

MUNICIPAL

SEWER
&

WATER™

FOR SANITARY, STORM AND WATER SYSTEM MAINTENANCE PROFESSIONALS

June 2024

www.mswwmag.com

HUMAN SIDE:
EDUCATIONAL PARTNERS
PAGE 20

SPECIAL:
WATER PLANNING IN
RURAL COMMUNITIES
PAGE 22

STAYING SAFE:
FOLLOWING THE HIERARCHY
OF CONTROLS
PAGE 28



THE MANUP KEY

THE REVOLUTIONARY TOOL TO
RELEASE STUCK MANHOLE COVERS

PAGE 4



PRODUCT FOCUS:
MANHOLE EQUIPMENT AND REHABILITATION



Elevate Your Career with AWWA!

The American Water Works Association (AWWA) has the tools, resources, and support water and wastewater operators need to pass their exams, advance their knowledge, and protect public health.

Whether you're looking to learn through networking and community, or reading our industry-leading publications, we've got you covered.

Dive into the heart of the water industry at **ACE24**, where innovation, insight, and the latest trends on plant operations, sustainability, and metering converge.

Embrace this opportunity to shape the future of water.



ACE24

American Water Works Association
California-Nevada Section



WSO

TAP INTO YOUR FUTURE

Our Water Supply Operations (WSO) materials are the gold standard, like the AWWA ACE24 conference in Anaheim.

Operators aiming for certification, trust WSO to provide a diverse range of learning tools tailored to every style.

Visit
awwa.org/store
and awwa.org/ACE.

Transform your knowledge and impact with AWWA today!

BEFORE



AFTER



A BETTER WAY TO REHAB

Easy-to-install lined solutions for permanent sanitary sewer rehabilitation

WE'VE GOT CORROSION COVERED >

Highly corrosive hydrogen sulfide gases (H₂S) accelerate decay in otherwise durable concrete wastewater structures. Geneva Pipe and Precast's lined solutions are engineered to protect concrete from corrosion and provide 100% water-tight coverage, effectively extending the service life of sanitary sewer assets. Quick and easy installation, low maintenance, and reliable, long-lasting performance result in reduced life cycle costs.



BEFORE



AFTER



BEFORE



AFTER



Hybrid PVC Manhole System

Combines an FRP or PP-lined base and lid with a PVC riser for an easy-to-install, permanent manhole rehab solution.



Lined Manhole Bases

Seamlessly molded synthetic liner offers total corrosion protection for the entire manhole base.



Composite FRP Panels

Easily extend the service life of large wastewater structures, including wet wells and pump lift stations.

More Innovative Solutions by Geneva Pipe and Precast

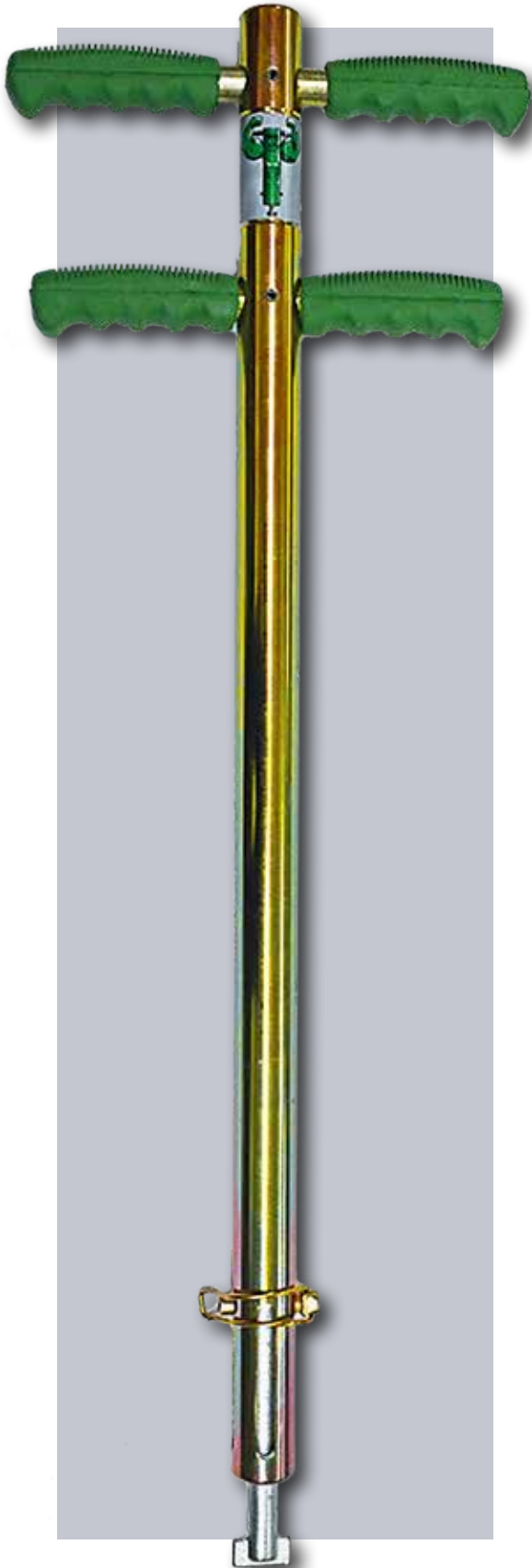
- Perfect Pipe (HDPE-Lined RCP)
- Concrete Jacking Pipe
- Integrated Wastewater Pretreatment Systems
- Stormwater Quality Products



GO TO > WWW.NWPIPE.COM

THE MANUP KEY

The revolutionary tool to release stuck manhole covers



“Everywhere is walking distance – if you have the time,” we are told, and while that may be true, we invented the car because we wanted to get to places quicker while using less energy. Similarly, bashing a stuck and seized manhole cover with a hammer and chisel, struggling with pry bars, and breaking and replacing the cover will eventually give access to the chamber. But using the ManUp Key you gain access quicker and use less energy.

The ManUp Key uses patented slide-hammer technology to free stuck manhole covers, sewer lids and storm drains quickly, efficiently and most importantly, safely. It is significantly more successful and safer than the old-fashioned methods still being used today.

The Key also boasts a range of easily interchangeable tips, allowing users to release all types of covers with only one Key. It is currently used in over 25 countries worldwide and is saving many companies’ time, effort and money. Additionally, it is used in a number of different industries from drainage to electricity, telecoms to water authorities, construction to utilities, and from fire services to gas and pest control. Anyone who has to gain access to underground chambers and open covers will benefit from this Key.

Engineers in all of these industries waste time every day struggling and battling with covers that are stuck and seized for many different reasons. The ManUp Key provides a quick, simple, efficient and safe one-man solution to that problem. The reason the ManUp Key is so successful is due to the difference between impact and force. If you

wanted to dismantle a brick wall, for example, you wouldn’t stand there and continue to push it hoping it will eventually fall. You’d hit it with a hammer because hitting it is more effective. We have taken that same principle and applied it to releasing stuck and seized manhole covers. It is incredibly simple to use – just select the correct tip for the cover that is causing problems, and you are ready to go.



Originally sold and made in the United Kingdom, the Key is now available in North America from a number of stockists. It was on display at the WWETT Show in Indianapolis in January, and it will also be on the show floor in New Orleans at WEFTEC in October. See it in person and try it out on the demo set up at the booth. Or, get in touch with one of the company’s stockists in North America, and they will be able to show you the Key.

A number of water authorities in the UK have reported eliminating back injuries from the process of releasing stuck manhole covers since using the ManUp Key. They have also reported replacing 95% less covers by gaining access with the ManUp Key. You can see the North American website at www.manupkey.com. ♦

If you want to join the company’s network of North American distributors and offer this revolutionary tool to your customers, or for more information about how the Key could positively impact your everyday job, email info@manupkey.uk or call or WhatsApp +44 7842 439147.



TRIED & TRUSTED SOLO PRO+



GO ORANGE

BOOK YOUR FREE DEMO TODAY

Minicam has designed and manufactured the tried and trusted Verisight® Pro push camera for over 10 years. The rugged, feature-rich system that you've depended on to keep you working, now ships in orange. It's time to show our true color!

SCAN HERE



minicaminc.com

Minicam Inc., 12600 Newburgh Road, Livonia, MI, 48150
Email: info@minicaminc.com **Phone:** (734) 744-5557



CONTENTS

ACE SHOW ISSUE, MANHOLE EQUIPMENT
AND REHABILITATION



ON THE COVER:

Freeing stuck manholes doesn't have to be difficult. The ManUp Key's slide-hammer technology opens manhole covers, sewer lids and storm drains quickly and efficiently. And it's safer than other methods.



COMING IN JULY 2024

Chemical and Mechanical Root Control

- ◆ WATER: Building infrastructure for growth
- ◆ TECH TALK: Selecting the right valve
- ◆ HUMAN SIDE: Expanding public outreach

FEATURES

14 WATER: An Urban Renewal

Baltimore is aggressively tackling major projects to get its aging water and wastewater system in top shape by 2030.

By Peter Kenter

30 SEWER: One Big Dig

Multifaceted, decades-long project will all but eliminate combined sewer overflows in Toronto.

By Ken Wysocky

COLUMNS

10 FROM THE EDITOR: On the Front Lines

Responding to emergencies and protecting the public is just part of the job.

By Luke Laggis

12 @MSWMAG.COM

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

20 HUMAN SIDE: Educational Partners

Virginia utility's award-winning online learning program helps educators teach students about water.

By Sandra Buettner

22 SPECIAL - WATER: Water Planning in Rural Communities

Starting small and building an accurate inventory is the first step toward better long-term planning.

By Jonathan Carpenter

28 STAYING SAFE: Following the Hierarchy of Controls

OSHA's system of hazard mitigation can help keep your crew safe.

By Ronnie Freeman

34 NASSCO CORNER: Building on the Foundation

NASSCO is successfully working toward expanded training and education programs.

By Sheila Joy

36 PRODUCT FOCUS: Manhole Equipment and Rehabilitation

By Craig Mandli

42 PRODUCT NEWS

Spotlight: Company offers largest robotically produced test plugs to date

By Craig Mandli

44 CASE STUDIES: Manhole Equipment and Rehabilitation

By Craig Mandli

46 INDUSTRY NEWS

50 WORTH NOTING

People/Awards; Calendar

JUNE 2024

MUNICIPAL
SEWER
&
WATER

ARE YOU AWARE OF THE EPA'S NEW CONCERNS WITH VINYL CHLORIDE?



DON'T WAIT FOR REGULATORY MANDATES TO DISRUPT YOUR PROJECTS.

As the EPA escalates its investigation under the Toxic Substances Control Act, **Vinyl Chloride** — commonly used in PVC plastics — faces new scrutiny due to significant health and environmental risks.

This essential review aims to address the long-standing concerns over its safety.

- **High Priority Review:** Vinyl Chloride is prioritized by EPA for its health risks.
- **Known Dangers:** Historically linked to severe health impacts, including cancer.
- **Impact on Infrastructure:** Predominantly used in water and sewage pipe systems
- **Urgency for Compliance:** Immediate reassessment recommended for all usage specifications.

CONTACT DIPRA'S REGIONAL ENGINEERS TODAY



to review your engineering specifications and ensure compliance with the latest safety standards. Act now to safeguard your community and environment!

<https://dipra.org/ask-an-expert/contact-a-regional-engineer>

I & I SOLUTIONS



FLEX-SEAL 2.0®
A urethane noted for extreme toughness, elongation, abrasion resistance, and longevity.



IINFI-SHIELD UNI-BAND®
An inexpensive and permanent method of externally sealing the grade adjustment ring area of a manhole or catch basin.



AQUA SEAL®
A dual component hydrophobic polyurethane water stop system designed to stop high infiltration in precast or brick-lined structures.



GATOR WRAP®
Forms a continuous rubber seal on a manhole joint which prevents water and soil from infiltrating through the manhole, catch basin or concrete pipe joint.



MANHOLE INSERT®
Stop the unwanted inflow of rain-water through manhole covers.



SEALING SYSTEMS, INC.
9350 County Rd. 19, Loretto, MN 55357
800-478-2054 | Fax 763-478-8868
www.ssisealingsystems.com

MUNICIPAL SEWER & WATER

FOR SANITARY, STORM AND WATER
SYSTEM MAINTENANCE PROFESSIONALS

Published monthly by:



PO Box 220
Three Lakes, WI 54562



www.mswmag.com

© Copyright 2024, COLE Publishing Inc.

