary collections systems by eliminating infiltration in manholes, sewer mainlines, joints, laterals and before and after various forms of CIPP lining. By eliminating infiltration before lining pipes, users achieve maximum performance and an infiltration-free environment. It creates an effective, long-lasting water barrier while providing soil stabilization. 800/877-2570; www.avantigrout.com.



able cure times from five seconds to more than 10 hours. It is used to rehabilitate and sustain sanitary collections systems by eliminating infiltration in manholes, sewer mainlines, joints, laterals and before and after various forms of CIPP lining. By eliminating infiltration before lining pipes, users achieve maximum performance and an infiltration-free environment. It creates an effective, long-lasting water barrier while providing soil stabilization. 800/877-2570; www.avantigrout.com.

DYNALINER PVC

DynaLiner PVC pipe has an expected life of 400 years and is recyclable up to seven times. It is made in factory, so the physicals remain the same from the factory to completed installation. The



HY-FLEX CORPORATION 30GM/DM

The 30GM/DM trailer-mounted rotor/stator pump from Hy-Flex Corporation has an integrated mixer and air compressor. Available with either a standard gasoline or optional diesel engine, it is designed to pump cementitious linings and coatings. Mated with an optional Hy-Flex SpinCaster, the pump is a high-output, agile, compact package for contractors performing wastewater, containment repair and rehabilitation projects. Ease of operation and maintenance make it an ideal choice. 866/849-6246; www.hyflexcorp.com.



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**IPEX MANAGEMENT
NOVAFORM PVC LINER**

NovaForm PVC Liner from IPEX Management brings the benefits of factory-made PVC pipe to the trenchless pipe rehabilitation industry. It is available in 6- to 30-inch sizes and

industry-standard dimension ratios DR 35 and DR 41. 800/463-9572; www.ipexamerica.com.

**LMK TECHNOLOGIES
T-LINER**

The T-Liner from LMK Technologies is a one-piece homogenous main and lateral CIPP connection liner that is ASTM F2561 compliant. It has a uniform wall thickness and incorporates compressible lining material at the upstream and downstream ends, creating a smooth tapered transition to the host



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pipe. Both the mainline and lateral sections are formed as a structural cylinder that renews 18 inches and 360 degrees of the mainline and extends up the lateral pipe as one continuous lining. T-Liner with Insignia compression gasket-sealing technology provides a verifiable non-leaking system. These compression gaskets are embedded between the host pipe and the T-Liner and are compatible with all pipe types, including polyethylene. 815/433-1275; www.lmktechnologies.com.

**PICOTE SOLUTIONS
COATING SYSTEM**

Picote Solutions has a simple coating system available for use in pipeline renovation. It can be used to coat pipes from 1 1/4 to 6 inches or reinforce small areas. The coating resin creates a new pipe that is self-supporting, damp-proof, corrosion-resistant and elastic. Choose from a variety of resins including those for potable applications. The coating pump is attached on the top of the Picote Mini Miller, which can be used for drain cleaning and reinstatements. The compact system fits in tight places, is easy to clean and service, and is suitable for nearly every type of pipe. 706/436-1892; www.picotesolutions.com.



PRIME RESINS

Prime Flex Hydro Gel SX from Prime Resins is a single-component, hydrophilic polyurethane resin that reacts with water to form either a closed-cell, watertight foam or impermeable gel depending on the water-to-resin mix ratio. It is used to seal actively leaking joints and cracks in below-grade concrete structures such as manholes and dams. It can be used for soil stabilization. Material is typically injected under pressure to curtain grout behind porous structures. It is verified to meet NSF/ANSI Standard 61 for contact with potable water. 800/321-7212; www.primeresins.com.

