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WATER:
THE TEXAS LAKE EFFECT

PAGE 12

HUMAN SIDE:
THE NEXT-GENERATION WORKPLACE

PAGE 20

STAYING SAFE:
ROADSIDE SAFETY

PAGE 28

UPGRADING TO EXCELLENCE

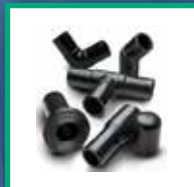
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making them stronger and more resilient

PAGE 22

Carel Vandermeijden
Deputy Executive Director, Treatment and Engineering
Cape Fear Public Utility Authority

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CONTENTS

PIPELINE AND INFRASTRUCTURE, HYDRANTS



ON THE COVER:

Carel Vandermeiden is the deputy executive director of treatment and engineering for the Cape Fear Public Utility Authority in Wilmington, North Carolina. In the 15 years since its founding, the Authority has reduced sanitary overflows by 94% and earned the Association of Metropolitan Water Agencies' Gold Award. (Photography by James Nix)



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- ◆ HUMAN SIDE: Phoenix tackles problems as a team
- ◆ BETTER MOUSETRAPS: Solving an airport's stormwater needs
- ◆ SEWER: Music City's massive sewer system upgrades

FEATURES

12 WATER: A Texas Lake Effect

Once-in-a-lifetime reservoir project will slake fast-growing region's thirst for more water.

By Ken Wysocky

22 WATER: Upgrading to Excellence

Cape Fear has brought systems together, making them stronger and more resilient.

By Giles Lambertson

COLUMNS

8 FROM THE EDITOR: Access Without Exception

Far too many people lack the clean water the rest of us take for granted.

By Luke Laggis

10 @mswmag.com

Visit daily for news, features and blogs. Get the most from *Municipal Sewer & Water* magazine.

18 BETTER MOUSETRAPS: Aircraft-Grade Drainage

Alternative stormwater pipe serves the needs of international airport's expansion.

By Steve Cooper

20 HUMAN SIDE: The Next-Generation Workplace

Organizations must adapt to the needs and concerns of Gen Z employees.

By Ken Wysocky

28 STAYING SAFE: Roadside Safety

Flaggers are responsible for everyone's safety in work zones.

By Ronnie Freeman

30 NASSCO: Technical Advice for the Trenchless Industry

NASSCO's Technical Advisory Council is a resource for the whole industry.

By Sheila Joy

32 PRODUCT FOCUS: Pipeline and Infrastructure, Hydrants

By Craig Mandli

36 CASE STUDY: Pipeline and Infrastructure, Hydrants

By Craig Mandli

38 INDUSTRY NEWS

40 PRODUCT NEWS

Product Spotlight: New knife gate valve a fit for sewer applications.

By Craig Mandli

45 WORTH NOTING/CALENDAR

People/Awards; Calendar

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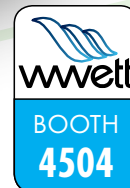


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ADVERTISER INDEX

COMPANY	PAGE
American Highway Products Ltd.	45
AMT Pump Company	36
Applied Felts, Inc.	29
Aries Industries	21
Brandt Truck Rigging & Trailers	8
Cam Spray	10
CUES, Inc.	5, 37
Envirosight LLC	2
FerraTex Solutions, Inc.	25
GapVax, Inc.	47
Hermann Sewerin GmbH	41
Hurco Technologies, Inc.	42
Hydra-Flex, Inc.	11

COMPANY	PAGE
InfoSense, Inc.	43
Ladtech, Inc.	7
McElroy Manufacturing, Inc.	41
No-Dig Show	39
Pipeline Renewal Technologies	19
PPG Protective & Marine Coatings	17
Reed Manufacturing	43
Reline America	3
Saniflo SFA Inc.	9
Sealing Systems, Inc.	45
Subsite Electronics	27
T&T Tools, Inc.	6
USB-USA	43
VAC-CON	35
Vactor Manufacturing	48
Vaughan Company, Inc.	15
VEGA Americas, Inc.	31
WinCan	33
CLASSIFIEDS	44
MARKETPLACE	44

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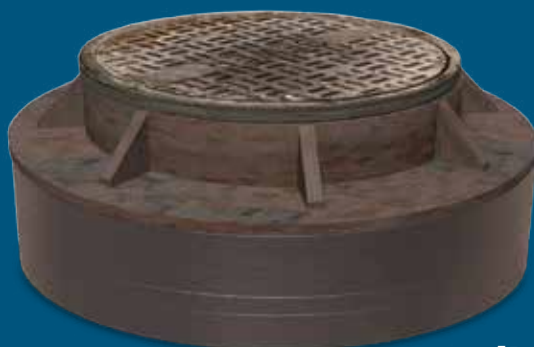
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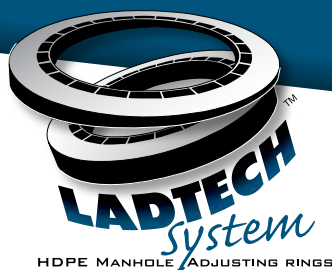
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Luke Laggis

ACCESS WITHOUT EXCEPTION

Far too many people lack the clean water the rest of us take for granted.

Some friends and I share a hunting cabin. It's about 45 minutes from where I live, bordering a large block of public land. It's stick-framed on a concrete foundation, and it's only about 25 years old, but it's also primitive in some ways — no electricity and no running water.

Spending time out there, then, always requires bringing in water. Heading out there for the day isn't any different than any other day outdoors — bring the water you'll need to drink. Spending the weekend takes a little more effort. You'll need plenty more drinking water, obviously, along with water for cooking, cleaning and other odd chores. A group of people spending the week will also have to consider some means of showering.

Now, to be clear, I don't think having to transport water for use at a semi-remote recreational property is a hardship in any way. It's a minor inconvenience for the privilege of using the place. I can easily fill containers at home or stop and buy inexpensive cases of bottled water on my way out. Still, even with drinking water needs easily met, after a couple days without a shower the inconvenience grows.

Let me again say, inconvenience and hardship are a far cry apart. As I was

wishing for a hot shower one morning in late November and not wanting to drive home, I wondered how many people have no access to drinking water or a hot shower in their homes. A couple weeks later it crossed my mind again and I did a little searching.

According to the United Nations World Water Development Report released last year, approximately 2 billion people around the world don't have access to safe drinking water, and approximately 3.6 billion people — 46% of the world's population — lack adequate sanitation services.

Closer to home, a 2022 report from Los Angeles-based nonprofit DigDeep found that more than 2 million people in the U.S. live without running water or basic indoor plumbing. An additional 44 million Americans live with water systems that have been in violation of the Safe Water Drinking Act. And 43 million more Americans rely on water from wells that are threatened. DigDeep says the economic impact of this water gap is measured in billions of dollars annually.

That's in the United States, a wealthy, first-world country. But while economic impact can be measured or at least estimated, the mental and physical impact on those individuals — mothers, fathers, children — is harder to quantify and much more difficult to accept.

Everyone should have access to clean, safe water. No exceptions. The work you do to ensure that for your customers is often unheralded but it's as important to the health and wellbeing of your communities as the work of any doctor. You have too much on your plates to spend a lot of time touting the virtues of your work, but I'm happy to help out a little in the pages of *Municipal Sewer & Water*.

The value of water needs to be understood, and so does the value of your work. Enjoy this month's issue. ♦

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PREDICTING WATER DEMAND

Sister Climate Cities

An international research team has developed a model to predict how climate change might affect residential water demand in U.S. cities, using data from cities with similar climates as analogs. The model aims to guide city planners in developing effective climate change mitigation strategies.

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A TEXAS LAKE EFFECT

Once-in-a-lifetime reservoir project will slake fast-growing region's thirst for more water

By Ken Wysocky

The Upper Trinity Regional Water District is about halfway finished with building an estimated \$490 million water-supply reservoir that will help meet ever-increasing demands for water in a fast-growing region of North Texas.

When completed in late 2025 or mid-2026, Lake Ralph Hall — named for the late congressman who helped spearhead the project — is expected to supply 35 million gallons of raw water a day to the 29 communities the utility serves in Denton and Collin counties.

An allocation of another 19 mgd of reuse water will also be available for the communities, which are located some 60 miles northeast of Dallas and have a total population of around 400,000 people, says Ed Motley, the utility's project manager for the huge undertaking.

"This the biggest infrastructure project in our history," says Motley, who joined the UTRWD, a wholesale water and wastewater utility, in 2019 after 43 years as a civil engineer. "It's also one of only two major new water supply reservoirs to be built in Texas during the last 30 years."

The other reservoir is 16,641-acre Bois D'Arc Lake, which is located about 20 miles north of the site of Lake Ralph Hall, near the town of Bonham. It was completed in 2021.

About 80% of the project is funded by a loan from the Texas Water Development Board. The balance is funds the district has saved and municipal fund revenue bonds. The bonds and loans will be paid off by user-rate revenue, Motley says.

Massive project

At 7,600 acres, Lake Ralph Hall will cover about 12 square miles of land and hold about 180,000 acre-feet of water — about 59 billion gallons. It will be created by damming the North Sulphur River.

The river only flows when it rains; the area receives an average of about 34 inches of rainfall annually.

Aside from supplying drinking water, the lake also is expected to provide a big economic boost to the area by providing a myriad of recreational opportunities, including fishing, boating, hunting, hiking and camping. Officials expect the project will generate billions of dollars in economic benefits to surrounding counties and communities.

Furthermore, the project also includes taking steps to rejuvenate about a mile of the North Sulphur River, located just downstream of the dam. The river channel is more than 20 times its original size due to significant erosion, stemming from channel alterations made in the 1920s, Motley explains.

The utility currently depends on three water sources: Lake Lewisville and Ray Roberts Lake in Denton County, under a contract with the cities of Dallas and Den-



Lake Ralph Hall Program Manager Ed Motley (left) and Ronna Hartt, assistant director of operations for the Upper Trinity Regional Water District, look over a map of the Lake Ralph Hall project at the district's offices.

“This the biggest infrastructure project in our history.”

Ed Motley



ton; and Jim Chapman Lake, under a contract with the city of Commerce, located about 15 miles south of Ladonia, the closest town to the Lake Ralph Hall site.

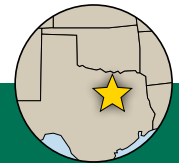
Major components

The 2.3-mile-long Leon Hurse Dam is currently under construction and should be completed in 2025. It's named after the late Charles Leon Hurse, who served as the mayor of Ladonia for 17 years. Hurse also tirelessly championed the reservoir project with Hall.

Building the dam will require moving 5 million cubic yards of soil and pouring 136,000 cubic yards of roller-compacted concrete. Making the concrete will require 9,000 tons of cement and 9,000 tons of fly ash, Motley says.

To supply water for construction purposes, two 2,000-foot-deep groundwater wells were drilled. Each well produces about a half million gallons of water a day, he says.