No part may be reproduced without permission of publisher.

In U.S. or Canada call toll free 800-257-7222
Email: info@mswmag.com / Fax: 715-350-8456

Office hours Mon.-Fri., 7:30 a.m.-5 p.m. CST

SUBSCRIPTIONS: A one year (12 issue) subscription to *Municipal Sewer & Water™* in the United States, Canada and Mexico is free to qualified subscribers. A qualified subscriber is any individual or company in the United States, Canada and Mexico that maintains, manages, designs or installs municipal or commercial sewer, water and storm infrastructures. To qualify, visit www.mswmag.com or call 800-257-7222.

Non-qualified subscriptions are available at a cost of \$60 per year in the United States and Canada/Mexico. Subscriptions to all other foreign countries cost \$150 per year. To subscribe, visit www.mswmag.com or send company name, mailing address, phone number and check or money order (U.S. funds payable to COLE Publishing Inc.) to the address above. MasterCard, VISA, American Express and Discover are also accepted. Include credit card information with your order.

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

CLASSIFIED ADVERTISING: Submit classified ads online at www.mswmag.com/classifieds. Minimum rate of \$25 for 20 words; \$1 per each additional word. All classified advertising must be paid in advance. DEADLINE: Classified ads must be received by the first of the month for insertion in the next month's edition. PHONE-IN ADS ARE NOT ACCEPTED. Fax to 715-350-8456 only if charging to MasterCard, VISA, Discover or AmEx. Include all credit card information and your phone number (with area code). Mail with check payable to COLE Publishing Inc. to the address above. CLASSIFIED ADVERTISING APPEARS NATIONWIDE AND ON THE INTERNET. Not responsible for errors beyond first insertion.

DISPLAY ADVERTISING: Contact Jim Koshuta or Kayla Bisnette at 800-994-7990. Publisher reserves the right to reject advertising which in its opinion is misleading, unfair or incompatible with the character of the publication.



Jim Koshuta



Kayla Bisnette

EDITORIAL CORRESPONDENCE:

Send to Editor, *Municipal Sewer & Water*, P.O. Box 220, Three Lakes, WI, 54562 or email editor@mswmag.com.







REPRINTS AND BACK ISSUES: Visit www.mswmag.com for options and pricing. To order back issues, call Holly Gensler at 800-257-7222 or email holly.gensler@colepublishing.com. To order reprints, call Jeff Lane at 800-257-7222 or email jeff.lane@colepublishing.com.

CONTROLLED CIRCULATION: 30,000 copies per month (U.S. and international distribution).



www.facebook.com/MSWmag
www.twitter.com/MSWmagazine
www.youtube.com/MunicipalSewerWater
www.linkedin.com/company/municipal-sewer-&-water-magazine

ADVERTISER INDEX

COMPANY	PAGE
ACME Trenchless.....	40
 American Highway Products Ltd.....	18
American Water Works Association	2
Bitco Insurance Companies.....	26
 Cam Spray	43
CCI Piping Systems.....	47
Core & Main.....	39
CoverUp Key.....	4
 CUES, Inc.....	9, 37
DIPRA (Ductile Iron Pipe Research Association)	7
EJ	41
 Epoxytec.....	25
 GapVax, Inc.....	51
Geneva Pipe and Precast, a Northwest Pipe Company	3
Hermann Sewerin GmbH.....	45
Hydra-Flex, Inc.....	19
 InfoSense, Inc.....	40

COMPANY	PAGE
Ladtech, Inc.....	11
Massa Products Corporation.....	18
 minicam Inc.....	5
OBIC.....	27
Pentair	13
Pipeline Renewal Technologies.....	17
PPG Protective & Marine Coatings	35
Pulsar Measurement.....	41
RELINER/Duran Inc.....	47
Sauereisen, Inc.....	49
Sealing Systems, Inc.....	8
Specialty Maintenance Products, Inc....	45
 T&T Tools, Inc.....	49
The Strong Company, Inc.....	10
 United Felts.....	21
 Vactor Manufacturing.....	52
Vanair.....	29
CLASSIFIEDS	49
MARKETPLACE	48

LARGE PIPE INSPECTION DONE RIGHT

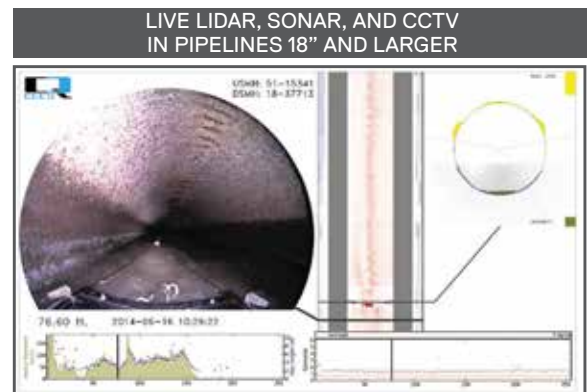


Call Your CUES RSM
To Learn More!

LIVE LIDAR, SONAR, AND CCTV IN PIPELINES 18" AND LARGER

- ◆ State-of-the-Art LIDAR Inspection
- ◆ Registered SONAR/LIDAR
- ◆ Fast Report Turnaround
- ◆ LIVE Lidar, Sonar, and (HD) CCTV
- ◆ Pipes Sizes 18" and Larger
- ◆ Dedicated Customer Support

The CUES SoLID FX (SFX) is the preferred multi-sensor inspection (MSI) system for large diameter pipes. Whether the need is for condition assessment [2D] to determine the 'remaining-useful-life' or rehab planning [3D] to obtain accurate dimensions of bends and underground structures, SFX is the tool for both! The standard sensors, including our high-definition digital video camera (DUC), 2D-LIDAR, and profiling SONAR, can be deployed up to 3,000' from a CUES Steerable MudMaster crawler or up to 5,400' on a CUES SFX FLOAT.



CROSS-SECTION REPORT

105.7 Station	105.8 Region Interval	105.9 Station Limit
No. Corrosion (in.) 0.2	No. Corrosion (in.) 0.2	No. Corrosion (in.) 0.7
Max. Corrosion (in.) 0.4	Max. Corrosion (in.) 0.4	Max. Corrosion (in.) 1.8
No. Bulging (in.) 0.0	No. Bulging (in.) 0.0	No. Bulging (in.) 2.2
Max. Bulging (in.) 0.0	Max. Bulging (in.) 0.0	Max. Bulging (in.) 4.4
Max. Seal Height (in.) 0.7	Max. Seal Height (in.) 7.2	Max. Seal Height (in.) 7.2
Seal Infiltration % 0.0	Seal Infiltration % 7.3	Seal Infiltration % 7.8



Luke Laggis

ON THE FRONT LINES

Responding to emergencies and protecting the public is just part of the job

Stories about unusual finds in sewer and stormwater systems often draw attention. We've all heard about wedding rings being pulled from sewer mains and precious little ducklings being rescued from catch basins. Those are nice moments for sure, but not every story has such a nice ending.

I recently came across a story from Tulsa, Oklahoma, about the disappearance of a woman during severe weather back in April. The woman was caught in the storm and decided to take refuge in a large storm drain. You probably already know where this is heading. Tragically, when the surging stormwater filled the pipe, the woman was swept away. The woman's boyfriend shared details with emergency responders and the search began.

Crews searched through the night until 3 a.m. the next day with no luck. That morning, the city's stormwater maintenance team brought out a sewer camera to aid in the search. A few hours later, they found the woman's body in the 42-inch pipe.

I doubt anyone on the Tulsa stormwater team woke up that morning expecting to find a dead body. Emergencies aren't typically expected. But you're expected to respond, regardless of what else is happening.

You might not be celebrated as heroes, but you should be.

Sewers overflow and cause public health and pollution concerns. Contamination can create drinking water safety issues. Main breaks can create dangerous soil conditions. Repair work can require con-

finied-space entry, putting your own safety at risk. The list goes on and on. Not all emergencies bring out the sirens and crime scene tape.

Police officers and firefighters aren't the only first responders. Emergencies stretch beyond fire and crime. And water and wastewater workers are regularly on the front lines.

I've talked in this space before about how you're as responsible for the health of your communities as any doctors, as responsible for safety as law enforcement. You face difficult situations, danger and sometimes even come face to face — or at least camera to face — with death. Thankfully, you've proven up to the task.

You might not be celebrated as heroes, but you should be. Thanks for everything you do to keep us healthy and safe.

Enjoy this month's issue. ♦

Comments on this column or about any article in this publication may be directed to editor Luke Laggis, 800-257-7222; editor@mswmag.com.

Strong-Seal[®]

SYSTEMS



The Technology Leader in Manhole Rehabilitation Since 1989



*The Fast,
Cost-Effective
Solution for*

**STOPPING
INFILTRATION**

**RESTORING
STRUCTURAL
INTEGRITY**

**CORROSION
PROTECTION**



4505 Emmett Sanders Rd | Pine Bluff, AR | 71601 | (870) 535 - 7617 | Fax: (870) 850 - 6933 | www.strongseal.com | info@strongseal.com

Don't turn a blind eye to

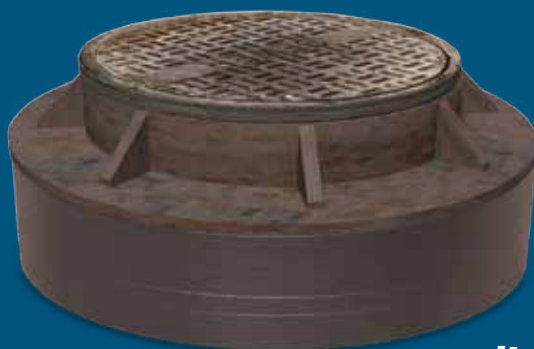
I&I

**It's Your
#1 Problem**

SAVE

**Long-term
Costs**

**Pad Your Pockets
For Other Projects**



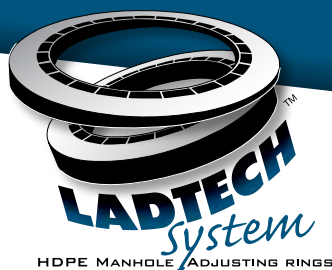
LADTECH RINGS will eliminate **50%** of the **BIGGEST CULPRIT** of I&I which is related to Concrete Adjustment Rings.

When installed correctly, HDPE Rings eliminate 100% of I&I from the chimney section.

REQUEST A FREE DEMO

www.ladtech.com

877.ADJ.RING (235-7464)



SPECIFY THE LADTECH SYSTEM
High Density Polyethylene Manhole Adjusting Rings

Visit the site daily for new, exclusive content. Read our blogs, find resources and get the most out of *Municipal Sewer & Water* magazine.



CONFINED SPACES

How Much Ventilation Do You Need?

When occupying hazardous confined spaces, it may be necessary to use forced air ventilation. This online article instructs readers on how to calculate the required amount of ventilation based on square footage and standards for air exchanges per hour. mswmag.com/featured



NEW CISA SERVICE

Cyber Vulnerability Scanning

In light of recent cyberattacks targeting critical infrastructure, water utilities are facing a heightened urgency to bolster cybersecurity defenses. One way to protect your utility against cyber threats is by taking advantage of the Cybersecurity and Infrastructure Security Agency's free cyber vulnerability scanning service. mswmag.com/featured

“As you consider different ways to build a healthy work environment, be intentional in stamping out office politics.”

—8 Tips for Keeping Office Politics Out of Your Workplace
mswmag.com/featured



SNOWPACK STUDY

Researchers Develop New Metric

Scientists have developed a new way to measure the amount of water stored in mountain snowpack, a critical resource for many regions. This new metric revealed a 22% decline in the amount of water stored in snowpack across the lower 48 states, highlighting potential challenges for future water supplies.

mswmag.com/featured



Join the Discussion

Find us at:
facebook.com/MSWmag
twitter.com/MSWmagazine



Emails & Alerts

Visit [MSWmag.com](https://mswmag.com) and sign up for newsletters and alerts. You'll get exclusive content delivered right to your inbox, and you'll stay in the loop on topics important to you.



THIS IS WHAT
200 YEARS OF
RUGGED RELIABILITY
LOOKS LIKE.

THESE HANDS HAVE SEEN IT ALL.