**RATECH ELECTRONICS
SNAPLOCK**

The SnapLock repair system from Ratech Electronics is a no-dig repair system that renovates the defective section of a sewer or pipe. No chemicals are



needed to install. It is the most economical and efficient system for the quick repair of damaged areas in a pipe whose overall condition makes evacuation and the whole relining unnecessarily expensive. Made of high-grade stainless steel and surrounded by a rubber outer sleeve, the snap-lock system is durable and resistant to most chemicals including hydrogen sulfide. It is available in various diameters and lengths. 800/461-9200; www.ratech-electronics.com.



SOURCE ONE ENVIRONMENTAL THE PHOENIX

The Phoenix heated packer from Source One Environmental helps eliminate infiltration by helping point repairs cure 50 percent faster. It has an internal heater

powered by 230 or 110 volts, ensuring full control of the hardening process regardless of the outside temperature. The preprogrammed digital display on the heated control unit shows the actual temperature of the pack-

er, allowing the technician to regulate the entire curing process and increase daily work capacity. It installs and cures like the Standard PipePatch system to create structurally rehabilitated spot repairs in sanitary sewer and stormwater applications. It exceeds ASTM F 1216 and complies with NSF, ICC-ES PMG and IAPMO UPC certification standards. 877/450-3701; www.s1eonline.com.

REHABILITATION

CUES EASY GROUT SYSTEM

The Easy Grout computerized grouting system from CUES has a computerized graphical user interface that leads the user intuitively through the grouting process, reducing training time and increasing operator efficiency. The software includes help files, tool tip descriptions and recom-



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mended settings to assist operators throughout the grouting process. Since the system has been designed to consolidate all the valves and electrical controls into a single instrumentation cabinet, it can be mounted in any location, saving office space. **800/327-7791; www.cuesinc.com.**

**IBG HYDROTECH GMBH
IBG UV-PATCH-SYSTEM**

The **IBG UV-Patch-System** from **IBG HydroTech GmbH** is a compact and mobile part liner system that allows for the rehabilitation of damaged pipe sections in lengths up to 40 inches.

It works for defective pipe connections, selective corrosion, pipe cracks, root intrusion, broken fragments, infiltration and exfiltration. It works in pipe diameters from 6 to 24 inches. Three 250-watt UV lamps cure the patch. An articulated joint makes for better inserting through the manhole into the pipe. Wheel sets are manual and adjustable. Patches cure in eight minutes. **www.ibg-hydro-tech.de/en.**



to 8-inch pipes can be rehabilitated up to 600 feet in length. Listings include Uniform Plumbing Code, ICC-ES PMG, International Residential Code, International Plumbing Code, IAPMO Classified Marking, and the NSF/ANSI Standard 14 Certification and Quality Assurance Program. It is third-party tested and certified environmentally safe with odorless materials. **866/336-2568; www.perma-liner.com.**

**RAUSCHUSA QUICKLOCK
POINT REPAIR**

QuickLock Point Repair from **RauschUSA** is a permanent no-dig trenchless pipeline rehabilitation installation with a 316L stainless steel sleeve encased in an EPDM rubber gasket that



is mechanically compressed against the inner pipe wall and permanently locked in place by two locking gear mechanisms. No chemicals or resins are used, so there is no cure time. It meets ASTM Standard F3110-14 and is NSF61 certified for use in potable water. Applications include repairing leaking or offset joints, fixing cracks and holes, preventing root intrusion, and closing unused laterals. It augments the structural strength of the pipe and is a permanent and reliable repair. The installation withstands and passes internal pressure tests. Since there are no chemicals involved, it can be installed with flow. It has a 6- to 32-inch-pipe-diameter application range. **717/709-1005; www.repipetech.com.**



**MAXLINER USA
SUPERFLEX**

SuperFlex single-layer CIPP liner from **MaxLiner USA** is PU laminate coated, stitched and bonded to polyester felt. Extremely flexible in bends, the versatile liner is offered in diameters

of 2 to 8 inches with a thickness of 4 1/2 mm. Using inversion installation, it is used with MaxPox resin and hardener from the MaxLiner system and will go around bends with minimal wrinkling. **877/426-5948; www.maxlinerusa.com.**