Another major component of the project is already completed: a 1.1-mile-long bridge that currently spans the North Sulphur River and will eventually allow drivers on State Highway 34 to cross part of the lake.



PROFILE:

Upper Trinity Regional Water District, Lewisville, Texas

SERVICE AREA:

About 1,000 square miles encompassing 29 communities

POPULATION SERVED:

About 400,000 people

WATER TREATMENT PLANTS:

2

TREATMENT CAPACITY:

Up to 100 mgd

WATER DELIVERED:

An average of 48 mgd in 2022

WATER INFRASTRUCTURE:

103 miles of pipelines that deliver water to communities; two pumping stations; one elevated storage tank/booster station; three water-storage facilities.

LAKE RALPH HALL COMPONENTS:

A 2.3-mile-long dam across the North Sulphur River; a 7,600-acre, 12-square-mile lake that will hold about 190,000 acre-feet of water; a 1.1-mile-long bridge for motorists to traverse part of the lake; a 32-mile, 66- to 72-inch-diameter pipeline that will carry raw lake water from a pump station by the dam to a water-treatment facility.

EMPLOYEES:

About 130

WEBSITE:

utrwd.com



Construction advances on the primary spillway at the Leon Hurse Dam, which will eventually hold back the water of Lake Ralph Hall.



Upper Trinity Executive Director Larry Patterson (left) and Lake Ralph Hall Program Manager Ed Motley stand in front of the newly installed Lake Ralph Hall monument sign on State Highway 34.

The bridge features a 10-foot-wide pedestrian/bicycle lane on its western side.

The last major piece of the project is a 32-mile-long, 66-inch-diameter steel pipeline that will deliver water to the Upper Trinity's treatment plant in Lewisville, a northern suburb of Dallas. The pipeline will be fashioned from roughly 3,400 sections of 50-foot-long steel spiral-wound pipe, made by American SpiralWeld Pipe Company, based in the nearby city of Paris.

The first 27 miles will convey water from a pump station at the dam to a two-part balancing reservoir located on one of the higher points along the route; there the pipeline will transition from pressurized to gravity flow, Motley says.

From there, water will travel through a 5-mile-long, 72-inch-diameter steel pipeline that will connect to an existing pipeline owned by the city of Irving, which currently delivers water to the UTRWD from Lake Chapman. That pipeline will carry water to the treatment facility.

Construction of the pipeline began in spring 2023 and



“The area we serve includes two of the fastest-growing counties in Texas.”

Ed Motley

Patience pays off

After developing about 20 different options in what Motley calls a “vigorous evaluation,” the utility decided that from a cost and an environmental-impact standpoint, creating a reservoir was the most desirable strategy.

year, according to statistics from the TWDB.

“Basically, we’ve all been living off that infrastructure for 50 years,” Motley says. “And now we’ve run out of lakes — the population growth has caught up with our water supply.”

is slated for completion in spring or summer of 2025.

Long time coming

Planning for the project began back in 2000, when utility officials started doing long-range planning because they saw that current water supplies would eventually not meet the demands of the rapidly growing region, Motley says.

Utility officials determined they’d need additional water resources by 2025 or 2026 to meet fast-growing demand.

“The area we serve includes two of the fastest-growing counties in Texas,” Motley explains. “During the last decade or so, about 100,000 people a year have been moving into the Dallas-Fort Worth metropolitan area, most of them from out of state.

“And none of them bring water with them.”

A flurry of constructed lake reservoirs were built in Texas during the 1960s and 1970s in the wake of a historic drought in the 1950s. In fact, more than half of the state’s available surface water is in reservoirs — 8.9 million acre-feet per year out of a total of 13.3 acre-feet per

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NEW RESERVOIR WILL ENHANCE RIVER CHANNEL, FOSSIL HUNTING

Along with providing a stable and sustainable source of water for North Texas residents, the Lake Ralph Hall reservoir also will produce a more under-the-radar but still important benefit: a healthier North Sulphur River.

The 7,600-acre reservoir will be created by building the 2.3-mile-long Leon Hurse Dam across the river, which flows only during heavy rainfalls. The dam will allow the reservoir, which will be owned and managed by the Upper Trinity Regional Water District, to slowly fill with water.

But the dam also gives the utility a chance to rejuvenate the river channel below the dam. The river bed has undergone severe erosion ever since it was straightened and channeled in the 1920s to protect farmland along the river — and the nearby city of Ladonia — from periodic flooding.

At that time, the channel was 16 to 20 feet wide and about 10 feet deep. Now the river channel is approximately 350 feet wide and 60 feet deep. As a result, hundreds of acres of valuable land, trees and wildlife habitat have been lost to massive erosion.

But environmental mitigation efforts will help reduce the impact of the continued erosion and restore portions of the original river channel to its natural meandering path, says Ed Motley, the utility's project manager for the huge infrastructure endeavor.

"About a mile of the stream, stretching from immediately downstream of the dam to the North Sulphur River's first tributary, will basically have significantly less flow than it does today," Motley explains. "We'll raise the channel bed to protect the dam against erosion and will do restoration work that will make the river more of a natural stream.

"We'll essentially turn an environmental problem into a healthy asset by providing a rich aquatic and wildlife habitat."

The lake also will cover the Ladonia Fossil Park, located a few miles north of Ladonia. The park is a popular spot for residents and tourists to hunt for fossils commonly exposed by the river erosion, Motley says.

The park also stood in the path of a recently constructed, 1.1-mile-long bridge that spans the North Sulphur River and will eventually carry motorists across part of the lake. As such, the UTRWD is doing something not every utility has to do: build a temporary fossil park, then later create a permanent one downstream from the dam that will offer multiple access points to new, untapped fossil beds.

"It's probably a pretty unique situation for a water utility," Motley says. "But the park is a great asset to the community and we didn't want to take it away."



The pump station is shown under construction, with several sticks of new pipe on site.

The utility submitted a water-rights application in 2003 and received it in 2013. It submitted a federal permit application in 2006 and received it in 2020.

"We thought the permitting processes would take 10 to 15 years, but here we are," Motley says.

Permit approvals take so long because utility officials had to negotiate with the United States Army Corps of Engineers and three other federal agencies, plus two Texas agencies, the Texas Water Development Board and the Texas Commission on Environmental Quality, Motley says.

"We spent hours and hours in conference rooms, negotiating with all these agencies. We had to work with input from all of them and try to satisfy the desires of these multiple agencies and many times those desires didn't align.

"In the end, it took a lot of patience and persistence — and Pepto-Bismol."

The utility also had to deal with objections from two local environmental groups. But overall, the project received strong support from the communities the utility serves, he says.

A landmark project

Looking back, Motley is proud of what's been accomplished. And despite being past retirement age, he plans to stick with the project until the lake is filled with water, hopefully by mid-2026, depending on how much rain the area receives.

"This is my legacy project and I'm committed to finishing it," he says. "It's a once-in-a-lifetime project, so it's very hard to walk away from."

On the other hand, water from Lake Ralph Hall is projected to handle the region's water needs only until the middle 2040s.

"At that point, we'll be going through this planning process again," Motley says. "We've already started thinking about what our next water source might be.

"As long as this area keeps growing, our work will never be done." ♦

The recently opened State Highway 34 bridge stretches over what will become Lake Ralph Hall.

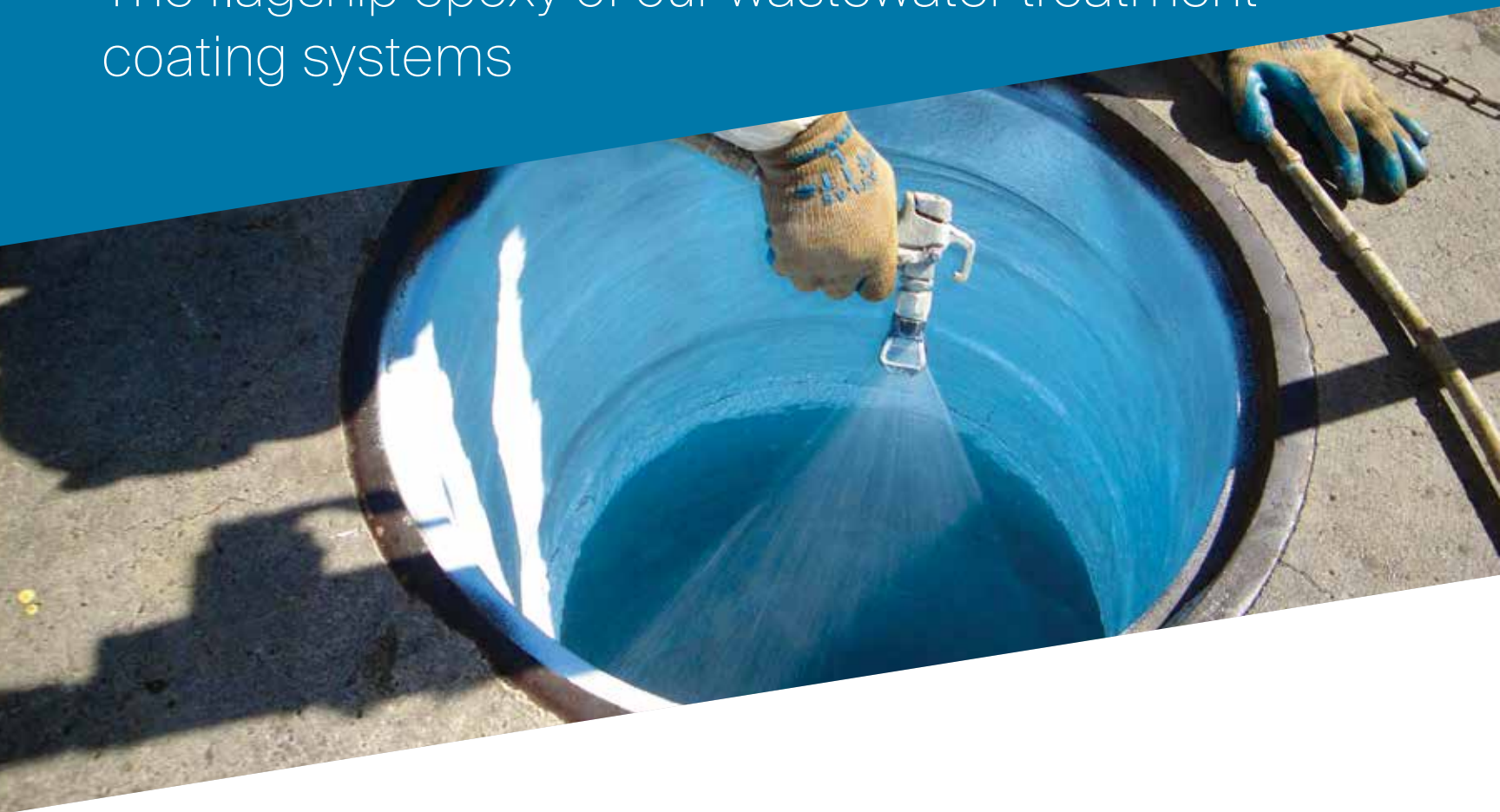


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AIRCRAFT-GRADE DRAINAGE

Alternative stormwater pipe serves the needs of international airport's expansion

By Steve Cooper

Richmond International Airport's rapid growth necessitated a new area for deicing aircraft, as well as more space for operations, passengers, restaurants and shops. That meant significantly more impervious surface and, with it, more runoff.