LEARN MORE ABOUT OUR ENDURING COMMITMENT TO QUALITY AT
[PENTAIR.COM/200](https://www.pentair.com/200)

AN URBAN RENEWAL

Baltimore is aggressively tackling major projects to get its aging water and wastewater system in top shape by 2030

By Peter Kenter

Like many older cities, Baltimore, Maryland, faces significant challenges in maintaining and improving its sewer and water infrastructure. However, the Baltimore City Department of Public Works continues an assertive program to ensure that critical projects, such as improvements to the sanitary sewer system along Chinquapin Run, are completed efficiently, affordably and equitably on behalf of residents.

The DPW is responsible for the city's water, wastewater and stormwater systems, and solid waste collection. It also provides water and wastewater services to surrounding Baltimore County.

The city is working to complete projects under a consent decree established by the U.S. Environmental Protection Agency in 2002 to eliminate sanitary sewer overflows. That consent decree was modified in 2017, setting a deadline for all major capital projects to be completed by December 31, 2030. The Chinquapin Run project was one of the capital projects designed to move the city closer to that goal.

The average age of the system's conveyances ranges from about 75 years for water pipes, 74 for stormwater and 87 for wastewater.

"All three are aging systems," says Paul Sayan, the acting head of Baltimore's Bureau of Water and Wastewater. "But with the work we've been doing, they're still reliable. These systems require constant maintenance, and we're always mindful of the need for a constant influx of new talent to maintain them."

The city replaces 15 miles or more of its water pipe system each year and pursues an ambitious program of reha-

"It's a balancing act to ensure capacity for the entire county while completing infrastructure improvements here in the city."

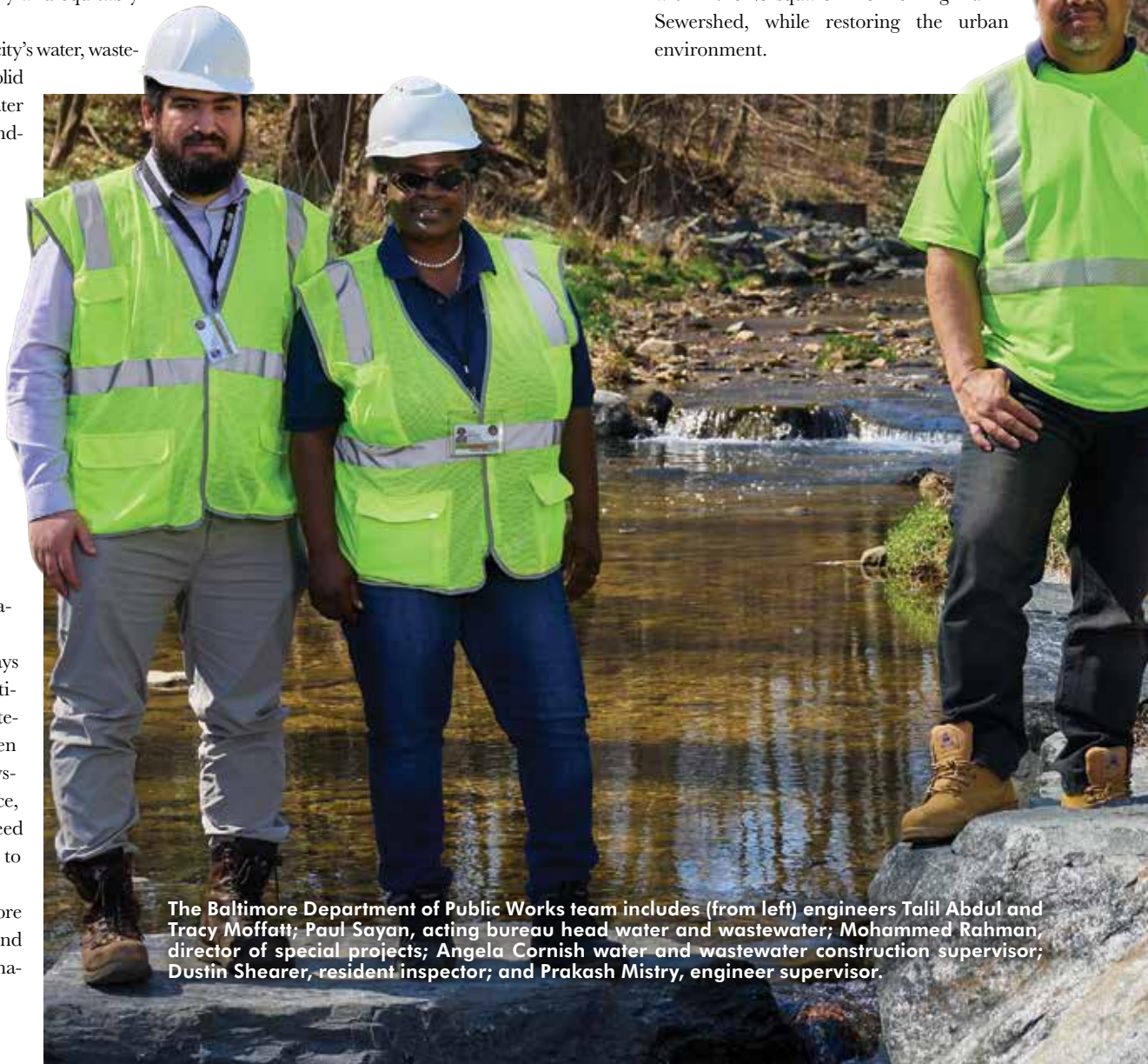
Paul Sayan

bilitation, cleaning, inspection and upsizing its wastewater infrastructure. Baltimore's stormwater system is also a priority as the city works to address SSOs cost efficiently.

While the population of the city of Baltimore has declined in recent years, the increase in the population of surrounding Baltimore County has more than made up for it, requiring the city to ensure that its infrastructure can handle the increased demand.

"It's a balancing act to ensure capacity for the entire county while completing infrastructure improvements here in the city," Sayan says.

Under the original consent decree, the city was divided into eight sewersheds, each of which required a distinct plan to reduce SSOs. The Chinquapin Run project is one such improvement, designed to reduce SSOs within the 25-square-mile Herring Run Sewershed, while restoring the urban environment.



The Baltimore Department of Public Works team includes (from left) engineers Talil Abdul and Tracy Moffatt; Paul Sayan, acting bureau head water and wastewater; Mohammed Rahman, director of special projects; Angela Cornish water and wastewater construction supervisor; Dustin Shearer, resident inspector; and Prakash Mistry, engineer supervisor.

Stabilizing flow

Chinquapin Run is one of the largest municipal urban stream restoration projects in Maryland. It takes its name from a stream located in north-central Baltimore, which follows tributaries and storm drain outfalls that flow through private property, public parks and a college campus before joining Herring Run. The area has experienced significant SSOs associated with inflow and infiltration and basement flooding during high peak rainfalls.

“The project involved upsizing, rehabilitation and relocation of sewer pipe located within and along the low points of Chinquapin Run Stream,” says Mohammed Rahman, who shepherded the project as director of special projects with the city of Baltimore, before taking on the role of acting chief business strategy officer. “By combining the project with stabilizing the flow of the stream and

reducing bank erosion, we were able to provide additional benefits to the community in a cost-efficient manner.”

The project comprised two phases, the first of which targeted the headworks of the downstream Back River Wastewater Treatment Plant. An improvement in interceptor flow and the addition of 25 million gallons of storage at the plant provided additional capacity to prevent the backup of wastewater flows.

The second phase of the project included:

- 4,900 feet of cured-in-place pipe lining
- 13,510 feet of sanitary sewer replacement
- Upsizing of the existing sewer interceptor with a larger-diameter pipe
- 12,750 feet of Chinquapin Run stream stabilization
- 5,000 feet of sewer cleaning and CCTV inspection
- Replacement of 61 manholes with fixed-cover manholes
- Planting of 3,200 trees and 2,100 shrubs

Stabilizing the stream beds through the addition of rocks and riprap prevented further erosion at the



PROFILE:

Baltimore Department of Public Works, Baltimore, Maryland

WEBSITE:

publicworks.baltimorecity.gov

YEAR ESTABLISHED:

1854 (Baltimore Water Department);
1925 (Department of Public Works).

RESIDENTS SERVED:

582,000 (city), 1.8 million (total including Baltimore County)

SERVICE AREA:

92 square miles (city), 560 square miles (Baltimore County)

DEPARTMENT STAFF:

2,720 (2020)

CURRENT INFRASTRUCTURE:

- WATER — 1,500 miles (city)
- SEWER — 1,400 miles (city)

ANNUAL BUDGET:

\$662.5 million (2024)

ASSOCIATIONS:

American Public Works Association,
American Water Works Association



Tracy Moffatt and Talil Abdul measure the width of the cross-vein at the Chinquapin Run project in Baltimore.



“We used a whatever-it-takes approach to sewer pipe work.”

Mohammed Rahman

same time as it protected wastewater infrastructure. Wastewater pipes were also relocated to remove them from the stream floodplain. Upsizing and rehabilitation of pipes, in addition to sewer cleaning, improved both the efficiency and capacity of the system.

The path of the work crossed major roadways, public parks, residential areas and other private property.

“We used a whatever-it-takes approach to sewer pipe work,” Rahman says. “We relied primarily on open-cut, but switched to pipe bursting across private property. When we reached two major roads that could not be shut down, we relied on microtunneling and auger boring.”

No SSOs

The project required considerable flexibility on the part of engineers, city staff and construction contractors. Work was adjusted to actual ground conditions under the major thoroughfares, requiring additional bedrock surveys and extensive monitoring.

“We also encountered an unexpected number of rocks and boulders, which kept the engineers and contractors busy as we determined how best to remove them,” Rahman says.

He notes that ongoing erosion of the stream banks had completely exposed some infrastructure, requiring relocation of those sewer pipes. “The ongoing erosion was so severe in some areas, that when we returned to the site following the planning stage some of the stream banks had collapsed, and were now threatening to affect residential areas,” he says. “We had to stabilize the banks in their

DEVELOPING TALENT IN-HOUSE

One of the greatest challenges facing the Baltimore Department of Public Works is maintaining a skilled workforce to oversee the programs required to renew and operate its infrastructure.

“We need to do a much better job at recruitment and retention of staff,” says Paul Sayan, the acting head of Baltimore’s Bureau of Water and Wastewater. “We also need to ensure we have effective succession planning, so the skills and knowledge of our most senior employees are passed on to a new generation.”

The DPW recently completed a salary survey to ensure that city workers are receiving competitive compensation.

“It’s a shrinking global talent pool for both public and private organizations,” Sayan says. “There’s no getting around the fact that we’re competing for the same workers who have highly portable skills.”

The DPW is doubling up on its efforts to hire sewage treatment plant operators, one of the most difficult positions to fill. The department participates in a program for operators in training, who can apply for certification with the Maryland Board of Waterworks and Waste Systems Operators after a three-year apprenticeship.

“That certificate is a very valuable piece of paper,” Sayan says. “Once an operator achieves certification, it’s up to us to encourage them to stay in the city instead of moving elsewhere.”

In 2022, the DPW established B’more W.I.S.E (Baltimore Water Infrastructure Strategic Educational Program), a six-month program that provides technical training to city residents interested in pursuing careers as licensed water and wastewater operators. Those who complete the program can apply to join the operators-in-training program. A dozen students are enrolled in the current cohort. Interest from city staff has also seen additional spaces opened for internal applicants.

“Our message to program applicants is that they are developing rewarding and stable careers,” Sayan says. “We just need them to put in those first few years with us to get them to that point.”



Mohammed Rahman (left) and acting bureau head Paul Sayab on the stabilized bank of Chinquapin Run Stream.



Rahman takes down measurements along Chinquapin Run Stream.

new position and also move those sewer pipes.”

Work began in 2018 and concluded in 2021. All told, the project budget totaled \$23.5 million with additional costs for engineering support, construction management and inspection.

“The result of the project has been that we’ve experienced no SSOs in the target area following completion of the project,” Rahman says.

Not done yet

The DPW continues to undertake a significant number of major infrastructure projects. The department recently completed a project covering the open-air reservoirs at Druid Lake and Ash-

burton in two tanks holding 52 million gallons of water. At 500 feet in diameter, the Druid Lake tank is the largest tank of its kind in the world.