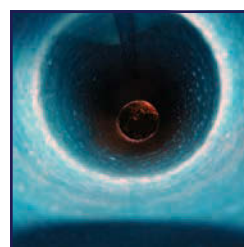
**PERMA-LINER
INDUSTRIES PERMA-
LATERAL SYSTEM**

The **Perma-Lateral System** from **Perma-Liner Industries** is designed for 2- to 8-inch pipe diameters and can be installed through clean-outs or open-end pipes as only one access point is required. The liner can be ambient cured in three hours or steam cured in as little as 20 minutes. Pipe diameters of 2 to 4 inches can be rehabilitated up to 120 feet in length, while 5-



**TRELLEBORG PIPE SEALS
MILFORD DRAINPLUS 2.0**

The **Drainplus 2.0** liner from **Trelleborg Pipe Seals Milford** is designed for rehabilitation of pipes with variations in internal diameter and bends. It has the ability to negotiate multiple 90-degree bends and overcome changes in internal diameter, while maintaining the required minimum 3 mm wall thickness. The silicone provides high-temperature resistance, and when used in combination with a range of epoxy resins, can be steam cured without the need for calibration hoses. This allows fast processing time so the installer can achieve maximum productivity. **800/626-2180; www.trelleborg.com.**





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TRY TEK MACHINE WORKS TRYDENT 80

The Trydent 80 small-pipe cutting system from TRY TEK Machine Works allows reinstatement of interior or exterior relined pipes from 3 to 6 inches in diameter. Operators can

access pipe systems through clean-out ports or roof-top vent pipes. Buildings where tenants or operations cannot be disturbed are ideal prospects. It can be used to reinstate an entire vertical waste pipe from a single access point. Its small, powerful cutting head can maneuver around 90- and 45-degree elbows and navigate multiple bends and turns. Its reach extends up to 100 feet and its narrow 23-inch width enables easy access through doorways. It can be used to reinstate lateral waste pipes connected to the sewer main at ground or basement level. 717/428-1477; www.trytek.com. ■

What's Read All Over?

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PIPELINE REHABILITATION AND REPAIR

By Craig Mandli

CIPP EQUIPMENT KEEPS JAIL WITHIN BUDGET, DISRUPTION-FREE



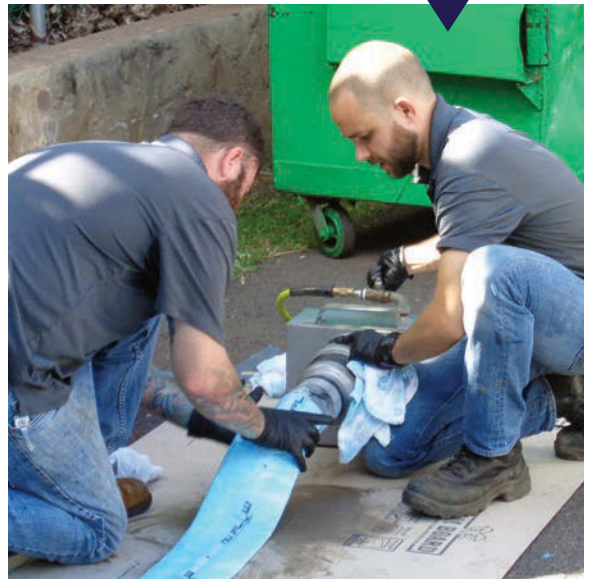
Problem: Rehabilitation of a sewer main running below four dormitories at Estrella Women's Jail in Maricopa County, Arizona, came with some unusual job limitations. First, the work had to be performed at night but could not disturb the detainees, due to state law. The actual work window would be between 9 p.m. and 5 a.m. During that time, the crew had to complete any run it started. Plus, project funding restricted overtime pay for necessary extra security, so the crew was allowed to work only on the Thursday, Friday and Saturday nights of two consecutive weeks.