Part of a continuing expansion plan, the recently completed Concourse B Apron Expansion and Deicing Facility includes some 66,000 square yards of commercial aircraft-grade concrete pavement that runs from the existing Concourse B apron to Taxiway F. The apron is configured to allow the glycol runoff to be sent to the collection pump station, which will discharge to the Henrico County sanitary system, while stormwater runoff is directed to one of two basins at the airport.

"We put in two trench drains located in the middle of the apron," explains Derek Johnson, project manager for Hi-Way Paving of Hilliard, Ohio, the contractor on the job. "There is a valve system that diverts stormwater into the HP pipe or the glycol deicing chemical into a separate pipe."

According to the American Airport Guide, 1,604,459 passengers flew in or out of Richmond International Airport in 2021, a 91% increase compared to the previous year. In October 2022, RIC had nearly 6,000 flights. Of utmost importance to the airport was the security of the system that would contain and convey both the deicing and stormwater runoff.

"We didn't want any runoff to get into the groundwater," says Wade Brooks, P.E., project manager for the engineering design firm, CP&Y, Inc. of Richmond, Virginia.

The Stormwater Management Facility at RIC consists of shallow marsh with two basins, inlet and outlet structures, plus shallow marsh plantings to treat stormwater runoff. Runoff goes into the White Oak Swamp Creek that flows to the Chickahominy River and into the James River, ultimately into the Chesapeake Bay. The recently completed project enhances the airport's efforts to protect the water quality of the Chesapeake Bay.

"To do the new deicing facility, which is on the southside of the airport, we had to have a trench around the inlet that captures the deicing fluid," Brooks says. "And during a regular rain, that can be diverted to go into the main storm drain system."

"They were stuck in their ways of using concrete pipe."

Wade Brooks

"We designed the apron stormwater drainage originally to use Class V reinforced concrete pipe because it's pretty typical of what we do on airports. Sometimes it's hard to get these government entities to make a change. They were stuck in their ways of using concrete pipe. After the bid, however, the contractor came to us and said, 'Hey, to meet the schedule, there's no way we can get concrete pipe; their supplies are behind schedule.' That's when we looked at something that can handle the weight of the various aircraft, and we thought of the Advanced Drainage Systems pipe, which we learned we could get delivered pretty quickly. And for scheduling purposes, and putting in as much pipe as possible in a day, it worked out really well to go with those products. For

BETTER MOUSETRAPS

PROJECT:

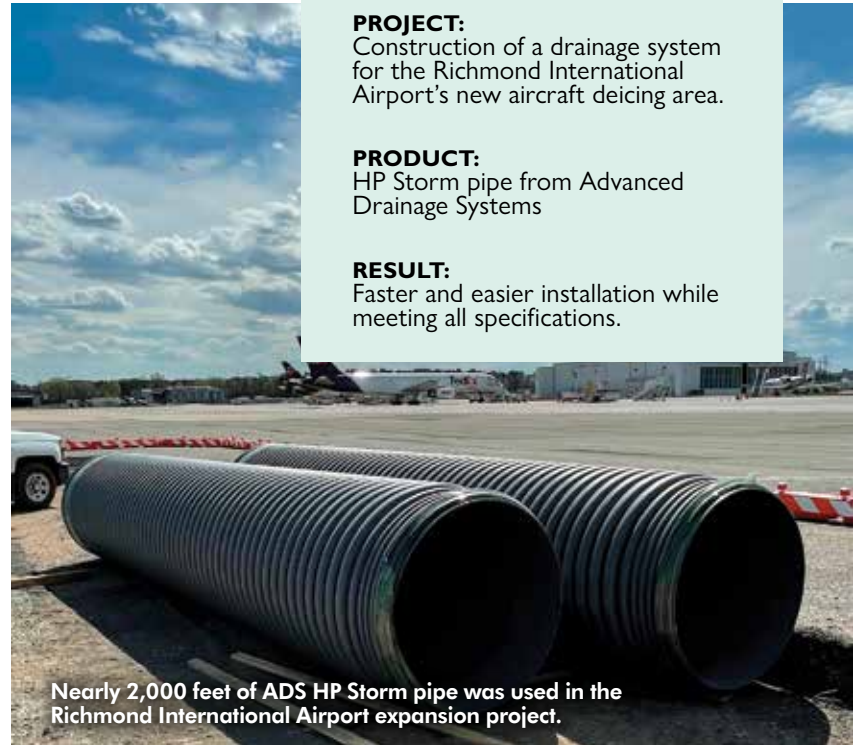
Construction of a drainage system for the Richmond International Airport's new aircraft deicing area.

PRODUCT:

HP Storm pipe from Advanced Drainage Systems

RESULT:

Faster and easier installation while meeting all specifications.



Nearly 2,000 feet of ADS HP Storm pipe was used in the Richmond International Airport expansion project.

every day after the deadline that the project was not completed, it would have cost the contractor \$15,000 a day."

The layout called for nearly 2,000 linear feet of HP Storm pipe in diameters from 24 to 42 inches from ADS. For the deicing pipeline, 500 linear feet of solid-wall high-density polyethylene pipe was used.

"We didn't want to contaminate the environment," Brooks says. "And we wanted a quality pipe that would serve the purpose for the airport for a long time, because they don't want to come back in and have to redo anything. Since it's all FAA-funded, there's an expectation that the money will be used the best possible way. Plus, we didn't want any infiltration from the ground, which has a high water table, being close to the James River, and we were confident in the HP Storm gaskets. The ADS pipe also enabled us to actually reduce the size of the pipe that we had originally specced in, so we were able to save on size and costs."

Being able to change the concrete pipe's diameter from 27 inches to 24-inch-diameter HP Storm, for example, was possible due to the ADS pipe's smooth interior that provides a Manning's "N" value of 0.012, which was important because the slope of the pipe is less than 1%. "Typically for concrete we use a 0.013," Brooks says. "Going to the polypropylene pipe would have a better N value."

The ADS pipe comes in 20-foot lengths that reduce the number of joints in a typical 200-foot run to nine versus 24 joints for 8-foot RCP sections, which can weigh as much as 2,600 pounds each in a 27-inch diameter. This longer length and lower weight of the thermoplastic pipe means installation is easier and faster and provides a favorable installed cost with an established RSMean installation rate of 200 feet a day.

A high-performance polypropylene pipe for gravity-flow storm drainage applications, HP Storm pipe provides stiffness and premium joint performance. The ADS design couples advanced polypropylene resin technology with a proven, dual-wall profile design for superior performance and durability. The pipe is corrosion resistant and is unaffected by salts, chemicals and hot soils.

The pipe meets or exceeds ASTM F2881 and AASHTO M330 and is approved by the Army Corps of Engineers for storm drainage applications under Section 33 40 00 (Unified Facilities Guide Specifications). The Federal Aviation Authority permits polypropylene pipe under airfield pavements per Item



Pipe was installed in trenches from 3 to 7 feet deep, with cover ranging from 2 to 4 feet.



Protecting water quality was key, as runoff moves through creeks and rivers to the Chesapeake Bay.

D-701, Pipe for Storm Drains and Culverts in AC 150/5370-10G (Standards for Specifying Construction of Airports).

The pipe was installed in trenches from 3 to 7 feet deep with cover from 2 to 4 feet. Compaction was done before the backfill and pipe were put in place. The pipe was inserted into the manholes and mortared into place. Flowable fill was used primarily around and above the pipe along with Class 1 backfill as bedding material.

“Since it was designed and calculated with aircraft loading we did have to pour flowable fill 12 inches over the top of the HP pipe,” Johnson says.

Hi-Way had a crew of five. “As far as installation goes, we love the pipe,” Johnson says. “It was easy to unload. It was lightweight, so it was easy to maneuver. We liked the home system with the joints. We felt that it was easy to joint properly. We liked it for all those reasons.” ♦



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“As far as installation goes, we love the pipe.”

Derek Johnson

THE NEXT-GENERATION WORKPLACE

Organizations must adapt to the needs and concerns of Gen Z employees

By **Ken Wysocky**

The newest coming-of-age cohort that's beginning to shift workplace dynamics is Generation Z, generally defined as the 72 million or so people born between 1997 and 2012.

On one hand, many consider Gen Zers as entitled, unmotivated to work hard, less professional, not as loyal to employers, less adept at "soft" skills and more prone to challenge managers. They're also harder to work with than other generation cohorts, such as baby boomers, Generation X and Generation Y (also known as millennials).

In fact, in a recent survey conducted by Resume Builder, nearly 75% of 1,344 managers nationwide said Gen Zers are more difficult to work with than any other age cohort and 65% said they had to fire Gen Zers more often than employees from other generations.

On the other hand, many view Gen Zers as more idealistic and purpose-driven than other cohorts. They're also considered more technologically savvy, innovative and adaptable, and they value authenticity and social responsibility more than their older co-workers.

But the bottom line is, no matter what employers think of Gen Zers, they are reshaping organizations that already are grappling with the challenges posed by the widest-ever range of workplace age diversity. And their numbers are growing fast.

While every other generation in the American workplace is shrinking, employment of Gen Zers has increased by at least 2% annually since 2018. And for the last year or so, there have been more Gen Zers than Baby Boomers in the United States workforce and they're slowly but surely overtaking Gen Xers and millennials.

Furthermore, Gen Zers are expected to make up approximately 27% of the workforce by 2025 and 30% by 2030. Clearly, there's no stemming this employment tidal wave.

Purpose-driven mindset

So what will organizations have to consider as this next generational cohort slowly seeps into the workforce? For starters, Gen Zers are very passionate about making a difference and want to work for companies that they feel have a broader mission that aligns with their values.

Fortunately, this can be an easy sell for water and sewer utilities, particularly for those organizations that can clearly define how they help create a better environment, provide clean water and fight against water and environmental inequities and racism.

Moreover, Gen Zers will be more likely to thrive and stay at companies that demonstrate a strong internal commitment to diversity, equity and inclusion. They also highly value volunteer opportunities and philanthropic efforts aimed at improving communities, plus strong corporate ethics and social awareness.

To understand just how much Gen Zers prize this emphasis on being part of a larger cause, consider that one study showed that one-third would take a pay cut to work somewhere that supports a mission they believe in.