Other upgrade projects include the start of the three-year rehabilitation of the city’s two “golden egg” anaerobic digesters at the Back River Wastewater Treatment Plant, improvements to the Patapsco Wastewater Treatment Plant grit chamber, and significant upgrades at many of the city’s pumping stations.

“Whether it’s fortifying a stream bank, upsizing a pipe or improving wastewater treatment capacity, as engineers we want to fix those things,” Sayan says. “It’s our job to deliver those projects as cost-effectively as possible, but also to educate the public that these are necessary investments. Through education and community engagement we believe that ratepayers will understand the value they’re getting for their money.” ♦

Trenchless rehab equipment that delivers high-performance.

Service and support teams that give you the knowledge and power to stay productive.

**REPAIR
RELINE
REINSTATE**

Contact us anytime to request a demo or for purchase, leasing or rental information.

Pipeline Renewal TECHNOLOGIES™

www.PipelineRT.com | (866) 936-8476

MSW IS FREE

GET:

- New techniques that boost efficiency and drive out costs.
- Tips for building a stronger, more productive staff.
- Bargains on a wide range of tools and equipment.
- And much more.

visit MSWMag.com

MUNICIPAL
SEWER & WATER



GENERATIONS AHEAD IN
SONAR & ULTRASONIC TECHNOLOGY

SUPERIOR SENSING SOLUTIONS FOR WASTEWATER MANAGEMENT

PulStar® Family of Sensors



- Standard, Plus, TTL, Loop Powered
- Distance measurements from 4 in. up to 20 ft.
- 95 kHz & 150 kHz

FlatPack® Sensors



- Ideal for Turbulent Surfaces
- Distance measurement as close as 1 in. up to 20 ft.
- 95 kHz & 160 kHz

Custom Solutions and More!

MassaSonic® Level Sensors are expertly designed to overcome industry specific challenges such as false echoes and adverse conditions. Contact Massa for your next sensing solution today!

Challenge Your Perception of What's Possible

sensors@massa.com

781-749-4800

www.massa.com



AMERICAN HIGHWAY PRODUCTS LTD.

RAISING AMERICA, ONE INCH AT A TIME

the PIVOTED TURNBUCKLE Manhole Riser



PIVOTED TURNBUCKLE
For Easy Adjustment!

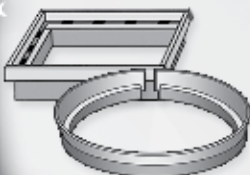
The Most Efficient and Powerful Expanding Riser on the Market.

Riser heights $\frac{3}{4}$ " and up in all diameters. 1" diametric variance and DOT approved in most states.

Made in the USA

◀ **INCLINED RISER** also available. RAISE & TILT the manhole cover.

Catch Basin & Valve Box Risers reduce costs and streamline adjustments



I.D. Locator allows for easy location of common utilities and aids in identifying striping



Sewer Lid Seal Kit eliminates lid vibration and reduces moisture penetration



Rubber Adjusting Ring protects sub-structure, eliminates noise and vibration



SAFETY RAMPS

ELIMINATE

- Vehicle Damage Claims •
- Material Cost for Cold Patch •
- Labor and Disposal Costs •



Since 1978 • Toll Free: 1-888-272-2397 • www.ahp1.com • e-mail: sales@ahp1.com

Lift Stations. Manholes. Tanks. Hard-to-Reach Surfaces.

MARKSMAN™

**LONG-DISTANCE
CLEANING NOZZLE**



**REACHES OVER
20FT**

WORK SAFER

No need to enter
confined spaces

No need for
multiple lances

USE 21% LESS WATER

Proven to
reduce water use

Environmentally friendly

MAXIMUM IMPACT

Fluid particles follow a
single, optimized path for
maximum force impact



LEARN MORE

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.



EDUCATIONAL PARTNERS

Virginia utility's award-winning online learning program helps educators teach students about water

By **Sandra Buettner**

The Prince William County Service Authority has had a varied and engaging education program for years.

But when COVID hit, staff members knew they had to help teachers keep carrying the torch for water education. So they created the H2Go Kids! online learning program for educators and students in K-6. Materials use cartoon characters Drip (K-3) and Drop (4-6) to teach students about water and wastewater.

"There was a period right when the pandemic hit where even virtual learning was restricted," recalls Kathy Bentz, director of communications and community engagement. "So we needed something to keep the children entertained and interested in water conservation.

"For that reason, our community outreach group created H2Go Kids! It includes experiments, videos, games, activity and coloring sheets and comics, all related to water." Parents learned along with the children dur-

ing COVID time, and they continue to work alongside their kids using the program.

Works of art

The Prince William County Service Authority, on the Potomac River, serves Virginia's second-most populous county, with 506,000 residents. The authority's H.L. Mooney Advanced Water Reclamation Facility has a design capacity of 24 mgd.

In H2Go Kids, the community outreach and graphic arts department created a program with fun characters that the kids could relate to. "Hence the birth of Drip and Drop," says Michelle Miranda, community outreach supervisor. "The characters have a distinct look and are featured throughout the activities."

Later more characters were created, including drops of water wearing



hard hats, men and women, with different skin tones, making them diverse and so more relatable. The program was tested on staff members to see what activities their kids enjoyed and what they liked about them. H2Go Kids is promoted through social media, emails to educators and news releases.

Meshing with curriculum

The H2Go Kids! Modules include various activities, all tied to Standard of Learning requirements for the grade levels and coinciding with the educators’ curriculum.

The modules include:

Experiments. This section is the most popular section with kids and teachers. The experiments can be done at home and include determining the real weight of water, what to flush and not flush, creating a mini water cycle and creating a water filter.

Videos. Building on the lessons learned in the experiments, videos show students how to create their own experiments at home.

Activity sheets. These items teach students how much water is used for everyday functions like washing dishes and taking a shower. They also include mazes and word search games.

Coloring sheets. Kids can color characters who show them why we need water; how to use water wisely; why fats, oils and grease do not belong in the drain; and more.

Writing prompts and comics. This section includes comic characters who teach about good water practices in fun and amusing ways.

Pipeline Pals. Clever cartoon characters use games to show the children how to be good water stewards.

Classroom Presentations. Recorded and live classroom presentations via Zoom are available to teachers. The lessons align with the Standards of Learning for elementary students and cover content including aquifers, watersheds and pollution prevention.

Winning recognition

H2Go Kids! won the 2023 National Environmental Achievement Award in the Public Information and Education in the E-Media category from the National Association for Clean Water Agencies.

Miranda notes that the program has been picking up steam and in the last four years has been viewed and used by some 40,000 educators and students. “The educators help us keep track of the numbers,” she says. Some teachers who have relocated still contact the authority to use the program in their new positions.

“Our partnership with Prince William County schools is what makes this thing tick,” says Bentz. “The schools have a foundation called SPARK, for Supporting Partnerships and Resources for Kids, that connects our community to the schools. It’s an amazing foundation with the educators.” ♦





(Formerly Applied Felts, Inc. & FerraTex Solutions)

UNITED TO DELIVER BIG



CIPP Liner Manufacturing & Wet-Out Under One Roof.

www.unitedfelts.com

Applied Felts Ltd., based in the UK, remains owned and operated by the Rawson Corp. and continues to serve the market outside of the Americas.



WATER PLANNING IN RURAL COMMUNITIES

Starting small and building an accurate inventory is the first step toward better long-term planning

By Jonathan Carpenter



The Safe Drinking Water Act was established in 1974 to protect public health by regulating the nation's public drinking water supply. For rural communities to be compliant, a lot of money was invested in water and sewer infrastructure in the late 1970s and early 1980s.

Utility board members and water and sewer operators who began their careers during this time often continued to serve the utilities until their retirement. For many communities, the exodus of this generation of community water resource leaders combined with aging infrastructure meant water infrastructure was not maintained.

Today, a new generation of water and wastewater operators and technicians, mayors, city council members and water board members is helping rural communities ensure safe and reliable water for their citizens.

This generation is trying to do all it can, often with limited resources in a race against the clock. As the American Water Works Association first chronicled in its *Buried No Longer* report, "More than 1 million miles of pipe are nearing their end of useful life and approaching the age at which they need to be replaced."

The water infrastructure challenges rural areas face may seem daunting, but there are many opportunities and resources available. Whether you are a water resources engineer, a representative of the water and sewer board or a city council member, these tips are perfect for starting small and building a strong water and wastewater planning process.

Inventory water assets

When it comes to an existing water system inventory, many rural communities may only have outdated paper maps stored somewhere in a file cabinet. And that's sometimes a best-case scenario.

A thorough inventory includes evaluating the pipe size, pipe length, and condition of water and sewer lines, water meters, hydrants, manholes, treatment plants, pump stations and water storage facilities. For small rural communities, however, the resources might not exist to hire a consulting engineering firm that would have the expertise needed for a comprehensive assessment using technology like GIS. In this case, it's possible a volunteer might be able to start a basic inventory.

Start small tip: Reach out to see if there is someone who has enough working knowledge to at least go around and mark valve locations on a paper map.

Other visible components a volunteer may be able to inventory include fire hydrants, water meters and manholes.

Whether a paper map prepared by a volunteer city employee or a comprehensive GIS inventory prepared by a consulting engineering firm, you first need to know what water assets exist and get an idea of their current condition. Focus on identifying needs for immediate repairs first.

Visit water facilities

While reviewing data and reports is crucial, a firsthand look can be highly informative. A great step in learning about your community's water systems is to visit its facilities.

Start small tip: If possible, encourage city council to go on a tour of the water treatment plant. Firsthand observation can even strengthen arguments for budget allocations and the need for infrastructure improvement projects.

Request a tour of key facilities like treatment plants, storage tanks, pump stations and sections of the distribution system. During the tour, ask questions about infrastructure redundancy measures, including the capacity of backup systems (eg. additional pumps, storage tanks) and their functionality. Look for and ask about any visible signs like leaks or damaged and aging equipment.

Research available funds

The Clean Water State Revolving Fund is a federal-state partnership established by the Environment Protection Agency to provide low-cost financing for a variety of water quality infrastructure projects to communities. Projects can include municipal wastewater facilities, nonpoint source pollution control, stormwater management and more.

The CWSRF provides funding to all 50 states plus Puerto Rico. Your community may be eligible. To learn more about your community's eligibility and how to apply for CWSRF funding, you can start small by visiting the CWSRF's website and contacting your state's program.

Start small tip: Contact your state's CWSRF program. Each state manages its own program. You can find contact information on the EPA's website.

Also consider visiting your state's environmental protection agency website. They may have more information about the CWSRF program and eligibility criteria.

Build local relationships

Regional planning commissions, state associations and similar organizations can be valuable assets for rural communities planning water infrastructure projects. Many will have grant application writers on staff to assist rural communities in completing applications, and in some cases can even help to identify the most appropriate funding opportunities to apply for per eligibility requirements.

These organizations can also connect rural communities with other resources such as technical experts and training opportunities. Additionally, these organizations are usually willing to lend their expertise gained from previous rural water infrastructure projects for valuable technical assistance and guidance throughout the planning process.

Start small tip: Not sure which local planning and development organizations





exist in your community? Start with some online research, per the suggestions below, and make a list of possible organizational partners to reach out to and begin building relationships.

Many state government websites list their affiliated planning and development organizations. Look for sections like “Community Development,” “Rural Development” or “Water Resources.”

The USDA Rural Development website is a great example. The site even allows filtering by state to find relevant programs and local USDA Rural Development office contacts: rd.usda.gov/browse-state.

Established in 1994 by the U.S. Department of Agriculture, USDA Rural Development is dedicated to improving the economy and quality of life in rural communities. It provides financial assistance in the form of loans, grants and loan guarantees to support various aspects of rural development, including utilities.

Also, look for websites of national organizations focused on rural development. For example, the Rural Community Assistance Partnership (rcap.org) is a national network of nonprofit partners working together to provide technical assistance, training, resources and support to rural communities across the U.S. Use this form to find out more about resources that may exist for your community: rcap.org/get-assistance.

Reach out to RWA

The Rural Water Association is a national nonprofit organization dedicated to supporting and advocating for rural water and wastewater systems.

RWA chapters provide workshops, training, technical assistance, help securing financial assistance and more.

Start small tip: To find your local state association, you can visit nrwa.org/about/state-associations. Many RWA state chapters also have their own websites,

so make sure to check whether your state does or not.