Solution: Digging up the pipe would have required relocation of half of Estrella's inmates for the duration of the job, making CIPP rehabilitation the best choice for the county. Irontree Construction chose **Hammer-Head Trenchless Equipment's HydraLiner** line of CIPP equipment and consumables. The first night began with jet cleaning and inspecting the main. Everything was made ready to begin inversion immediately once they returned. The next night, inversion began with

wet-out. After wet-out, the crew wound the liner onto a spool inside the HydraLiner inversion drum. Pressurizing the drum forced the liner to spool out through the nozzle, turning itself inside out as it progressed, its epoxy resin side bonding and sealing with the existing pipe to create a continuous, jointless rehabilitated line.

Result: Work was completed on schedule and within budget. The job went so well that two more dormitories were slated for sewer rehabilitation. 800/331-6653; www.hammerheadtrenchless.com.

LINER INSTALLATION AVOIDS NEED FOR PITS AND ARCHAEOLOGISTS



Problem: Seamen's Hospital, a two-story stone building constructed in 1833 in Hawaii, was experiencing daily backups and had resorted to renting portable toilets. The inversion process was not a viable option because it would have resulted in disturbing a historical site in a special management area, and a traditional repair would have cost more since an SMA permit and assessment would have been required with an archaeologist on site for the duration of the project.

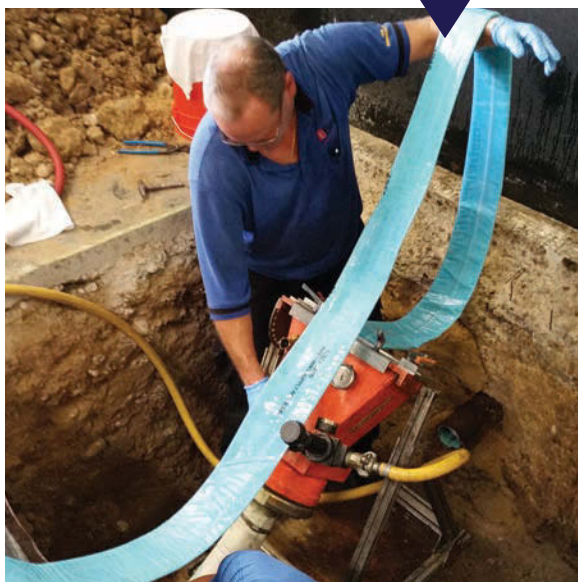
Solution: Maui Plumbing was able to clean 120 feet of 4-inch cast iron through the existing clean-outs using the **Pneumatic Micro-Cutter** by **Nu Flow**. Once clean, technicians wet-out the **Nu Drain** liner using slow-cure epoxy because of the high humidity and temperatures that reached over 90 degrees Fahrenheit. The lining was performed in three separate sections, which had three reinstatements for the downstairs restroom, the upstairs plumbing stack and the clean-out.

Result: The system allowed Maui Plumbing to clean and line the historical property's piping system without the need to dig pits, have an archaeologist or obtain SMA permits. 905/433-5510; www.nuflowtechnologies.com.

it was still round except for the collapsed section. There was a lack of access points, with the shortest line segment being 70 feet, then 289, 141, 140, 220 and 240 feet. Brink Services determined it could employ the **Quik Shot** lateral lining inversion system from **Quik-Lining Systems** to make the long lengths between pits, with a 240-foot blind installation at the end. Epoxy resin was chosen to eliminate toxic fumes, and a 60-minute resin hardener was chosen to expedite the project.

Result: The project was completed with no issues, on budget and faster than anticipated. The warehouse was able to continue operations uninterrupted. 605/695-6778; www.quiklining.com.