We invite readers to offer ideas for this regular column, designed to help municipal and utility managers deal with day-to-day people issues like motivation, team building, recognition and interpersonal relationships. Feel free to share your secrets for building and maintaining a cohesive, productive team. Or ask a question about a specific issue on which you would like advice. Call editor Luke Laggis at 800-257-7222, or email editor@mswmag.com.

In short, Gen Zers want to work for good corporate citizens, so it behooves organizations to act accordingly — and prominently promote those programs and endeavors in both recruiting and internal communication programs, experts say.

Technology and communication

Gen Zers are the first generation to grow up in a completely digital age — the "TikTok generation," as some call it. (One study shows that more than 60% of TikTok users are Gen Zers.)

As such, these "digital natives" have high expectations when it comes to workplace technology — and not meeting those expectations will result in lower engagement and high turnover. It also could tarnish organizations' reputations as preferred employers, experts say.

In terms of communication, Gen Zers generally prefer texts to emails. Furthermore, messages must be short and to the point. But they also prefer video calls to phone calls, a reflection of their need for personal connections.

This leads to a surprising and counterintuitive finding: Most Gen Zers prefer speaking with co-workers and managers face-to-face compared to all other forms of communication. They want meaningful relationships with colleagues and managers.

As such, regular one-on-one meetings where managers can provide constructive and insightful feedback are critical. Mentors and ongoing training and career development programs also factor heavily in maintaining high levels of engagement and retention, experts say.

Mental health matters

More than any other cohort, Gen Zers desire work-life balance. They work to live, not live to work.

This is a key consideration because high stress and burnout are primary reasons why they leave jobs. In addition, studies suggest they struggle more with anxiety, depression, loneliness and other forms of emotional duress — conditions that experts speculate were exacerbated by pandemic-related isolation.

As such, creating a safety net of sorts is important. Organizations can start by offering training that shows employees how to maintain mental health; this kind of training is just as important to Gen Zers as increasing their technical competencies.

Organizations also can train managers to handle employees they believe are struggling with emotional issues. Many managers don't feel equipped to address such sensitive issues with employees for fear of using the wrong words.

Part and parcel to this, it helps if organizations can create a common vocabulary when talking about mental health, so that terms such as anxiety and depression are properly defined and used accurately by everyone involved.

Furthermore, organizations can offer peer groups where Gen Zers can talk about mental-health issues in a safe environment, experts say.

To understand just how much Gen Zers prize this emphasis on being part of a larger cause, consider that one study showed that one-third would take a pay cut to work somewhere that supports a mission they believe in.

Change is inevitable

It's always tempting to broadly stereotype cohorts; remember when millennials were the workplace punching bags du jour for being self-absorbed and entitled? Nonetheless, experts say there's no doubt that each successive generation possesses traits and characteristics molded by their collective life experiences.

And for Gen Zers, some of the defining elements of their lives include the Great Recession of 2008-09, the rise of social media, climate change, large student loans, pandemic lockdowns and an affordable-housing crisis, to name a few.

As a result, this growing cohort brings its own set of needs and concerns to the workplace table, just as millennials and Gen Xers did before them. And organizations must be prepared to adapt and meet those needs, especially since Gen Z employees — disillusioned by all the layoffs they witnessed during times of economic and pandemic upheaval — don't feel a lot of loyalty to organizations and aren't afraid to leave for other opportunities.

In fact, one study showed that the average time a Gen Z employee stays in a role is two years and three months.

If that's the case, why should employers even bother trying to cater to their needs? And is doing so worth alienating older employees who resent that Gen Zers get preferential treatment, hold diametrically opposed workplace attitudes (work/life balance, for starters) and weren't offered the same work options and opportunities (flexible hours, for example) that Gen Zers enjoy?

Regarding the latter, some experts point out that what's good for Gen Zers — an emphasis on mental health, better work/life balance, more face-to-face communications and top-flight technology, for example — generally is good for all employees. Moreover, younger employees bring in fresh perspectives and new innovations.

And secondly, if organizations want to remain viable and vibrant, they have no choice but to roll with the changes. At stake is the very future of work and their place in it. ♦

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UPGRADING TO EXCELLENCE

Cape Fear has brought systems together, making them stronger and more resilient

By Giles Lambertson

The Cape Fear Public Utility Authority is busy for all the right reasons. The Wilmington, North Carolina, agency has a diverse customer base depending on its services, from the university to the deepwater port, to vacation cabins along the Atlantic Coast and businesses and homes across New Hanover County.

“We cannot let the system fail,” says Carel (pronounced Carl) Vandermeijden, the authority’s deputy executive director for treatment and engineering. “A community cannot be successful without reliable water and sewer services. Providing those services is our job.”

The authority was formed in 2008 through the merger of the city of Wilmington and New Hanover County systems. Vandermeijden says one of the “drivers” behind creation of the unified system was periodic failure of the then-existing sewer system. “In the five years before the authority was formed, there were 156 sewer overflows that spilled 11 million gallons of untreated wastewater.”

In the 15 years since, the authority has made dramatic progress in reducing overflows. In the last five years, it has experienced fewer than half the number of spills of the five-year period before the consolidation — and has reduced the volume of spills by 94%. “We see how we have improved the system and that we did it in a cost-effective way,” Vandermeijden says. “We’re still doing it cost-effectively though the systems are much larger now.”

One indicator of its success is the gold award the authority won in 2022 from the Association of Metropolitan Water Agencies for “exceptional utility performance.” Vandermeijden says the association cited the authority’s general good management. “We’ve made a lot of progress — and the award reflects that — but there also was a heavy focus on infrastructure sustainability, reliability and resilience. We focus a lot on the proactive replacement of aging infrastructure.”

The focus is justified. Parts of the combined system are old — it contains 170 miles of water main and 110 miles of sewer lines that are at least 70 years old. Some clay or cast iron pipe underneath the older parts of Wilmington has been there for more than a hundred years.

The authority is systematically addressing the issue by identifying infrastructure nearing the end of its useful life — which is about 70 years for water and gravity sewer lines and 40 for pump stations, for example — and targeting that stock for replacement or rehabilitation. A “find it, fix it” process relies on work orders that show which sections of the system routinely require the most labor hours to maintain.

Whenever feasible, sewer pipe is lined rather than dug up and replaced to minimize disruptions above ground. While some pipe bursting has been tried, lining is the more usual response to a leaking segment of pipe.

Whenever possible, the authority coordinates this repair work with the city and county. “If they have a street to repave, we partner with them to replace our aging assets underneath the street first and then they can come back and pave it. The last thing we want to do is have to dig up a newly paved street,” Vandermeijden says.

Paying for growth

The authority’s latest 10-year capital improvement plan reflects all of the foregoing projects. The price tag of the plan totals almost \$650 million: 77% of that total to rehab or replace infrastructure, 22% to expand the footprint of the system, and 1% for system enhancement.

“We always look for enhancements that lower the operating costs, build in efficiencies and reduce energy use. But the vast majority of dollars in the plan will be spent to rehabilitate or replace aging infrastructure,” Vandermeijden says.

One project alone accounts for \$250 million of the 10-year expenditure: replacing and

“A community cannot be successful without reliable water and sewer services.”

Carel Vandermeijden



A crew for the Cape Fear Public Utility Authority exposes a leaking water main along Kelly Road in Wilmington, North Carolina. (PHOTOGRAPHY BY JAMES NIX)



PROFILE:

**Cape Fear, North Carolina
Public Utility Authority**

SERVICE AREA:

City of Wilmington and New Hanover County

**WATER/SEWER CONNECTIONS/
CUSTOMERS:**

77,000 accounts for water and/or sewer, 200,000 people served

MILES OF WATER MAIN:

1,187

MILES OF SEWER MAIN:

1,090

**CAPACITY OF TWO WASTEWATER
TREATMENT PLANTS:**

12 mgd and 16 mgd

**CAPACITY OF WATER TREATMENT
PLANTS:**

35 mgd and 7 mgd, 2 mgd well system

WATER DEMAND:

7 billion gallons annually

DEPARTMENT EMPLOYEES:

340

WEBSITE:

cfpua.org



Crew members replace a damaged section of water main with a new piece of PVC and Macro couplings from Romac Industries.



Crew members assist in the repair of a leaking water main in Wilmington.



Carel Vandermeijden, deputy executive director for treatment and engineering for the Cape Fear Public Utility Authority in Wilmington, North Carolina.

“After Hurricane Florence in 2018, we were the only utility in the area that did not lose service.”

Carel Vandermeijden

upgrading the system’s south-side wastewater treatment plant. The existing facility was built in the 1970s and has a treatment capacity of 12 mgd. That will be increased to 16 mgd and its function will be enhanced through the latest technology filtration and treatment components.

“We don’t have the luxury of shutting down the old plant and building a new one. We’ll build the new one while the old one is in operation, then phase it into the system and transfer flow from the old to the new.” The biggest part of the new facility will be built on land purchased adjacent to the existing plant.

A major impetus for expansion and modernization of the south-side plant is increasing development farther north. The largest tracts of land for future development are all at the northern end of the county, which eventually will challenge

“We have a policy where growth pays for growth.”

Carel Vandermeijden

the capacity of the north-side plant. “We have the ability to shift some sewer flow to the south-side plant and will do so after its expansion in 2030,” Vandermeijden says.

Other current big-ticket capital expenditures for the Cape Fear authority include nearly \$10 million to replace 7,000 feet of 6-inch water mains, 9,000 feet of 6- and 8-inch sewer mains, and cleaning and lining 4,000 feet of gravity sewer in a section of downtown Wilmington. That work will precede city stormwater curb and street paving projects.

Even pricier is the \$48 million construction of a 24-inch sewer force main and pump station to meet the demands of all that north-side development. A booster pump station on River Road and 16-inch water main running from it will cost more than \$11 million with work beginning in 2025. Work also is wrapping up on a new Motts Creek pump station with a capacity of 4.2 mgd, more than double the capacity of the old pump station.

“We have 158 sewer pump stations and we track them in terms of age and maintenance history,” Vandermeijden notes. “The stations have a life of about 40 years and we try to replace or rehab two aging stations every year.”

On the water treatment side of the ledger, the authority’s primary plant dates to 1943 but has been continually upgraded through the years. It can produce 35 mgd of treated water now and is expandable to 44 mgd. “It is one of the most advanced water treatment plants in the country,” Vandermeijden says.

The plant’s most recent enhancement was the installation of \$43 million in granular activated carbon filters, an add-on to rid the system’s water of a combination of synthetic chemicals called PFAS.

When the authority discovered that a chemical manufacturer had for years been dumping PFAS into the Cape



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KEEPING REPAIRS AND TALENT IN-HOUSE

Modern water and wastewater treatment plants, pump stations, and water and sewer mains operate smoothly — until they don't. Keeping the systems flowing is the work of maintenance crews. Cape Fear (North Carolina) Public Utility Authority relies on 107 people for that.