Check for weaknesses

Evaluate systems for unaccounted water via leaks, faulty water meters or even water theft. Also, find out whether there is a plan in place for an unexpected water event and a secondary source of water. If these infrastructure weaknesses exist, addressing them should be prioritized.

Start small tip: Ask for maintenance records. Records of repairs, replacements and maintenance activities can reveal areas prone to problems and identify recurring issues.

Analyzing water meter data is a good place to start for understanding any leaks or water theft. Abnormally high usage compared to property size and occupancy can be an indicator of water theft and areas with unusually high water usage compared to historical records can be an indicator of leaks. In some cases, a leak detection study may be needed to prioritize identified areas via further assessment.

Start small tip: Talk to engineers, operators and maintenance personnel. They possess extensive knowledge of the system, potential problems and are involved in ongoing efforts to address them.

As recent events like the Flint water crisis, Texas winter storm and the water crisis in Jackson, Mississippi, all reveal, lack of redundancy can be a critical water infrastructure weakness. Relating back to visiting facilities, ask about what redundancy is built into critical water infrastructure, if any, and potential vulnerabilities in the event of component failure. Ask if any system maps and diagrams are available to understand the layout and potential backup options.

Know best practices

You may not be able to afford a consultant to chart out a 20-year plan to ensure



Epoxytec: **Your I&I Solution** **for Manholes**

As inflow and infiltration (I&I) experts, Epoxytec representatives have the experience to provide applied lining solutions to meet your I&I collection system needs. **To learn more, scan the QR code above or contact your local representative.**

PART OF THE TNEMEC FAMILY OF COATINGS



EPOXYTEC™

that infrastructure upgrades keep pace with growth. But you can learn some general maintenance guidelines for your water systems. Here are a few best practices to get you started:

Start with implementing a seven-year water meter placement program. This ensures consistent and reliable measurement of water consumption. Newer water meters may also allow for remote reading of meter data, reducing the costs associated with taking manual meter readings and enabling faster detection of leaks.

Engineers also recommend a one-year valve exercising program. Each year, cycle each valve through a full open and close cycle. This prevents seizing, or the valves becoming stuck due to corrosion or internal deposits when left unused for extended periods. A valve exercise program ensures the valves are operational when they are (inevitably) needed for system repairs — for isolating sections of the waterline, controlling flow or managing pressure.

Every five years, conduct public fire hydrant flow testing. This verifies the capacity and functionality of the hydrant and helps ensure its flow rate meets requirements for effectively fighting a fire. Regularly operating the hydrant also prevents internal components from seizing or corroding, so that they are available when needed during an emergency.

These tips should give you and your community some direction when it comes to the big undertaking of water infrastructure planning. Take advantage of the many resources available to rural communities for water planning and you'll be on the road to success. ♦

Jonathan Carpenter, P.E., serves as the water resources market leader at The Thrasher Group, a multidisciplinary civil engineering and surveying firm. You can reach him at jearpenter@thethrashergroup.com.



DEDICATED TO DELIVERING CONFIDENCE.

**It all starts with a deep
understanding of your business.**

Land improvement contractors lay the groundwork for our country's success. Something that important deserves the confidence that comes with an insurance partner who truly knows your business and how to support you best. Since 1917, BITCO has provided customized insurance programs across the country, dedicated to protecting you and delivering confidence day-in and day-out.

Get the service you deserve.
Visit BITCO.com to find a specialist agent near you.



OLD REPUBLIC INSURANCE GROUP

IS YOUR MONEY GOING **DOWN THE DRAIN**

(Well, at least being cycled through your wastewater facility?)



Treating wastewater is expensive, so eliminating additional flow from I&I is crucial. Fortunately, OBIC products offer an alternative to costly and disruptive reconstruction.

Our lining systems cure in minutes, requiring minimal disruption to service.

We are so confident in the quality of our professionally installed multi-layer system and OBIC Armor system that we offer a 10-year warranty.



To learn more about **OBIC** visit www.obicproducts.com



CONTACT US:
866-636-4854
info@obicproducts.com

FOLLOWING THE HIERARCHY OF CONTROLS

OSHA's system of hazard mitigation can help keep your crew safe

By *Ronnie Freeman*



Maybe you've heard of OSHA's "hierarchy of controls" in a safety training class or seen it on a sign somewhere, but do you know what it means and what it's trying to accomplish in your workplaces?

Before implementing the hierarchy of controls, the first step is recognizing a hazard in the workplace. It can be something as simple as a leaky chemical container or as broad as working in a confined space. If there is a recognized hazard, then the hierarchy of controls can help employees and employers avoid an incident resulting in injury or even property damage.

The hierarchy of controls comes in five descending phases that were developed to help make decisions based on the hazard and the feasibility of controlling the hazard and its impact on the employees.

Elimination: This is where employers should always start. Can the hazard be eliminated altogether? What will it take to eliminate the hazard? If the hazard can be eliminated, then that is what's best for all and eliminates the possibility of injury. An example of elimination is to lower work to the ground to

remove fall hazards. Another example would be to use a lift or hand cart to move material instead of employees lifting the material, thereby eliminating the potential for a back injury. Sometimes elimination isn't possible due to costs or other issues, that brings us to our next step.

Substitution: If elimination isn't possible, what about a substitute? This is our second-best option. Examples include replacing a hazardous chemical with a less hazardous chemical and replacing worn power tools with newer tools. These solutions can remove most of the hazard but do not eliminate the hazard altogether, so there is still some portion of the hazard to be aware of.

Engineering Controls: Sometimes the hazard can't be eliminated or even substituted, but keeping employees out of harm's way can be accomplished. This is where engineering controls come in. You create a physical barrier like a wall or fence between the hazard and the employee. Other examples are providing vacuum cleaners with HEPA filters when having to clean up spills, using a guard rail system for fall prevention and providing exhaust ventilation sys-

These solutions can remove most of the hazard but do not eliminate the hazard altogether.

tems to remove dust and other contaminants. Engineering controls reduce exposure to a hazard and often eliminate direct contact, but the hazard still exists.

Administrative Controls: This is a different type of control because at this level this is changing the way an employee works. This level also gives employees more information such as training or procedures to handle the hazard better. Examples of administrative controls are procedure changes such as scheduling maintenance of equipment when fewer employees are around, employee safety and job skills training, and installing signs and warning labels. These controls do not eliminate the hazard, but give the employee the knowledge on how to better handle the hazards.

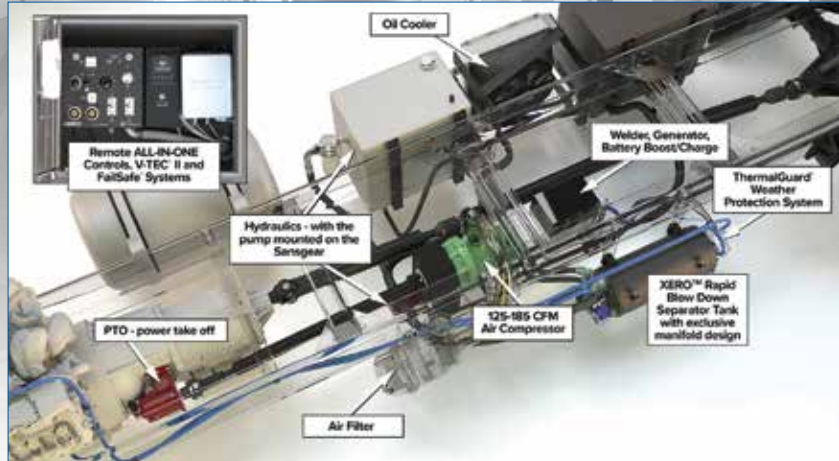
Personal Protective Equipment: PPE is the last line of defense in protecting employees. When the higher levels of control are not adequate or feasible, then PPE is required for protecting employees from hazards. You can also have in place one or more higher levels of control, but still need PPE to be worn. It is also the least effective means of hazard control as employees are exposed to the hazard fully. The safety of an employee can be compromised if the employee removes his PPE or does not wear it properly. Also, no PPE is considered 100% effective in totally protecting employees.

The bottom line is that hazards are always going to be there in our industry. How we approach them can go a long way in protecting employees from injuries. ♦

MSW IS FREE
 visit MSWMag.com
 MUNICIPAL
SEWER & WATER

Want More Stories? Check out Online Exclusives at mswmag.com

One Underdeck PTO System... Six Forms of Power



Our PTO Shaft-Driven Underdeck ALL-IN-ONE Power System[®] replaces six pieces of equipment, saving you over 2000 lbs. of extra weight. This single unit delivers an impressive 125-185 CFM rotary screw air compressor, a powerful 10kW generator, a 330A welder, 12V-24V battery boosting, 12V-24V battery charging, and up to 30 GPM @ 2000 PSI of hydraulic-driven power. In addition to having six forms of power at the ready, this unit:

Reduces Costs

- Less weight reduces fuel costs
- No need to buy extra equipment
- Patented UltraLife[®] Hour Air/Oil Separator reduces maintenance and oil disposal costs

Increases Uptime

- Patented FailSafe[®] Dual Sensor Redundancy System virtually eliminates downtime
- Patented ThermalGuard[®] Weather Protection Kit prevents regulator freeze-up, reduces startup torque, and eliminates moisture
- Patent Pending XERO[®] Rapid Blow Down Tank provides instant restart time and reduces leak points

Only Vanair[®] offers a PTO Shaft Driven Underdeck ALL-IN-ONE Power System[®] that saves you a ton in weight, cost, and downtime.

VAN AIR
MOBILE POWER SOLUTIONS[®]

800-526-8817 • vanair.com

LEARN MORE

ONE BIG DIG

Multifaceted, decades-long project will all but eliminate combined sewer overflows in Toronto

By **Ken Wysocky**

The city of Toronto has nearly completed the first phase of a massive, roughly \$2.2 billion project designed to eliminate frequent combined sewer overflows into the Don River, the city’s inner harbor and a local creek that flows into the river.

The centerpiece of the sprawling, six-phase project, which is expected to be completed around 2037, is a network of three interconnected, concrete-lined deep tunnels — roughly 13½ miles long in total — that will hold CSOs until there’s sufficient treatment capacity available. The project also includes 12 wet-weather flow storage shafts that connect to the tunnels and seven offline storage tanks with a collective capacity of about 6.3 million gallons, explains Lou Di Gironimo, general manager of Toronto Water.

Toronto Water is a city department that manages stormwater, wastewater and drinking water facilities and infrastructure.

The other primary project components include a new high-rate wastewater treatment facility, which will be built just south of the Ashbridges Bay Treatment Plant, the largest of the city’s four wastewater treatment plants and the second-largest such facility in Canada. The facility will treat only CSOs collected in the deep tunnels during heavy rain events.

In conjunction with that, a new larger-capacity outfall currently is under construction; it will improve dispersal of treated and disinfected effluent from the Ashbridges Bay plant into Lake Ontario. The effluent will flow by gravity through a roughly 2-mile-long, approximately 23-foot-diameter concrete-lined outfall tunnel bored nearly 280 feet below ground level. From there, effluent will be dispersed into the lake via 50 roughly 3-foot-diameter riser pipes connected to the tunnel, Di Gironimo says.

“These projects represent the largest and most significant stormwater management program in the city’s history,” Di Gironimo says. “This program will greatly improve the water quality in the lower Don River, Taylor-Massey Creek and along Toronto’s inner harbor by keeping combined sewer overflows out of our waterways through upgraded technology and more capacity to capture, transport and treat it.”

In addition, the city also will replace a chlorine treatment system in the Ashbridges Bay plant with an advanced ultraviolet-light technology that’s more energy efficient and requires less space than conventional ultraviolet equipment.

The project also will include replacing an existing pumping station at the Ashbridges plant. The new station will transfer wet-weather flows from the tunnels into the high-rate treatment plant. The city also will install a

real-time control system to optimize the available storage in existing sewers.

Long-standing problem

The project began in 2018 after more than a decade of planning. But its origins date back to 1987, when the International Joint Commission, a binational organization established by the United States and Canada under the Boundary Waters Treaty of 1909, identified Toronto’s waterfront as one of 43 so-called “areas of concern” in the Great Lakes basin.