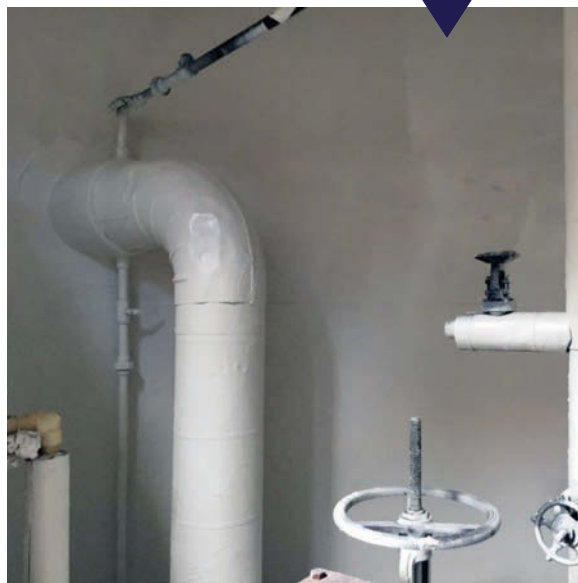
LATERAL LINING SYSTEM USED TO REPAIR COLLAPSED DRAIN



Problem: A warehouse facility housing three businesses in San Diego had a problem. The 4-inch common sewer drain buried under the floor of the warehouse was failing, and one section had already collapsed. Multiple contractors recommended cleaning 960 feet of pipe and replacing the remaining 140 feet of collapsed pipe.

Solution: The owner didn't like that solution and asked Brink Services to look at the situation and see if it could solve the problem without disrupting day-to-day operations of the warehouse. The bottom was missing on the entire length of the 1,100-foot cast iron pipe, but

LINING LOWERS AMBIENT TEMPERATURES IN STEAM SYSTEM



Problem: Pepco Energy Service of Atlantic City, New Jersey, maintains the steam distribution loop for the downtown district. Its utility vaults had extensive leaks and extremely high ambient temperatures, creating a hazardous environment where infiltrating water was being evaporated into steam.

Solution: A large ventilation system was installed in the vaults for employees to safely work. The vault walls were sandblasted and lined with a plural component waterproofing system from **Triton Lining Systems**. Existing insulated steam lines with metallic covers were sprayed with a thermal-insulating nano particulate material that substantially reduces heat loss.

Result: The abatement of water infiltration comingled with heat reduction lowered the ambient temperature to 130 degrees Fahrenheit. The additional pipe insulation improved the overall steam system's efficiency, which is directly affected by unrecoverable loss during transmission. 631/462-2952; www.tritonpipelining.com.

dependent upon where manholes were replaced. Pipe depth was in the 20-foot range. Bursting runs averaged 700 feet in length and took approximately three to four hours each to successfully complete. 800/533-2078; www.tttechnologies.com.

PNEUMATIC SYSTEM MEETS PIPE BURSTING CHALLENGE



Problem: Anticipated increased flows from the new 18,000-seat Avaya Soccer Stadium in San Jose, California, made an existing 12-inch vitrified clay sanitary sewer main inadequate. A new 20-inch HDPE line was proposed to replace the existing clay pipe. The privately funded project took place along a highly traveled thoroughfare in Silicon Valley.

Solution: Trenchless pneumatic pipe bursting was chosen for the project because of its ability to upsize the existing sanitary main while ultimately limiting disruption. The trenchless application required the closing of only a single lane of traffic in the heavily traveled area. A 14-inch-diameter **Grundocrack Koloss** pneumatic bursting system with rear expander from **TT Technologies** was used to burst the existing clay pipe and pull in the new 20-inch HDPE. It delivers 220 percussive impacts per minute at full power.

Result: The 2,250-foot project layout was L-shaped. Crews divided it into a series of runs, varying in length

UTILITY USES PIPE BURSTING TO REPLACE DUCTILE IRON FORCE MAIN



Problem: The Cape Fear Public Utility Authority (CFPUA) Northeast Interceptor Rehabilitation Phase II Project in North Carolina, designed by Kimley-Horn & Associates, included replacing 5,039 linear feet of 20-inch DIP force main. The existing line was located in a tight easement with numerous utilities in the immediate vicinity. Standard open-cut replacement of the line was deemed unacceptable due to the intrusive nature of the open-cut installation method and the high cost of restoration for roadway and utilities.