Those people in turn rely on specialized equipment. That includes a fleet of five Vactor combo cleaning units mounted on Freightliner chassis with 1,500-gallon water tanks and 10-cubic-yard debris containers. The trucks are “used every day,” according to Carel Vandermeijden, the authority's deputy executive director for treatment and engineering.

The authority's jetting machinery includes Harben jetters that can push out 14 gpm at 4,000 psi, and larger Vacall or Vactor jetting units capable of 80 gpm at 2,500 psi. For pre- and post-inspection of the pipes, an Aries camera is the tool of choice.

When moving soil is necessary to address a flow problem, the authority has nine mini- and mid-size excavators in its equipment yard — JCB, Kubota, Komatsu and John Deere machines — plus a Bobcat skid-steer.

“We do our own emergency repairs to a point,” says the deputy executive director. “If it's a larger project like, say, having many water breaks in a cold snap, or if it's a very complex repair, we call emergency contractors, who are on standby.”

Because skilled maintenance department positions sometimes are difficult to fill — a complaint voiced across the construction and industrial trades — the authority has begun to address the issue internally. “We've started an in-house training program for electricians. If, say, a mechanic wants to become an electrician, we enroll him in a one-year program and systematically move him into a higher position.”

The authority also supports employees wanting to secure advanced levels of certification. As they add credentials to their resume, pay increases. “It's one way we can retain our top performers.”

Fear River upstream from the authority's raw water intake — the source point for 80% of the authority's water — a lawsuit followed, as did the upgrade of the plant. The good news: authority water engineers have consistently found that the new filters are effectively removing PFAS, often to levels at or near nondetection.

Improvements are funded in part by state loans and grants but the authority mostly relies on rates and fees to cover capital expenses and operating costs in the absence of city and county taxpayer support. Consequently, rates are going up. “We do a lot of outreach through various channels to explain what we are trying to accomplish, why we are doing it and what the benefits are to customers,” Vandermeijden says.

Developers pitch in, too. The cost of lines extended to subdivisions are covered by the developer. Water and sewer infrastructure within a development is built at the expense of the developer and then conveyed to the authority.

“We have a policy where growth pays for growth,” Vandermeijden says. And while development does put pressure on the authority to deliver more services, “It also increases our customer base and allows us to spread our fixed costs.”

Building resilience

Cape Fear Public Utility authority has a responsive track record. The reaction to the PFAS situation shows that. So does the commitment to ridding its system of the “bad actors,” as Vandermeijden calls them — the undependable components in the infrastructure that are constantly poised to cause problems.

A 100% leak-free system is a pipe dream, Vandermeijden understands, but an annual audit of breaks per 100 miles of water mains shows a 50% reduction in leaks and breaks over the last six years.

The authority also anticipates threats to its system, such as hurricanes. Planning to keep the water flowing during storms has paid off. The authority “invested heavily” in standby generators for its 158 pump stations and plants. It stockpiles a 10-day supply of fuel on site in storage tanks to power the generators during a storm and

operates its own fuel truck to replenish the tanks rather than depend on commercial fuel delivery.

“We're proud of our resilience,” says Vandermeijden. “After Hurricane Florence in 2018, we were the only utility in the area that did not lose service.” He credits good management, good staff and repair crews that are always on call.

“We spend a lot of time thinking about how to keep our system reliable and resilient so that people can wake up and the water always comes out of the faucet and the toilet flushes and they don't even have to think about it. There are a lot of things that go on behind the scenes to make that happen.” ♦

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Flaggers are responsible for everyone's safety in work zones

By **Ronnie Freeman**

Work zones on roads and highways can be dangerous places. According to the Bureau of Labor Statistics, over 100 workers are killed each year in work zones across America. Some of these fatalities are the result of vehicles striking workers.

One of the most important jobs in a work zone is the flagger. While the task is often seen as the worst or most boring job in a work zone, the flagger position shoulders the responsibility of the work zone's safety — ensuring the safety of not only themselves but also the work crew, the motorists, the equipment and any pedestrians that might be close by.

Flaggers have to be properly trained according to their state's standards oth-

Flagging at a work zone is a job with great responsibility and should never be taken lightly.

erwise they are not officially qualified to act as the flagger in a work zone. Should someone from the Department of Transportation stop by the job site, one of the first things they are going to ask is if the flagger has had the appropriate training and if they have their flagger card on them. If not, they will likely shut the job down until a properly trained flagger can be brought in.





One of the key responsibilities of a flagger is safely stopping traffic as needed and maintaining a safe flow of traffic while they enter and exit the work zone. Flaggers need to have a professional appearance while providing guidance to the drivers, who are generally not used to driving through a work zone. Flaggers will need to be in good physical condition and be able to move quickly should a vehicle or some other hazards become an issue. Therefore, placing an injured worker in the flagger position is against regulations.

Flaggers will need to communicate instructions clearly and firmly, and also maintain a courteous attitude even if a driver does not cooperate. A vital responsibility of a flagger is to recognize the potential dangers that might occur and have a plan in place to warn other workers at the site. The flagger also needs to be easily identified by motorists and cannot be standing in areas that can conceal him/her. Generally, the minimum personal protective equipment a flagger must wear is established by local, state or federal regulations and this is to help them be clearly seen by the motorists entering the zone.

General safety tips for the flagger:

- Wear the appropriate PPE that is reflective. Be seen!
- Stand alone on the shoulder in clear view of traffic. Don't mingle with other workers on site.
- Never stand in the open traffic lane and do not turn your back to the traffic.
- Plan an escape route just in case. Do not stand by objects such as trees, mailboxes and signs that might impede your escape route.
- Stay alert and focused. Don't allow distractions to catch you off guard. Leave the cellphone in the truck.
- Always treat motorists with respect and courtesy even if they are being rude and disrespectful to you.
- Make sure you have communicated proper signals to the other flagger.
- Do not step in front of a moving vehicle even if it is slowing down. Don't assume it will stop in time.
- Maintain professionalism; do not sit down or lean on a tree or a vehicle. And dress appropriately.
- Never leave your position unless you are relieved by another qualified flagger. You are allowed to have breaks and lunch, so no eating while flagging either.

Flagging at a work zone is a job with great responsibility and should never be taken lightly. Flaggers are key to the overall safety and success of a work zone. Motorists rely on the flagger to give them proper directions, and workers rely on the flagger to keep them safe so they can focus on the task at hand. ♦

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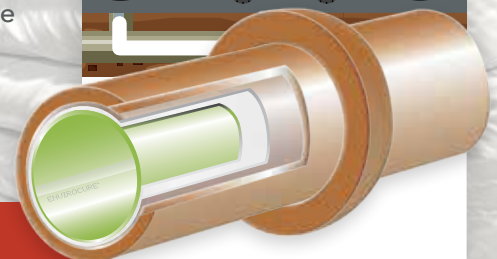
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Sheila Joy is executive director of NASSCO. She can be reached at director@nassco.org.

TECHNICAL ADVICE FOR THE TRENCHLESS INDUSTRY

NASSCO's Technical Advisory Council is a resource for the whole industry

By Sheila Joy

NASSCO membership includes many benefits such as discounts on PACP, ITCP and other training, involvement in NASSCO's dynamic committees and exclusive member-only networking opportunities with contractors, public agencies, consulting engineers and suppliers. It also provides technical resources and even technical guidance to its members and nonmembers, including access to NASSCO's impressive Technical Advisory Council.

The dedicated members of NASSCO's TAC include Christopher Garrett, P.E., Brown and Caldwell (who serves as the chair of TAC), Chris Macey, P.E., AECOM; Lynn Osborn, PE, Leo Consulting; Kaleel Rahaim, CIPP Consulting; and Jerry Weimer, Jerry Weimer Consulting. The TAC is also comprised of two associate members, Eric Haenlein, P.E., Inliner Solutions; and Veronica Alvarez, Redzone Robotics.

This group of highly experienced and respected professionals is available to provide answers to difficult technical questions, thanks to their combined decades of hands-on field experience and knowledge in a variety of trenchless technologies and methods. Since its inception, the TAC has received many questions, including the following:

- What causes pinholes and/or small bubbles in CIPP?
- Can the factor of safety be reduced from 2.0 to 1.5 when designing CIPP for large sewer rehabilitation?
- Do NASSCO guidelines contain information about suggested pressure and/or jetter configurations for the cleaning of ductile iron pipes?
- Are there any industry standards or best practices about how an employee cleans up their tools and equipment after a sewer cleaning operation?
- Is CIPP a suitable method for rehabilitating a gravity sewer that has previously been rehabilitated with a plastic product?
- Is there an industry report or standard regarding the effectiveness of Automated Defect Recognition for gravity sewer coding using PACP?
- Would NASSCO provide a future webinar on some of the emerging styrene treatment technologies, with more in-depth information?
- What changes should we expect with PACP Version 8?
- Is there documentation from a reputable source indicating the frequency at which municipalities or "owners" should conduct wastewater master plans?

Answers to these questions, and many, many more, may be found within the *NASSCO Pipeline* magazine, available for viewing at nassco.org/resources/pipeline.

Do you have a unique technical question you would like answered by the NASSCO TAC? Submit your question via nassco.org/contact-us and a member of the TAC will reply to you within two business days. As a reminder, you may also submit questions pertaining to health, safety and environmental issues. To learn more about NASSCO resources and becoming a member, visit nassco.org. ♦

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AWI, Phoenix, Arizona

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Trainer: Michael Lukas

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Trainer: Jerry Weimer

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Trainer: Tim Back

Feb. 20, 8 a.m. CST

Virtual

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Feb. 20, 8 a.m. PST
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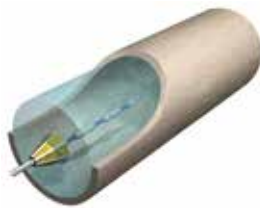
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Xylem Sahara Inspection Platform

Xylem's Sahara platform is an inspection technology for water pipelines that detects leaks and air pockets, captures live video, and maps pipelines. This in-line inspection tool collects multiple actionable data points in a single deployment, without disrupting service. The tool is easy to deploy through existing pipeline features 2 inches and larger. Technicians can navigate complex pipeline networks with this tethered tool. During inspections, they can stop and reverse the tool to investigate problem areas and mark the location above ground with sub-meter accuracy. Knowing a leak's magnitude and precise location before you dig improves the efficiency of repairs, reduces shutdown times and limits excavation. In-line leak detection is an accurate, cost-effective screening approach for transmission mains that helps utilities address leaks, prevent failures, reduce water loss, and prioritize pipes for further investigation. **443-766-7873**; www.xylem.com