The concerns stemmed from poor water quality and sediment conditions in the Don River, which meanders through the city and empties into its inner harbor. Poor water quality is of particular concern because Lake Ontario is the city’s primary source of drinking water, as well as a popular recreation center for boating, swimming, fishing and so forth.

To understand the scope of the problem, consider that there are 50 CSO outfalls along the Don River and the city’s central waterfront. On average, these outfalls dump a mixture of polluted stormwater and untreated sewage 42 times during a typical wet-weather season, which runs from April to October.

The result? Approximately 350 million gallons of combined stormwater and untreated sewage have spilled into the river and harbor every year.

“CSO discharges contain harmful bacteria, pathogens, heavy metals, oils and pesticides, as well as nutrients like phosphorus and nitrogen



“These projects represent the largest and most significant stormwater management program in the city’s history.”

Lou Di Gironimo

PHOTOS COURTESY OF TORONTO WATER

that cause excessive algae growth and degrade the health of the city’s waterways,” Di Gironimo explains.

In 2003, the city adopted a Wet Weather Flow Master Plan that proposed the currently ongoing series of projects aimed at improving water quality and ecosystem health in all six watersheds across Toronto, as well as along the waterfront. The plan is considered the most comprehensive program of its kind in Canada, city officials say.

Aside from improving water quality, key objectives include protecting vulnerable city sewer and water infrastructure from the impacts of erosion and reducing the risk of flooding caused by extreme wet weather, Di Gironimo says.

Huge challenge

Improving stormwater management in Toronto is a challenge because, like so many large and older cities, parts of its sewer system date back to the 1800s. As such, they were designed to old standards and did not consider pollution impacts from wet weather or flooding impacts from extreme storms when constructed.

But the deep tunnels and storage shafts will dramatically improve the CSO situation. The first tunnel, known as the Coxwell Bypass Tunnel, is about 164 feet deep, around 6½ miles long and roughly 20½ feet in diameter. Its capacity is approximately 105.7 million gallons – about equal to the water in 214 Olympic-size swimming pools, Di Gironimo says.

The tunnel bore was completed in July 2022. It was performed by North Tunnel Contractors, a joint venture between Jay Dee Contractors, C&M McNally Tunnel Constructors and Michels Corp.

Five shafts, roughly 164 feet deep and 65 to 72 feet in diameter, will eventually connect to the Coxwell tunnel. Each concrete-lined shaft is capable of holding about 46 million gallons of combined sewage.

As its name implies, the Coxwell bypass tunnel also provides another benefit: It will allow Toronto Water to divert sewage flow from the Coxwell sanitary trunk sewer, which is the city’s most critical trunk sewer, servicing about a third of Toronto’s population. Prior to this, the city couldn’t reroute sewage flows in the event of an emergency, such as a structural failure, or to perform periodic maintenance, Di Gironimo says.



PROFILE: Toronto Water

WASTEWATER INFRASTRUCTURE:

4 treatment plants, 6,835 miles of sewers (which includes, approximately 956 miles are combined sewers, 75 miles of combined trunk sewers and 68 miles of storm sewers that receive combined sewer overflows).

WASTEWATER CUSTOMERS SERVED:

About 3 million

WASTEWATER SERVICE AREA:

Around 96 square miles

WASTEWATER TREATMENT CAPACITY:

Roughly 408 mgd

AVERAGE DAILY FLOW:

About 269 mgd

EMPLOYEES:

About 1,700

WEBSITE:

toronto.ca

A GIANT UNDERTAKING

The city of Toronto's complex, roughly \$2.2 billion Don River and Central Waterfront project, which will virtually eliminate combined sewer overflows by around 2037, represents a remarkable feat of engineering. Here are some details and statistical highlights:

- The roughly 6-1/2-mile-long, largely completed Coxwell Bypass Tunnel, the first of three deep storage tunnels included in the project, was created by a huge tunnel-boring machine nicknamed "Donnie."
- The machine, which was shipped in sections by barge and by truck, measures about 23 feet in diameter and around 377 feet long and weighs almost 1,000 tons.
- Donnie was assembled underground, a process that took approximately three and a half months.
- A rotating cutter head on the front of the machine grinds through rock. Debris is transferred by a conveyor belt to its rear where it's removed for disposal.
- As the machine moves along, it lines the tunnel by installing large rings of precast concrete segments.
- On average, the machine can bore about 66 feet of tunnel per day.
- The machine excavated approximately 523,180 cubic yards of shale rock as it bored the Coxwell tunnel.
- Approximately 700,000 cubic yards of shale rock excavated so far during the project was used to create a landform in Lake Ontario upon which a new high-rate wastewater treatment system, designed to handle wet-weather flows from deep storage tunnels, will be built.
- The roughly 67-acre landform is expected to be completed in 2025. It will include erosion- and sediment-control features that will eliminate the need for regular dredging in that area of Ashbridges Bay.
- Construction crews worked from barges on Lake Ontario to drill down and connect 50 roughly 3-foot-diameter riser pipes to a new, 2-mile-long outfall tunnel that extends from the Ashbridges Bay plant, about 280 feet below ground level. The risers disperse treated effluent into the lake.
- The Ashbridges Bay plant's new outfall, which replaces a 70-year-old outfall with insufficient capacity and that's near the end of its useful life cycle, is reportedly the longest one in Canada.
- To bore the outfall tunnel, crews excavated a shaft about 45 feet in diameter and roughly 280 feet deep, then lowered boring-machine components to the bottom and assembled the boring machine.



More boring work

The second tunnel, known as the Inner Harbour West Tunnel, is currently in the design phase. It will be about 164 feet deep, 3.4 miles long and roughly 20 1/2 feet in diameter. Eight dropshafts, ranging from 20 to 35 feet in diameter, will connect nine existing combined sewers to the tunnel, which will provide about 46 million gallons of storage capacity, Di Gironimo says.

Two additional large-diameter storage shafts, one at each end of the tunnel, will provide an additional 9 million gallons of storage capacity.

The third tunnel, known as the Taylor-Massey Creek Tunnel, won't be finished until around 2037. The tunnel will be 70 to 200 feet deep, around 3.7 miles long and nearly 15 feet in diameter. The tunnel and some accompanying storage shafts will provide about 25 million gallons of storage capacity.

Collectively, the three tunnels and their respective storage shafts will hold approximately 186 million gallons of wet-weather flow — roughly equal to 380 Olympic-size swimming pools, Di Gironimo notes.

Several components of the project are largely completed. As of last January, both the new UV treatment system in the Ashbridges Bay plant

and the Coxwell bypass tunnel were about 90% completed and the Ashbridges Bay outfall was nearly 88% finished. And three of the five storage shafts that will connect to the Coxwell tunnel are expected to be completed during 2024, Di Gironimo says.

Benefits abound

The project has already encountered many challenges, including disruptions from the pandemic, supply chain disruptions that affected material costs and availability and a limited pool of specialized laborers. In addition, inflation is escalating the cost of the project, Di Gironimo says.

As such, the cost of the project likely will continue to rise and the completion timelines likely will need to be adjusted. But in the end, officials believe the results will be well worth the wait.

The Ontario Ministry of Environment, Conservation and Parks, which regulates wastewater treatment and discharge requirements, requires 90% of the volume from wet-weather flows to be captured and treated. But when the project is completed, Toronto Water officials expect to virtually eliminate CSOs — they predict just one a year — and capture and treat 97% of wet-weather flows.

In addition to improving water quality, the project will improve aquatic habitat for fish and other wildlife; reduce nutrient levels that cause excessive algae growth; and support revitalization efforts along the city's central waterfront, Di Gironimo says.

"As Toronto continues to grow, creating an acute focus on housing and building density, this project also is essential to building enough sewer-system capacity to accommodate population growth," he says. "This is a transformative project that will provide environmental and social returns as well as spur development of new, vibrant and healthy waterfront communities at the mouth of the Don River." ♦

FEATURED PRODUCTS FROM:

Michels Corporation
920-583-3132
www.michels.us



NASSCO is located at 5285 Westview Drive, Suite #202, Frederick, MD 21703; 410-442-7473; www.nassco.org

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

BUILDING ON THE FOUNDATION

NASSCO is successfully working toward expanded training and education programs

By Sheila Joy

This month marks the end of NASSCO's 2023/2024 fiscal year, so I thought it would be a great time to share some of the association's major accomplishments over the past 12 months.

NASSCO's mission is to set standards for the assessment, maintenance and rehabilitation of underground infrastructure and to assure the continued acceptance and growth of trenchless technologies. Our vision — to build awareness of aging underground infrastructure and to provide viable solutions through education, technical resources and industry advocacy — is the foundation for NASSCO's ongoing objectives:

- Grow NASSCO's training and education programs
- Expand NASSCO's library of technical resources
- Advocate for the underground infrastructure industry

This month we will focus on accomplishments made by our board, staff, members, Technical Advisory Council and trainers in achieving objective No. 1: training and education.

The January 2024 launch of Version 8 of NASSCO's Pipeline Assessment Certification Program was the culmination of years of dedicated work by NASSCO member volunteers, staff and consultants. NASSCO members concurrently worked throughout the year to develop Version 5 of the Inspector Trainer Certification Program for CIPP. This program will launch this summer.

Based on demand for the proper inspection of residential pipes during real estate transactions, NASSCO'S Lateral and Building Pipe Committee worked hard to develop a uniform inspection form and online course — specifically for plumbers and small contractors — called NASSCO's Building Sewer and Drain Inspection Certification Program — or BSDI.

NASSCO's Operations and Maintenance Committee worked on a parallel track to develop a new drain cleaning certification program. These new NASSCO certification programs — BSDI and Drain Cleaning — will be launched later this year and can be bundled together for dual certification of inspection and cleaning, giving plumbers a competitive advantage.

While most of NASSCO's training courses are delivered online, the NASSCO Exchange events take education on the road. These one-day, in-person sessions include curriculum developed by NASSCO's committee members and Technical Advisory Council. Free to municipalities, the events include PDH or CEU credits for all attendees. This year NASSCO member volunteers traveled to Exchange events in Boston, Detroit, Indianapolis and Albuquerque, New Mexico, with an inaugural event in Baltimore last May.

Building on the foundation of NASSCO's solid objectives and strategic plans, NASSCO's board, staff, Technical Advisory Council, members and trainers made a major impact in 2023/2024. As we enter our next fiscal year starting July 1, we look forward to setting new strategies to build upon these objectives.

Next month we will review the accomplishments made in 2023/2024 to achieve NASSCO's objective No. 2: technical resources. To learn more about NASSCO and to become part of our dynamic committees, please visit nassco.org/join. ♦