Solution: Kimley-Horn & Associates evaluated a number of options before deciding to specify pipe bursting as the method of installation. Allowable pipeline materials were either 20-inch fusible PVC or 24-inch HDPE as a bid alternate. "With a narrow right-of-way and other utilities adjacent to the Northeast Interceptor, a trenchless solution was the most economical and least invasive project approach," says Craig Wilson, senior project manager with CFPUA. During design, CFPUA's consultant, Kimley-Horn, took care to specify pipe wall thickness to meet both the pressure and depth require-

ments. Consideration was given to the shallowness of the existing force main in some areas, raising concern over potential surface heave as well as potential disruption to nearby utilities, including fiber optic lines.

Result: State Utility Construction won the bid and hired KRG Utility to perform the pipe bursting. **Underground Solutions** supplied and fused the 20-inch **DR18 Fusible PVC** pipe. During construction, Project Manager Jeff Wing worked with the contractor to adjust some of the pit locations based on the conditions of the existing pipe and constructability issues. “The pipe met the project requirements, and the pipe bursting installation resulted in less impact to existing roads, utilities, landscaping and the public compared to the open-cut alternative,” says Wing. “In addition, the use of pipe bursting resulted in an expedited schedule that was beneficial to meeting deadlines.” 858/679-9551; www.undergroundolutions.com.

PEX ENABLES INSTALLER TO KEEP AESTHETICS IN HISTORIC DEPARTMENT STORE



Problem: When a real estate development company in Tulsa, Oklahoma, sought to renovate the historic Vandever Department Store into a six-story apartment building, it was tasked with preserving the building’s historic charm while adding modern plumbing infrastructure in an efficient manner.

Solution: Installing **PEX** piping from **Uponor** reduced the required number of fittings and connections.

Eliminating fittings meant less material, less installation labor and fewer potential leak points — all resulting in more efficient installs and lower costs. PEX’s ability to bend around corners and run through tight spots without fittings allowed installer Todd Ringgold to create a more cost-effective plumbing layout. This reduced the size of the required soffit, allowing the ceilings to be higher (around 13 feet) and preserving the building’s desired aesthetics.

Result: The design efficiencies saved 40 percent in labor and halved material costs. The building now has tenants, and there hasn’t been any callbacks on the plumbing job. The clean, efficient and flexible PEX design eliminated the copper-related chases, wiring, ductwork and hanging pipe that would have negatively affected the building’s historic charm. 800/321-4739; www.uponor-usa.com. ■

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DITCH WITCH FOUNDER ED MALZAHN PASSES AWAY


Ditch Witch founder Ed Malzahn passed away Dec. 11. He was 94. Malzahn launched the first service line trencher, the Ditch Witch model DWP, in 1949 from a small machine shop in Oklahoma. Today, Charles Machine Works employs over 1,500 workers and has more than 175 dealerships and branches serving 195 countries. Malzahn's granddaughter, Tiffany Sewell-Howard, who represents the fifth generation of the Malzahn family, serves as the executive chair. Malzahn is survived by his three children, nine grandchildren and 13 great-grandchildren.

NU FLOW NAMES VICE PRESIDENTS

Nu Flow named Justin Mizell executive vice president. He will be responsible for overseeing sales throughout Nu Flow's East Coast locations. Joshua Shrock was named vice president of East Coast operations.

KNIPEX TOOLS WINS MULTIPLE INDUSTRY AWARDS

The KNIPEX Tools LP-patented hose clamp pliers received the Pro Tool Product Innovation Award and PTEN Innovation Award. The pliers are made for quickly opening hose clamps. Pro Tool Innovation Awards (PTIA) are judged by a panel of professional tradesmen in the electrical,

plumbing, MRO and concrete fields as well as general contractors and builders. The awards seek to discover and recognize the most innovative tools in the residential and commercial construction industry across a wide variety of categories.