Pumps

Boerger BLUEline rotary lobe pumps

Boerger BLUEline rotary lobe pumps are a self-priming, valveless, positive displacement pump used for conveying viscous and abrasive materials. They are resistant to wear and provide pulsation-free operation. Operation is fully reversible, with dry-run capability and flow rates up to 7,000 gpm. They are constructed with maintenance-in-place design, allowing for all wetted parts to be easily replaced through the front cover without removing pipe or drive systems. The pump conveys biosolids (primary, waste activated sludge, return activated sludge, digested, thickened, etc.), grease, sewage, scum, lime slurry, alum sludge, permeate and polymers. **612-435-7300**; www.boerger.com



Industrial Flow Solutions BJM Pumps

BJM Pumps submersible pump products from Industrial Flow Solutions are designed for harsh environments to save money by minimizing downtime and increasing efficiency. This results in improved total cost of ownership over the service life of the pumps. They offer tailored solutions for heavy solids-laden



liquids, abrasive slurries, acidic or caustic fluids, and fluid temperatures up to 200 degrees F. Fahrenheit series high-temperature pumps are capable of continuously handling 200-degree solutions. **860-631-3618**; www.flowsolutions.com

Franklin Electric Little Giant WE Series

The Little Giant WE Series is built with a Franklin Electric submersible motor, designed to provide maximum durability and years of reliable service. It consists of a high-head filtered effluent pump powered by a 1/2 hp submersible motor and includes a removable built-in check valve. The high-quality top bearing and stainless steel upthrust washer add resilience and reliability. **800-437-6897**; www.littlegiant.com



Gorman-Rupp SFSC Pump

The SFSC Pump from Gorman-Rupp is an SF Series product equipped with Eradicator Plus solids reduction technology. These are the most aggressive in the SF Series product lineup and are designed for applications where nonwoven flushable wipes, trash bags, hair, industrial byproducts and agricultural wastes are present. All pumps are equipped with a heavy-duty continuous vane impeller. The pumpout vanes incorporated into the thick back shroud are designed to help prevent buildup of debris behind the impeller. The wear plate utilizes notches and grooves with an oversized lacerating tooth designed to cut and shred organic solids before they enter the pump. Pumps are available in 3-, 4- and 6-inch discharge sizes. **419-755-1011**; www.grpumps.com



Saniflo Sanicubic 2 VX

The Sanicubic 2 VX lift station from Saniflo provides above-floor drainage for multiple plumbing fixtures for a commercial structure, eliminating the need for costlier and less convenient pit installations. It is an ideal solution for projects where conventional, below-floor drainage is impossible or too costly to install. Equipped with two 1.5 hp motors, the lift station is capable of discharging effluent through either 2- or 4-inch rigid pipe and offers a shut-off head of 43 feet. It employs an internal air pressure switch for automatically cycling the unit on and off. The unit also comes equipped with a wired control panel, as well as an external audible and visual LED indicator alarm in the event that a pump experiences overload or ceases to operate. Featuring easily removable circular panels on top, the IP68 enclosure permits ready access to every major component inside. **800-363-5874**; www.saniflo.com

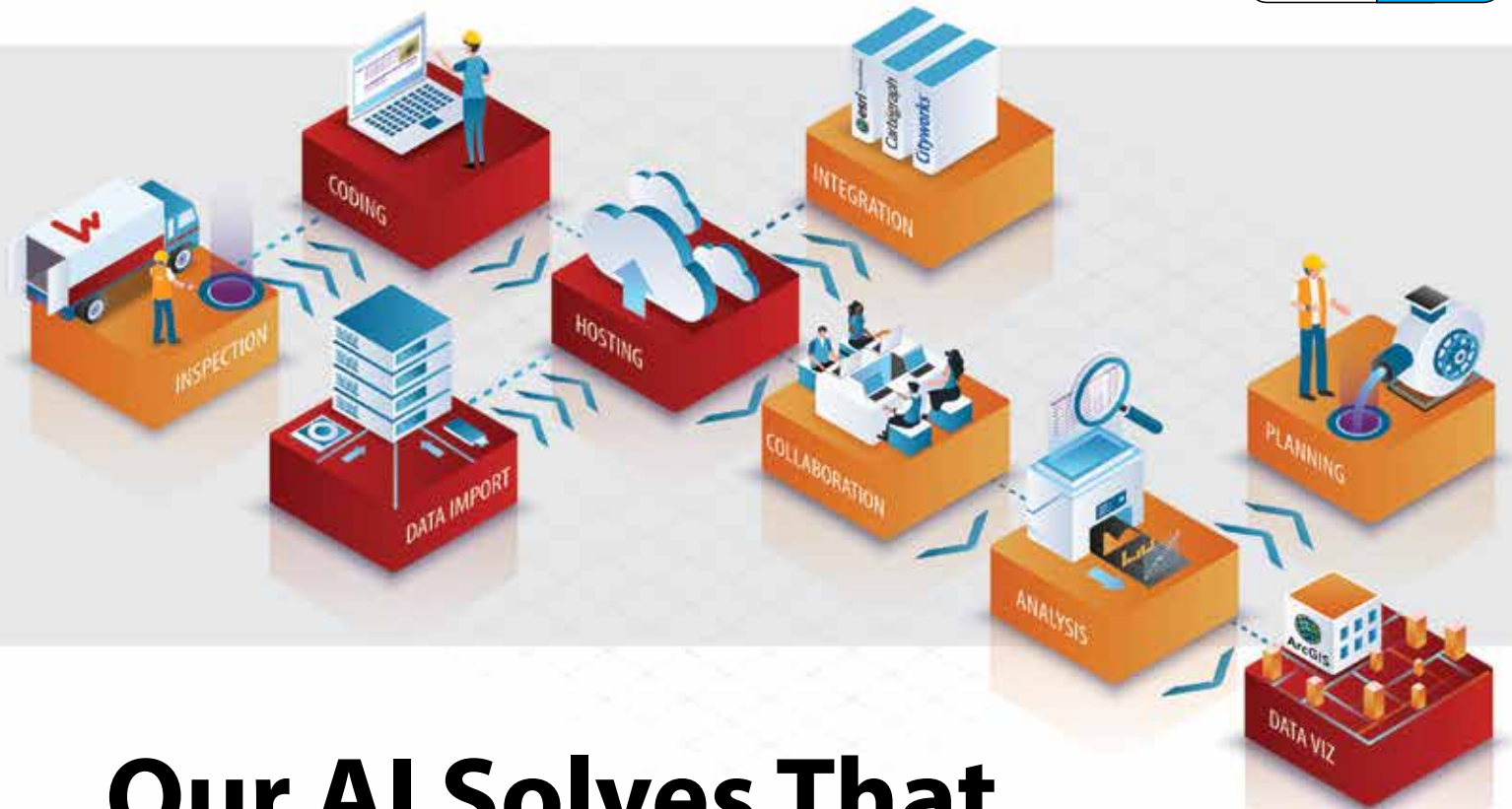


Smith & Loveless CAPSULAR Underground Pump Station

The CAPSULAR Underground Pump Station from Smith & Loveless provides an operator-friendly and economical solution for large-flow pumping up to 20,000 gpm. With a Safe-Stair entryway module and integrated HVAC, the pump station design meets the OSHA definition of "designed for continuous human occupancy" and therefore does not require confined-space entry. It comes with simplified, yet powerful QUICKSMART touchscreen controls and a spacious interior offering a variety of user options including shelving, work desks,



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800-898-9122; www.smithandloveless.com

Vaughan Chopper Pump

Self-priming Chopper Pumps from Vaughan are designed to be easily accessed outside of the wet well while pumping waste solids at heavy consistencies, without plugging or dewatering of the solids. They eliminate the loss in production and mess, along with making it easy to service the pump to get it back in operation.

888-249-2467; www.chopperpumps.com



Vertiflo Pump Company Series 1600

Vertiflo Pump Company's Series 1600 horizontal close-coupled, vortex end-suction pumps have a wide range of applications including food processing solids, wastewater treatment, pollution control, slurries and solids. They have capacities to 1,600 gpm and heads to 170 feet TDH, and operate at temperatures up to 250 degrees F. These pumps are designed with a variety of constructions such as cast iron, 316 stainless steel fitted, all 316 stainless steel, alloy 20 or CD4MCu. They are designed with a convenient back pull-out cost-saving feature to allow for easy inspection or maintenance without disturbing the piping to the pump. The impeller has a fully recessed design, which accommodates passage of solids. All impellers have wiping vanes, which reduce axial loading and prevent dirt from entering the sealing area. The impeller is keyed to the shaft and an impeller locking screw assures positive attachment. **513-530-0888; www.vertiflopump.com**



Zoeller Pump 72 HD Series

Zoeller Pump's 10 and 15 hp 72 HD Series is an expansion to its existing grinder product offering, now ranging from 1 to 15 hp. The units include a dual carbon ceramic shaft seal, moisture and thermal sensor, a buna-N gasket to protect the 3,450 rpm motor, and class F windings. Pumps are available in 208, 230, 460 or 575 volts using a three-phase connection. The 3- or 4-inch ANSI flanged horizontal discharge allows for easy adaption to a variety of grinder or solids-handling rail systems. Pumping performance ranges from 250 feet at shut-off and a maximum flow at 150 gpm at 50 feet TDH. Removable legs clear the bottom of the pump to allow debris to flow easier into the cutter assembly when used with a guide rail assembly. This assembly uses a 440 stainless steel with a Rockwell C hardness of 55-60 cutter and cutter plate in a scissor-like cutting motion that reduces solids down to 1/8 inch. **800-928-7867; www.zoellerengineered.com**



foul. It is suitable for operation in Class 1, Div 1, Groups C, D, T4 Hazardous Locations with optional intrinsic safety barrier. It also includes a color-coded 18/2 shielded cable with a vent tube. **844-477-4639; www.primexcontrols.com**

Valve

Flomatic Valves Model 92

Flomatic Valves' Model 92 3-inch AWWA C508 swing check valve is designed to meet the requirements of AWWA Standard C508 and complies with American Iron & Steel provisions. The Model 92 features a clear waterway design, offering unobstructed flow for efficient water movement. It is constructed using ductile iron for the body, cover and internals, ensuring durability and longevity. The valve also incorporates a replaceable stainless steel seat ring and fasteners as standard components. To ensure secure sealing and prevent leakage, the valve is equipped with a standard resilient seat seal. This design flexes upon contact, providing effective wiping action to clean the seat surface and establish a bubble-tight seal. The valve's O-ring design cover seal reinforces its leak-free performance.

800-833-2040; www.flomatic.com



Valve Boxes/Components

Dallas Specialty Plastic Valve Boxes

Dallas Specialty manufactures a line of Plastic Valve Boxes in both round and rectangular shapes. Multiple colors of lids – including green, beige, black and purple – are available. Orders are shipped quickly, and the boxes themselves are molded out of a sturdy thermoplastic material. A large inventory of premade boxes is available, and can be ordered with other products for freight allowance.