Get the EDGE

Training and Continuing Education Courses

PACP, LACP and MACP Training

June 5, 8 a.m. EST

Virtual

Includes PACP, LACP, MACP
Trainer: Brandon Conley

June 5, 8 a.m. MST

Virtual

Includes PACP, LACP, MACP
Trainer: Michael Lukas

June 11, 8 a.m. EST

Virtual

Includes PACP, LACP, MACP
Trainer: Jerry Weimer

June 17, 8 a.m. EST

Virtual

Includes PACP, LACP, MACP
Trainer: John E. Jones

June 19, 8 a.m. PST

Virtual

Includes PACP, LACP, MACP
Trainer: Brandon Conley

June 26, 8 a.m. CST

Virtual

Includes PACP, LACP, MACP
Trainer: Michael Lukas

June 26, 8 a.m. CST

Virtual

Includes PACP, LACP, MACP
Trainer: Brandon Conley

July 8, 8 a.m. EST

Virtual

Includes PACP, LACP, MACP
Trainer: Brandon Conley

July 9, 8 a.m. MST

Virtual

Includes PACP, LACP, MACP
Trainer: Jerry Weimer

July 24, 8 a.m. PST

Virtual

Includes PACP, LACP, MACP
Trainer: Brandon Conley

July 29, 8 a.m. EST

Virtual

Includes PACP, LACP, MACP
Trainer: Michael Lukas

July 31, 8 a.m. CST

Virtual

Includes PACP, LACP, MACP
Trainer: Brandon Conley
ITCP Training

June 17, 8 a.m. MST

Virtual

Includes ITCP-CIPP
Trainer: Michael Lukas

June 24, 8 a.m. CST

Virtual

Includes ITCP-CIPP
Trainer: John Williamson

July 16, 8 a.m. EST

Virtual

Includes ITCP-CIPP
Trainer: Michael Lukas

July 25, 8 a.m. EST

Virtual

Includes ITCP-CIPP
Trainer: John Williamson

August 15, 8 a.m. EST

Virtual

Includes ITCP-CIPP
Trainer: Lou Krch

August 20, 8 a.m. MST

Helena, Montana

Includes ITCP-CIPP
Trainer: Rocky Capehart

August 22, 8 a.m. MST

Helena, Montana

Includes ITCP-MR
Trainer: Rocky Capehart

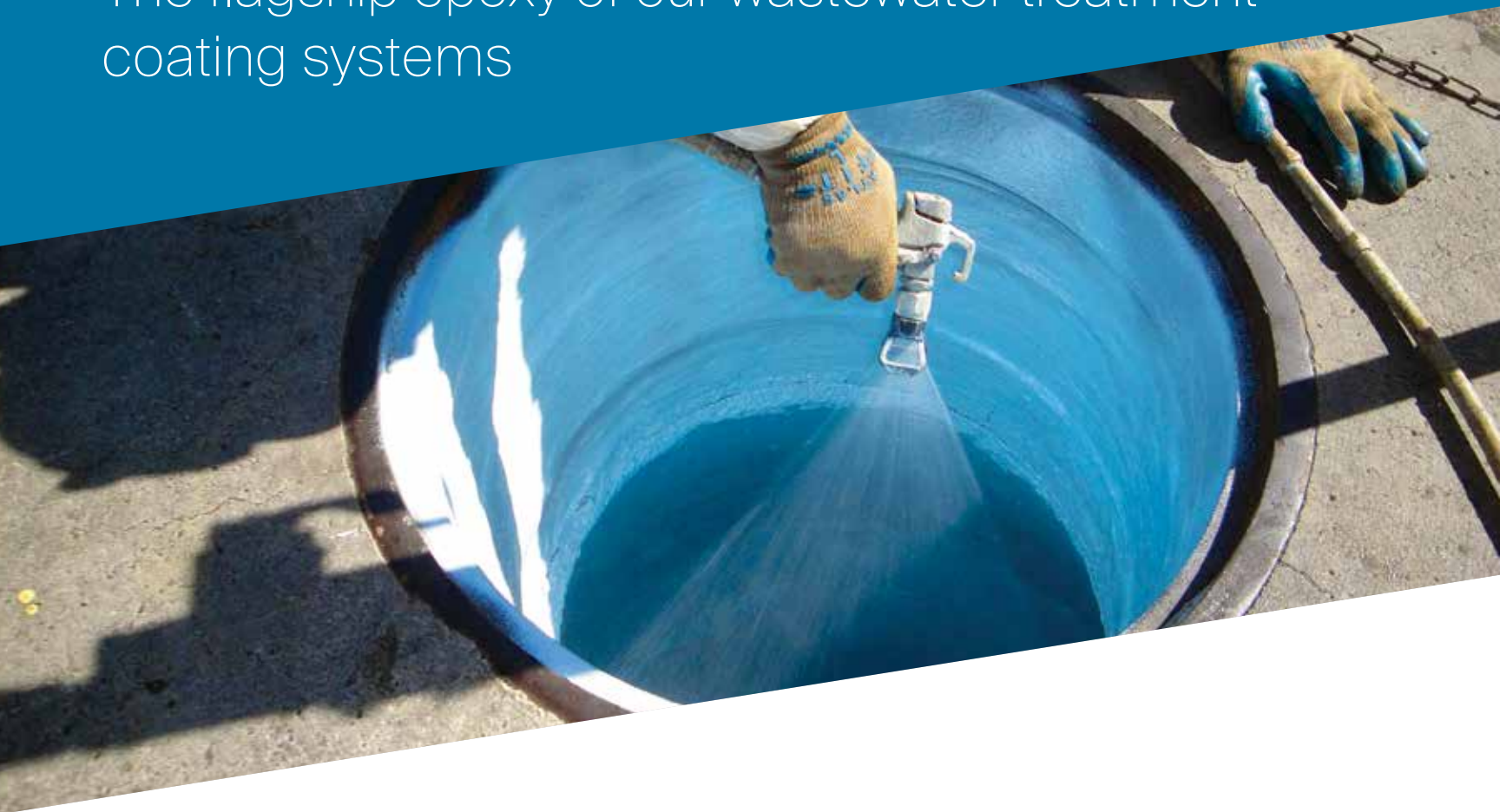
NASSCO
PRO
TRAINING



OTHER CLASSES FORMING
Contact one of the trainers listed above if you are interested in having a class at your facility or in your area.

PPG RAVEN[®] 405

The flagship epoxy of our wastewater treatment coating systems



PPG RAVEN 405 epoxy is an ultra-high build lining system with high physical strength and broad chemical resistance to stand up to severe, caustic environments.

Applications:

- Concrete wastewater lining
- Clarifiers and digesters
- Tunnels and pipelines
- Tanks
- Secondary containment
- Manholes



Corrosion resistance



Adhesive strength



100% solids, ultra-low VOC (0.52 g/L)



Quick return-to-service



SWAT certification

Visit www.ppgpmc.com to find out more.

PPG RAVEN 405 is available only to certified applicators.

www.ppgpmc.com | 1-888-9PPGPMC | PMCMarketing@ppg.com

The PPG Logo is a registered trademark of PPG Industries Ohio, Inc. PPG Raven is a registered trademark of the PPG Group of Companies.

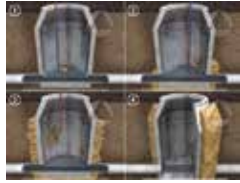


PUMPS, LIFT STATIONS AND CONVEYANCE

Chemical Grouts

Avanti International injection grouts

Infiltration enters underground systems every day through defects or faulty joints in manholes, causing system capacity issues, overload at treatment plants and possible injury to the community. **Avanti International injection grouts** have historically proven to be an economic and long-term solution to combatting infiltration entering all areas of a collections system, including manholes. Injection grouts are engineered to stop leaks, stabilize soil and control groundwater, and be used in precast barrel joints, brick and concrete masonry units, pipe penetrations, vertical or horizontal cracks, voids and pinholes. Each technique enables the technician to stop several leaks at once and helps to extend the life of the structure. **800-877-2570; www.avantigrout.com**



Prime Resins SoiLok MH

SoiLok MH from **Prime Resins** is an extremely thin two-component liquid resin designed specifically for manhole applications. It is a soil binding system (a subterranean grout) used to stabilize and bind loose soil or sand, stop underground water flows and seal weeping leaks in manholes and other below-grade structures. It is an easy-to-use pre-measured kit, resulting in predictable set times in noncohesive soils. It has super low viscosity, nearly as thin as water, allowing for thorough permeation. It contains no suspended solids in the blended product, which means no airborne particulates. It has adjustable gel set times for various site conditions. Achievable compressive strengths are site specific and strongly dependent on sand/soil conditions, composition and particle size distribution. **800-321-7212; www.primeresins.com**



Epoxies

Epoxytec Mortartec Cladliner

Mortartec Cladliner from **Epoxytec** is a practical and economical approach to sanitary sewer manhole and other wastewater infrastructure lining by providing ease of application while delivering performance with savings. It is an engineered standalone hybrid epoxy-cement liner combining the simplicity of a cementitious lining with the performance of a high-build epoxy. It offers acid resistance to protect from corrosion derived from mild-to-moderate hydrogen sulfide conditions up to 100 ppm. It is well suited for the protective lining of new structures and the rehabilitation of aging structures, particularly brick or concrete sanitary sewer infrastructure. **877-463-7699; www.epoxytec.com**



Infrastructure Repair Systems Infragard

Infragard concrete and manhole rehabilitation products from **Infrastructure Repair Systems** include Top Coat and Chim-Coat, which are non-hazardous ambient-cure epoxy systems for a small patch, entire manhole or retaining wall. This cost-effective solution requires no expensive equipment as it has an easy trowel-on application. They are corrosion-resistant and high strength with an impermeable structural bond to the substrate or to almost any concrete or metal surface. Chim-Coat is engineered with a flexible feature that maintains adhesion while expanding or contracting with changing temperatures and traffic loads. **877-327-4216; www.irsni.net**



Source One Environmental Quadex Structure Guard

Quadex Structure Guard, distributed by **Source One Environmental**, is a high-build epoxy coating formulated to provide long-term corrosion protection and structural enhancement for manholes, pump stations, treatment plants or any wastewater infrastructure subject to high levels of corrosion and/or abrasion in both municipal and industrial applications. It is also suitable for invert repairs. It can be trowel- and/or spray-applied, and is a 100% solids material with no VOCs and a fast set time. **877-450-3701; www.s1eonline.com**



Grade Ring

Ladtech HDPE manhole riser and catch basin adjusting rings

Ladtech HDPE manhole riser and catch basin adjusting rings are an alternative to concrete rings. A full line of round, square and rectangular adjustment rings is available. The product lines also include sloped rings and 1/4-inch-thick spacer rings that simplify grade adjustments, which takes all the trial and error out of matching the finished grade. Once adjustable rings are installed, the number of spacers required for an exact chimney height can be quickly and easily added. **877-235-7464; www.ladtech.com**



Insert

Simple Solutions Distributing Wolverine Brand Manhole Odor Filter Insert

Hydrogen sulfide-based sewer odors emanating from manhole covers are an extreme nuisance for residential homeowners or users of nearby public facilities. **Simple Solutions Distributing** offers the **Wolverine Brand Manhole Odor Filter Insert** to combat the issue. Made with durable and corrosion-free high-density polyethylene copolymer, each odor insert is made to order based on specific manhole measurements. The insert sits flush on the rim so it won't interfere with the installation or removal of the manhole cover. They install easily with no tools necessary. Each insert comes with the initial 20 pounds of H₂S SULFUSORB activated carbon and its H₂S breakthrough indicator to let the user know when maintenance is required. The insert requires no routine maintenance other than occasional replacement of the carbon, which is easily replaced and does not require removal of the insert from the manhole. **866-667-8465; www.industrialodorcontrol.com**



Manhole Liner

Sprayroq SprayWall

SprayWall from **Sprayroq** is a rigid polyurethane material that provides structural integrity and infiltration control to underground infrastructure assets. It is a 2-1-ratio product that is applied via a heated, plural component spray system. It begins to gel in about eight seconds and is tack-free after two minutes. Within 30 to 60 minutes, the initial cure is



LET MACHINES HELP YOU PROCESS AND DETERMINE CRITICAL INFRASTRUCTURE

GraniteNet Software is the turn-key Cloud-based platform for public works condition assessment and proactive decision making!



CUES CLOUD

GIS



ASSET MANAGEMENT



AI & DEFECT CODING AS-A-SERVICE



All of your inspection data is available at your fingertips



Get Prescriptive suggestions about what to fix and which method to use

Sync data through the Internet to the Cloud



MANAGE OFFICE TASKS & EDIT INSPECTIONS



PERFORM & VIEW INSPECTIONS / REVIEW TASKS



FIELD INSPECTIONS



MOBILE INSPECTIONS

CUES Cloud...fusing AI and Cloud Computing for superior Asset Management!



800.327.7791 | salesinfo@cuesinc.com | www.cuesinc.com

Ask for a demo! <http://gnet.us.com>

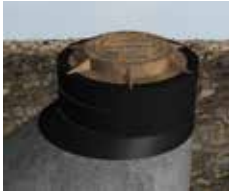
complete and the structure is capable of accepting flow. The benefits include its structural capacity, which provides for protection against multiple load components within an underground asset including water, soil and traffic loads. In addition, it allows an asset owner to return a structure to service quickly, creating a huge savings on bypass cost, as well as decreasing the overall downtime for a given structure. It is also third-party tested and most recently has undergone significant successful evaluations through AASHTO. 205-957-0020; www.sprayroq.com

Manhole Parts and Components

CCI Piping Systems WrapidSeal Manhole Encapsulation System

The **WrapidSeal Manhole Encapsulation System** from **CCI Piping Systems** consists of an engineered primer and a wrap-around, heat-shrinkable sleeve designed to seal joints and prevent groundwater from entering a collections system. This material has a high-shrink membrane (70% stretch and 40% recovery) designed to shrink around any manhole profile. In addition, the high-tensile strength accommodates structural movement while the tough backing resists soil stress and provides suitable abrasion resistance. It can be used for new construction or for the rehabilitation of existing manholes to control infiltration through joints and prevent deterioration, thus eliminating costly maintenance repairs and the added expense of treating groundwater.