PHCC FORMS SOUTH CAROLINA CHAPTER

The Plumbing-Heating-Cooling Contractors National Association (PHCC) formed a new state chapter in South Carolina. Chapter officers include Gary Goodwin, president, Twin Systems, Aiken, South Carolina; Joe Miller, vice president, AAA Accurate Backflow Testing & Repair, Lexington, South Carolina; Anja Smith, secretary, All Clear Plumbing, Greenville, South Carolina; and Tom Wilbert, treasurer, Carolina Cool, Myrtle Beach, South Carolina. Directors at large include Chris Corley, Corley Plumbing Air Electric, Greenville, South Carolina, and Justin Goodwin, Twin Systems, Aiken, South Carolina. Associate directors at large include Jason Brantley, Weeks-William-Devore, Matthews, North Carolina, and Jodi Thomason, Hughes Supply, Aiken, South Carolina.

NORTH CAROLINA PLUMBER WINS MANSFIELD SWEEPSTAKES

James Blue of Fayetteville, North Carolina, won the grand prize 2015 Jeep Wrangler Sport 4x4 in the Ultimate Summit Sweepstakes sponsored by Mansfield Plumbing. The sweepstakes for licensed plumbers and contractors ran from June through September. In a concurrent promotion, wholesale distributors of Summit toilets participated in a Scratch 'n Win contest. The \$5,000 grand prize was won by R.A. Townsend Company in Alpena, Michigan.



AMERICAN STANDARD NAMED VENDOR OF THE YEAR

American Standard Brands was named Showroom Plumbing Vendor of the Year by Ferguson, wholesale supplier of commercial and residential plumbing supplies. American Standard also received the Featured Counter Product Award for its Colony Soft centerset bathroom faucet promotion. Featured Counter Product recognition was based on successful marketing and sales execution of a promotion for the Colony Soft bath faucet in nearly 600 Ferguson blended branch counters across the United States.



▲ American Standard was named Showroom Plumbing Vendor of the Year by Ferguson. Accepting the award was Bert Magladry (third from left), manager of U.S. trade sales for LIXIL Water Technology Americas, American Standard. Ferguson associates assisting with the award presentation included (from left) Scott Russell, senior vice president, sourcing; Mary Hannah Fout, marketing manager, showroom; Terry Bradshaw, spokesperson; Sam Rose, vice president, showroom and builder business; and Rodney Grainger, vice president strategic product.



▲ American Standard received the Featured Counter Product of the Year award from Ferguson. Accepting the award was Bert Magladry (third from left), manager of U.S. trade sales for LIXIL Water Technology Americas, American Standard. Ferguson personnel assisting with the award presentation included (from left) Billy Stutz, marketing manager; Scott Russell, senior vice president, sourcing; Terry Bradshaw, spokesperson; Henry Wood, vice president, residential/trade and corporate counter; and Rodney Grainger, vice president strategic product.

GROHE NAMED ONE OF GERMANY'S MOST SUSTAINABLE COMPANIES

GROHE AG received a top-three ranking among Germany's Most Sustainable Major Companies of 2015. The company was recognized for its technologies that enable millions of people to use water and sanitary products in a sustainable way, including electronically operated faucets, the Blue kitchen system that reduces a household's carbon footprint and waste volume, as well as a range of products incorporating GROHE EcoJoy technology that cuts water consumption by up to 50 percent. The company also has substantially lowered its carbon emissions through heat recuperation and boosted its brass recycling rate to 80 percent.

LAUFEN CHOSEN INTERIOR DESIGN HONOREE

Laufen was a 2015 Interior Design Best of Year award honoree in the Bath Fixtures Category for the INO Bathroom Collection. The Swiss-based manufacturer of high-end bathroom solutions was among 1,600 entries in dozens of categories and received over 60,000 votes by members of the Architectural and Design Community. ■

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