800-222-5644; www.dallasspecialty.com ♦



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The PRIMEX Submersible Level Transmitter is designed for continuous level monitoring in the harshest environments, including sanitary and stormwater lift stations with suspended solids. The instrument measures the hydrostatic pressure of the liquid above the sensor and outputs a 4-20mA signal proportional to the level. The robust design of the transmitter provides a reliable and low-maintenance solution for critical level control applications where other level sensors easily



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The logo for Vac-Con features a red square with a white stylized swirl on the left, followed by the text "VAC·CON" in large, bold, white capital letters. Below the company name is the website address "www.vac-con.com" in a smaller, white, sans-serif font.

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CASE STUDY

PIPELINE AND INFRASTRUCTURE, HYDRANTS

By Craig Mandli

Facility reimagines water research and innovation with reclaim pipe

Problem:

In Georgia, The Water Tower serves water and wastewater utilities through programming in applied research, technology innovation, workforce development and industry engagement. When construction began on the nonprofit water innovation hub, the project team needed reclaim piping to transfer flows from a nearby reclamation facility to the campus's demonstration areas.

Solution:

A hands-on demonstration of REHAU MUNICIPEX reclaim pipe revealed the advantages of PEXa over alternative piping materials, leading the team to install 1,500 feet of MUNICIPEX. "The durability and ease of use of MUNICIPEX reclaim were the biggest selling points for me," says Chad Wilbanks, director of training and technology at TWT. "If you bend copper or PVC a certain way, it won't go back. This is not the case with MUNICIPEX, because you can bend the pipe in different ways and still bend it back, if needed. The pipe maintains its integrity, and you know you've installed durable pipe."



RESULT:

MUNICIPEX reclaim offered flexibility without compromising strength, supporting labor and material savings. The pipe can bend five times its outside diameter and is up to 70% lighter than copper, making it easy to carry and uncoil. Additionally, MUNICIPEX does not require specialized tools. "MUNICIPEX reclaim pipe is simple: You use a hand cutter, slide the pipe into the fitting and you're done," says Wilbanks. "You don't need to worry about glue and soldering – you set it and forget it."

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Logiball marking its 40th anniversary

Logiball celebrated its 40th anniversary in 2023. The last four decades have been spent innovating and providing unique and custom solutions for test and seal packers, reinforced multi-size plugs, carrier packers for sectional liners, lateral cleaning equipment and specialized tools for the rehabilitation and maintenance of collections systems. The team at Logiball thanks its loyal customers who have provided the opportunity to grow along with the industry.



Logiball team

Flomatic names new municipal and OEM sales manager

Appointed by President Nick Farrara, Flomatic has promoted Jim Tucci to municipal and OEM sales manager. With an engineering background and over two decades of industry experience, including the past ten years at Flomatic, Tucci will take on the responsibility of cultivating relationships with OEM partners, municipal authorities and engineers.



Jim Tucci

Mike Riley named new business development manager at Oxford Plastics

Mike Riley, based in Richmond, Virginia, was named as Oxford Plastics new business development manager. He will concentrate on U.S. operations as he spearheads efforts to grow the company's presence in the northeast. Riley brings over 16 years' industry experience and has a background in logistics sales and collaboration with leading construction companies. In addition to developing key markets, Riley will focus on reducing lead times for product approvals, and establishing strong partnerships with major utilities and regional safety directors within the Department of Transportation.



Mike Riley

Bryan, Ohio is the 2023 People's Choice Tank of the Year

After a record year of votes, Tnemec announced that the Dum-Dum water tank in Bryan, Ohio, was chosen as the People's Choice Award winner of the 2023 Tank of the Year Competition, sponsored by Tnemec. In addition, the tank, with its innovative design, was chosen by the company's team of tank enthusiasts as the 2023 Tank of the Year. As the winner of this contest, the tank will appear in the most prominent position in Tnemec's annual Tank of the Year calendar, alongside the other top finalists. The winning tank was painted with Tnemec's UV-resistant, long-lasting fluoropolymer finish, Series 700 HydroFlon, which will help the design look great for a long time in the Ohio climate.



Bryan, OH

Alberici acquires J.R. Filanc Construction

St. Louis, Missouri-based Alberici is strengthening its water/wastewater capabilities in the Western U.S. with the acquisition of J.R. Filanc Construction, a 71-year-old water/wastewater contractor based in Escondido, California. This is the third national water/wastewater acquisition made by Alberici in the past dozen years. Previously, it acquired WWPS in Villa Rica, Georgia and CAS Construction in Topeka, Kansas. Filanc also has offices in Phoenix and Denver.

Source One Environmental welcomes two regional sales managers

Source One Environmental has added two professionals, Matt Miranda and Roberto Moran, to its team as regional sales managers. A seasoned expert in CIPP and drain cleaning, Miranda brings over 15 years' experience and formal Nexstar sales training. With a decade of experience in the trenchless industry, Moran has in-depth knowledge of trenchless products and installation techniques.



Matt Miranda



Roberto Moran

Henkel acquires Critica Infrastructure

Henkel has acquired the U.S.-based Critica Infrastructure, a specialized supplier of maintenance, repair and overhaul composite solutions for critical infrastructure such as oil and gas transmission as well as municipal water supply systems. Critica is active in many countries with a strong focus on North America. Critica Infrastructure employs around 250 people and has eight production sites, most of them in the U.S. The business supplies products to about 3,000 asset owners, contractors and distributors.

Avanti International celebrates 45th anniversary

2023 marked a milestone for Texas-based Avanti International, as the injection grout manufacturer celebrated its 45th anniversary. Pioneered by David Magill in 1978, Avanti started with just one product – AV-100 chemical grout – which was primarily used to seal leaking sewer lines. Today, Avanti's injection grouts include a comprehensive line of acrylamide, acrylics, U.S. Grout Ultrafine cements, polyurethanes, epoxies, pumps accessories and more.

SmartCover Merges with Data Flow Systems

SmartCover has merged with Melbourne, Florida-based Data Flow Systems. Established in 1981, Data Flow provides remote monitoring and control for water, wastewater and stormwater utilities. Utilizing an end-to-end approach from design to implementation, Data Flow delivers consistent and cost-effective distributed control systems for utilities of any size. ♦

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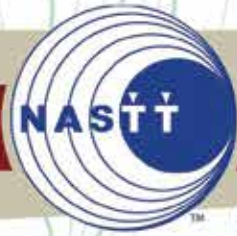
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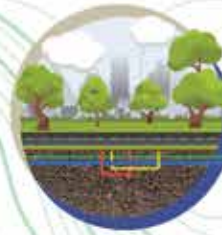




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Product Spotlight

New knife gate valve a fit for sewer applications

By **Craig Mandli**

Knife gate valves have long proven to be a fantastic option for sewer applications. They are designed to cut through the solid media that travels through the lines, while ensuring pipe turbulence and erosion are kept to a minimum. Mueller recently announced a new addition to its knife gate valve inventory – the Henry Pratt P77 Perimeter-Seated Bi-Directional Knife Gate Valve.

Engineered to specifically handle tough slurries and abrasive materials, the P77 meets rigorous MSS SP-81 standards and offers a range of features and benefits that make it an excellent valve for both municipal and industrial applications.

“The Pratt P77 Perimeter Seated Bi-Directional Knife Gate Valve is an industry game-changer,” says Dale Speggen, vice president of specialty valves for Mueller. “With its sealing capabilities and its ability to reduce stress on the packing chamber, the P77 ensures reliable and efficient operation.”

The P77 has ideal sealing capabilities, ensuring a drip-tight shutoff, and preventing the buildup of solids, regardless of line pressure. The valve is designed to eliminate any confusion regarding the direction of isolation, providing clarity and ease of use in demanding wastewater environments. It is designed with multiple rows of packing to reduce stress on the packing chamber, enhancing the longevity and reliability of the valve. The integrated PTFE gate guide reduces wear on the packing, preventing blockages and flow disruptions with its non-



stick properties. Its rubber-seated gate delivers a secure bidirectional drip-tight seal, which enables it to withstand pressures of up to 150 psi effectively.

Featuring an EPDM perimeter cartridge seat, the P77 Knife Gate Valve resists chemicals and high temperatures while preventing leakage and protecting downstream equipment. By reducing leak paths and extending the life of the packing, this valve minimizes maintenance requirements and ensures smooth operation. Its handwheel can be easily converted to various types of operators, including hydraulic or pneumatic cylinders, bevel gears, chain wheels, electric motors, or fail-safe spring cylinder operators, by utilizing an existing cast yoke.

The heavy-duty cast stainless steel body is resistant to deflection from line loads and internal pressure, further enhancing the valve’s performance and longevity. In addition to municipal water and wastewater, it has applications across various industries, including pulp and paper, mining, and food and beverage.

“We are proud to offer this valve, which sets a new standard for performance and reliability,” says Speggen. **877-436-7977; www.henrypratt.com**

SPECIAL REPORT

Vacall AllExcavate/AllExcavate2 811 models deliver hydro and air excavation in a smaller footprint



Vacall’s AllExcavate 811 delivers power and reliability in a smaller footprint. Get in and out of tight jobs faster with the 8-cubic-yard debris tank, 1,100-gallon water

tanks and an overall vehicle length of under 35 feet. The AE 811 delivers vacuum forces up to 5,400 cfm at free air and waterjetting power of 0 to 25 gpm at 3,000 psi. The AE2 811 adds air pressure modes at 110 psi at 185 cfm or 150 psi at 150 cfm. The AllSmartFlow CANbus intelligent control system features a programmable LCD display that monitors engine, water flow, air pressure and vacuum performance for precise boom and reel adjustments. Aluminum water tanks and optional galvanized debris tanks with supreme finish carry a lifetime warranty. Both models, manufactured by Gradall, use one engine to power the chassis and excavation functions, reducing service and operation costs.

800-382-8302; www.vacall.com

SPECIAL REPORT

OZ Lifting Products davit crane wheelbase



The new wheelbase from OZ Lifting Products can be used with its full range of davit cranes up to 1,200-pound capacity. Made in the U.S., the wheelbase is adjustable and has four different length positions: 56.57 to 77.57 inches long, 32.44 inches wide and 36.87 inches high. It weighs 140 pounds when fully assembled (without a crane pedestal base), so the total weight

will depend on the davit crane used. With durable steel construction and powder-coat finish, oversized casters make rolling the base and moving the crane easy. The floor anchoring system allows the davit to rotate 360 degrees, even when under load.

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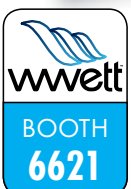
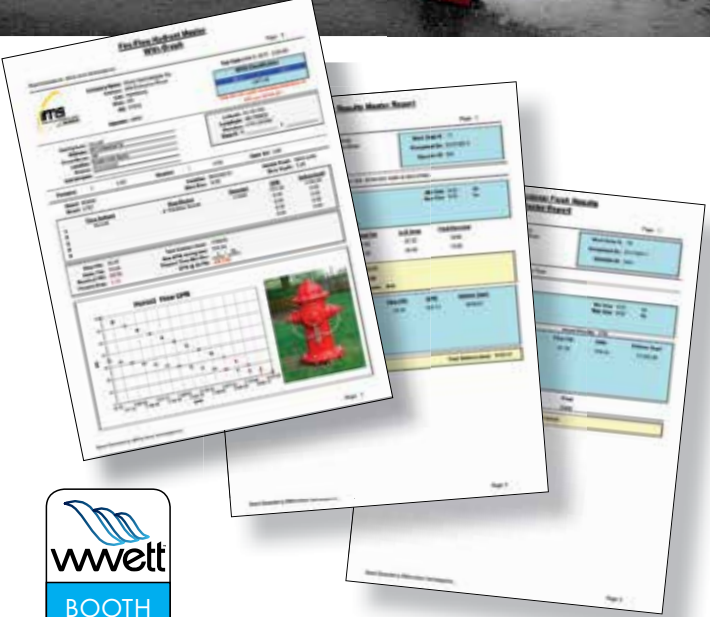
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PRODUCT NEWS

HYMAX Clamp with added outlet option

The HYMAX Clamp with an added outlet option offers a comprehensive solution for preventing leaks and repairing water pipelines. The clamp features a mat-type gasket and stab-fit design, allowing for effortless modification of a pipeline system without the need for welding. With a convenient wraparound design secured by two to four bolts, it saves valuable time during repairs. The outlet provides accessibility for service connections or temporary bypass creation. Also, the clamp is treated with molecular anti-galling on the nuts and bolts, ensuring durable, leak-free performance over an extended period. **855-457-2879; www.hymaxusa.com**



ADS Environmental Services ForeSITE ultrasonic level monitoring system

ADS Environmental Services has released its new ForeSITE ultrasonic level monitoring system for surface and stormwater applications. The system is designed for remote site monitoring in stormwater vaults and outfalls, rivers/streams, lakes, reservoirs, canals and is especially effective for flood-prone locations. The FS-UL is a fully integrated system with data logging, redundant cellular communications, non-volatile memory and an integrated ultrasonic sensor. It is delivered with all necessary parts including a high-gain antenna, battery pack, mounting bracket, maintenance kit and accessories providing fast, easy setup. The FS-UL has measurement frequencies that are user selectable. Additionally, it contains four user-definable alarms providing ongoing remote site data and alerts. The FS-UL delivers data to the cloud-based ADS PRISM software. **877-237-9585; www.adsenv.com**



LANXESS Lewatit MonoPlus exchange resin

With the new macroporous anion exchange resin Lewatit MonoPlus TP 109, LANXESS is expanding its range of selective resins for the efficient removal of contaminants such as PFAS from water. Lewatit MonoPlus TP 109 efficiently binds not only different PFAS but also complex anions such as nitrate, bromate, chlorate and perchlorate so that they can then be reliably removed from water. It can also remove chlorate from concentrated sodium hydroxide. **609-845-1500; www.lewatit.com** ♦



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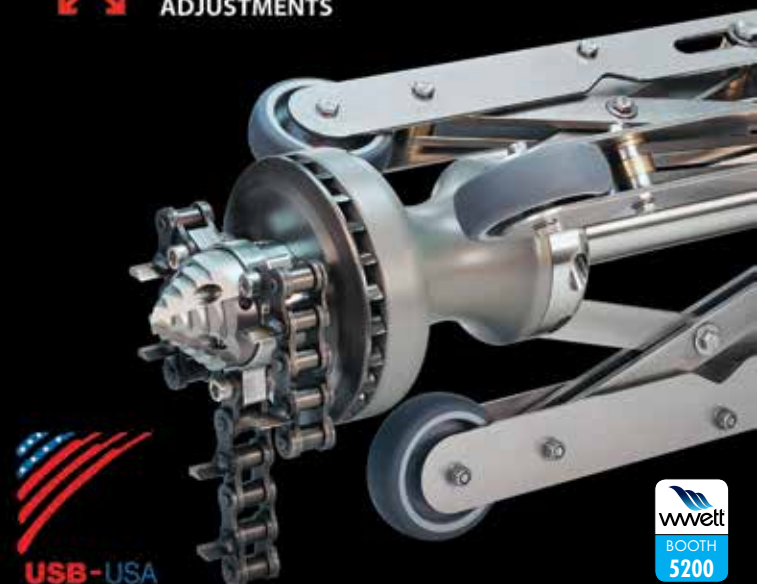
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WORTH NOTING

PEOPLE/AWARDS

The city of Santa Monica received a 2023 Helen Putnam Award for Excellence from the League of California Cities. The honor recognizes the city's Sustainable Water Infrastructure Project, which captures stormwater, urban runoff and wastewater for reuse as a sustainable water supply that provides for about 10% of the city's water demand.

The city of Wilmington (Delaware) received a \$3 million grant from the U.S. Environmental Protection Agency to help fund a Price Run project that aims to improve stormwater and sewer infrastructure built more than 100 years ago.

The town of Monterey (Tennessee) received a \$1.178 million grant from the federal American Rescue Plan to support stormwater drainage improvements and deal with flooding issues. ♦

CALENDAR

February 13-16

National Association of Clean Water Agencies Winter Conference, Hilton Austin Hotel, Austin, Texas. Visit nacwa.org.

February 25-28

International Erosion Control Association Annual Conference, Spokane Convention Center, Washington. Visit ieca.org.

April 7-10

American Society of Civil Engineers Operation and Maintenance of Stormwater Control Measures Conference, DoubleTree by Hilton, Austin. Visit asce.org.

April 8-11

Center for Watershed Protection National Watershed and Stormwater Conference, InterContinental Kansas City At The Plaza, Missouri. Visit cwp.org.

April 9-12

Water Environment Federation Collection Systems and Stormwater Conference, Connecticut Convention Center, Hartford. Visit wef.org.

May 7-9

New York State Floodplain and Stormwater Managers Association, Queensbury Hotel, Glens Falls. Visit nyfloods.org.

May 15-17

International Erosion Control Association / United States Environmental Protection Agency Municipal Wet Weather Stormwater Conference, Auburn University, Alabama. Visit ieca.org.

May 8-10

Ohio Stormwater Conference, Kalahari Convention Center, Sandusky. Visit ohioswa.com.

June 23-27

Association of State Floodplain Managers Annual Conference, Salt Palace Convention Center, Salt Lake City. Visit floods.org.

August 27-29

StormCon 2024, Grand Sierra Resort and Casino, Reno, Nevada. Visit stormcon.com.

October 9-11

Southeast Stormwater Association Annual Conference, hotel TBA, Chattanooga, Tennessee. Visit seswa.org.

October 21-23

California Stormwater Quality Association Annual Conference, hotel TBA, Sacramento. Visit casqa.org.

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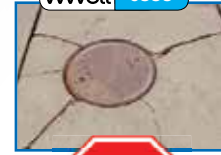


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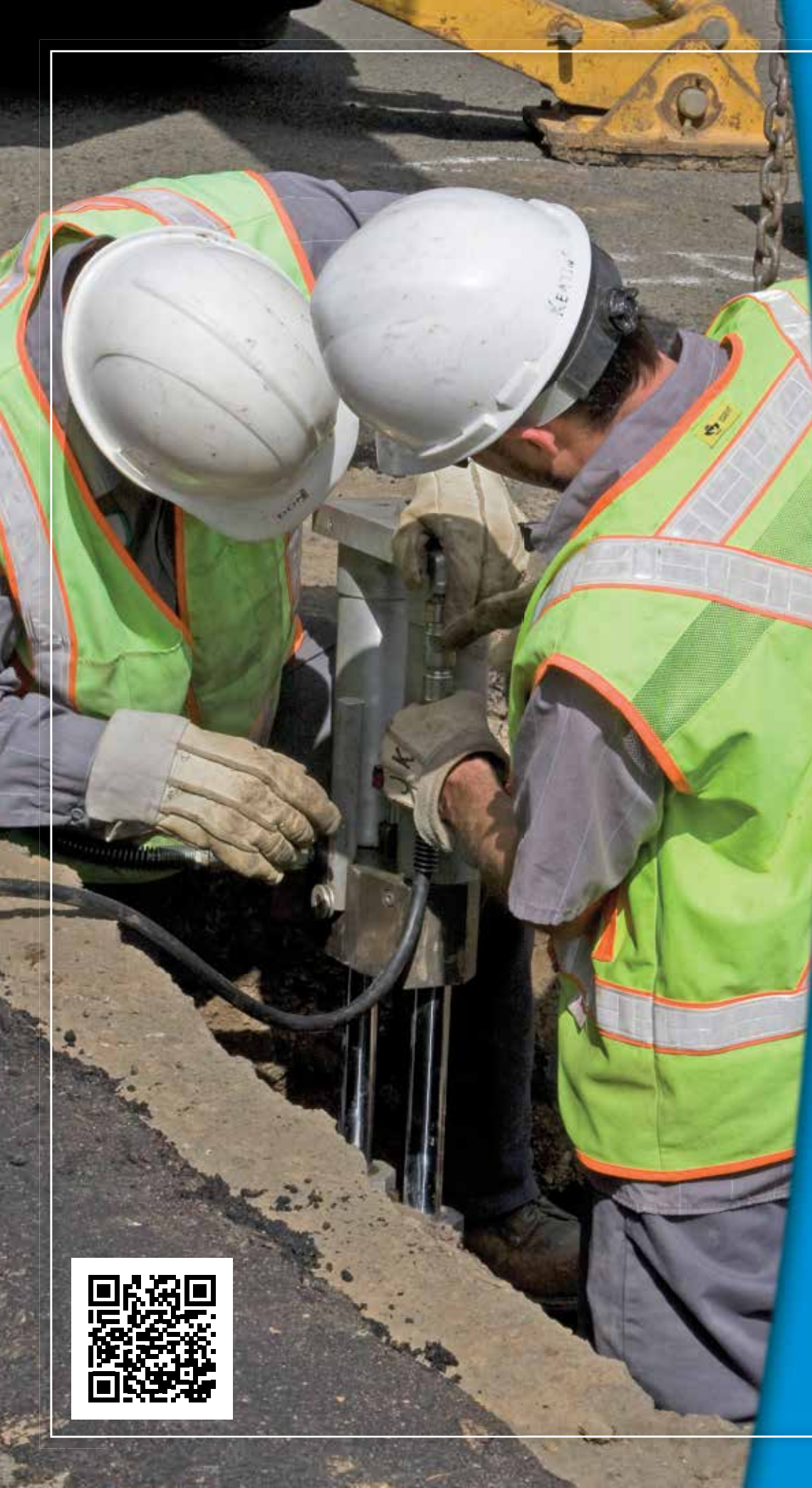
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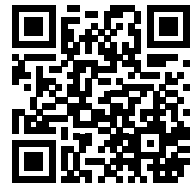

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