800-867-2772; www.wrapidseal.com



Cherne Air-Loc Bladder Style Manhole Testers

Cherne Air-Loc Bladder Style Manhole Testers provide an efficient, cost-effective method of testing new, existing and rehabilitated manholes, per ASTM C 1244. The testers, supported by an aluminum brace, seal the inside diameter of the manhole at the frame or core. The pushpin rod design enables easy depth adjustment. The remote inflation and monitoring system keeps users away from the danger zone. They are available in 10 variations. 800-321-9532; www.cherneind.com



Cretex Specialty Products Internal Chimney Seal

Cretex Specialty Products Internal Chimney Seals are mechanical, so there is no need to worry about surface adhesion or stopping active leaks prior to installation. The seals eliminate and prevent manhole chimney inflow. During wet weather, clear water enters the manhole through deteriorated and broken chimney joints, which may burden the collections system. The chimney seal has a 50-year design life and is available in four widths, allowing complete chimney coverage up to 24 vertical inches with a single seal. 800-345-3764; www.cretexseals.com



Italifters XT10

The **XT10** from **Italifters** is a universal magnetic manhole cover lifter with triple movable magnetic plate. It is suitable for lifting, moving and repositioning most manhole covers, drains, cast iron grates and ferrous materials. It is specifically ideal for linear, deformed and damaged manholes caused by traffic load. Its triple magnetic plate has a total of 27 neodymium magnetic pads, which grant an optimization of the magnetic contact and a superior adhesive force. Its handle is telescopic, to allow ergonomics and minimal space for trans-



port and stocking. Using the tool is simple, fast and intuitive. www.italifters.com

Mr. Manhole Water Valve Rebuild Package

The **Mr. Manhole Water Valve Rebuild Package** offers an efficient solution for water valve rebuilds, especially after paving operations. It is a rebuild system for water valve boxes in the street, which often go unrepaired after a paving operation simply because people don't realize they can be easily adjusted using this simple and effective method. The system allows for easy adjustment of water valve boxes, significantly reducing the cost and complexity of rebuilding. It includes an underslung adapter (for the Mr. Manhole cutter) and a reduced-diameter cutting blade designed for precision, capable of cutting diameters from 28 to 38 inches. This adaptability is crucial for different sizes of valve boxes, ensuring a centered and accurate cut every time.

833-242-2221; www.mrmanhole.com



RELINER/Duran Manhole Invert Channel

Improve manhole hydraulics with **RELINER/Duran Modular Manhole Invert Channels**. Molded fiberglass flumes with smooth sewer pipe interfaces are used to rehabilitate inverts without flow interruption and can be used for new construction. The field-installed modular components bolt together inside the manhole and serve as the form for a new concrete bench. The channels eliminate the inconsistencies associated with field-formed concrete channels. The full-depth lined channels are high flow and easy to clean and maintain. Standard 8- and 12-inch-depth channel sections fit through a 24-inch manhole frame and will accommodate 6- through 12-inch pipes. Larger sizes are available.

800-508-6001; www.reliner.com



USB-USA Spin-Jet

The **Spin-Jet** from **USB-USA** is a self-centering, controlled rotating nozzle that is used for cleaning lift stations, barrels and manholes prior to rehabilitation. Available in two different versions, it has driving nozzles that rotate in a 360-degree horizontal plane only. This action eliminates the need to cover the manhole during operation, allowing for constant viewing of the cleaning process. Front jets thoroughly clean any grease, sludge or mud at the bottom. 844-285-5770; www.usb-usa.com



Safety Equipment

CUES SPiDER

The **CUES SPiDER** allows technicians to inspect vertical structures in minutes, helping them make reliable repair decisions. It is flexible enough to inspect structures from 15 inches to 15 feet wide and up to 75 feet deep. It allows for a rapid inspection time with a nonstop rate of descent of 5 feet per minute. Its portable design eliminates excess hardware like cables and footage encoders. Its durable and waterproof solid aluminum design has been field-proven in over 250,000 inspections exhibiting minimal maintenance. The easy process can get the technician started inspecting in minutes out of the case. Lenient technology minimizes the rules to inspect and ensures assessments are done right the first time. Quality control tools are available to the field crew and office staff. It features automated data transfer from the field to the office, with accurate results



(continued)



Core & Main Supply

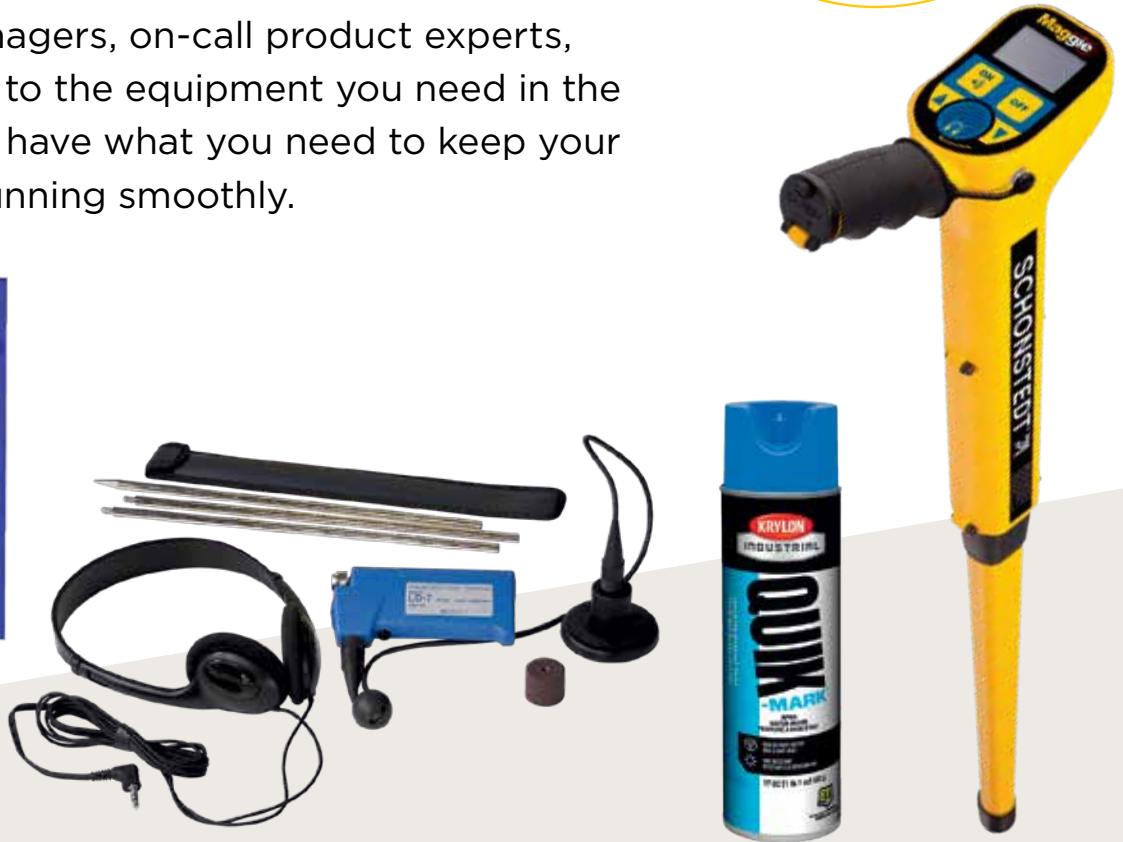
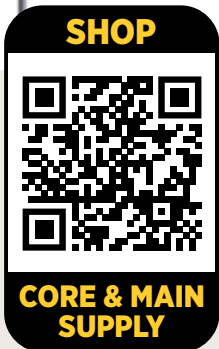
has the **Locators & Leak Detectors**

you need for Municipal Sewer & Water Protection.

Choose **Core & Main Supply** when you need **Locators & Leak Detectors** to quickly and accurately find underground pipes, utilities, and leaks in the plant and field.

With local account managers, on-call product experts, and 24/7 online access to the equipment you need in the lab, plant, and field, we have what you need to keep your municipal operations running smoothly.

Remember!
Stock up on marking flags and paint for identifying underground utilities!



NATIONAL REACH. LOCAL EXPERTISE.

Need help ordering or have questions about our services? Get in touch with our team of experts.
1-888-885-2673 | support.supply@coreandmain.com | supply.coreandmain.com

PRODUCT FOCUS

with sub-inch 3D models and embedded GPS. It is compatible with all NASSCO-certified software. **800-327-7791; www.cuesinc.com**

Sealants

Oatey Hercules Shutout

Hercules Shutout from **Oatey** seals and lubricates manhole covers to reduce inflow. It is a safe, job site-ready solution compatible with most manhole installations. It is designed to enhance existing seals by filling voids and defects within the manhole cover and seat. It creates a water barrier between surfaces, reducing the likelihood of corrosion and lubricating the manhole cover to allow for easier and safer removal. It is easy to transport and requires no measurements or pre-planning. It can be applied easily with minimal surface preparation. Monitor inflow to reapply as needed. **800-321-9532; www.oatey.com**



Sealing Systems Aqua Seal

Aqua Seal from **Sealing Systems** is an extremely reactive two-component hydrophobic polyurethane water stop system that can be injected into flowing water. It is an exceptionally fast reacting (3-5 seconds), quick sealing and high-early-strength grout that is pumped under pressure. It is designed to stop high infiltration sources in precast or brick structures and can stop leaks in excess of 50 gpm. It comes packaged with 12 600 mL dual-component urethane caulk tubes along with 12 static mixers. Since only a heavy-duty dual-component caulk-



ing gun is required, cities can easily install it with in-house maintenance crews. A user-friendly pneumatic gun is also available to provide a faster and more efficient installation. **800-478-2054; www.ssisealingsystems.com**

The Strong Company Strong-Seal System

The **Strong-Seal System** from **The Strong Company** offers a variety of cost-effective engineered cementitious products designed to rehabilitate municipal concrete and masonry structures and effectively stop inflow, infiltration and exfiltration. When spray-applied to a minimum of 1/2-inch thickness, the cementitious mortars are an impervious monolithic liner with compressive and flexural strengths exceeding that of the original structure. Both MS-2A and MS-2C are fiber-reinforced spray-applied cementitious mortars. Made with Portland cement, MS-2A is the most cost-effective solution for stopping infiltration and restoring structural integrity. MS-2C provides high early strengths and added corrosion protection in mild sulfide environments. High Performance Mix is a pure-fused calcium aluminate mortar that stops infiltration, restores structural integrity, and protects against microbiologically induced corrosion in sanitary sewer systems with harsh sulfide conditions (pH of 1.0 or greater). **800-982-8009; www.strongseal.com** ♦



TAP INTO SOUND SCIENCE

Looking for a safer and easier way to know which sewer lines need cleaning?

SAVE TIME

Get a reading in 3 minutes or less with no flow contact.

SAVE MONEY

Screen 2+ miles per day at a fraction of CCTV costs.

SAVE WATER

Clean the pipes that truly need it.

Easy to use.

Light to carry.

EPA evaluated.

See and Hear the Difference

Request a Demo Today

877-747-3245 · infoSense.com
sales@infosense.com

Trenchless LEAD Water Line Replacement with The ACME Pipe Winch

Pull or Split LEAD Water lines, Pull GALVANIZED and COPPER water lines. Also For Trenchless Gas Line Replacement.

- STRONG** With a line pull of 20,000 lbs.
- SAFE** The tensioned pulling cable remains within the confines of the winch frame and the access pit
- ECONOMICAL** The MAX 7/16 pulling cables are reusable
- STAY IN SPEC** Preserves the original lateral bury depth
- QUICK COUPLER** Attaches the ACME Pipe Winch to your excavator or backhoe
- ADAPTABLE SETUPS** The winch rotates 360 deg. and locks in place for a perfect alignment
- UNIVERSAL FOOT ARRANGEMENT** Pull a water line that is close to a sewer lateral
- LAND THE PULLING CABLE EVERY TIME** With the ACME Suction Machine

ACME

TRENCHLESS

CALL

920-376-4222

VISIT

WWW.ACMETRENCHLESS.COM

Simplify the Challenging

The **NEW PDFM 6.1** from Pulsar Measurement provides fast, accurate, non-invasive flow measurement for the most challenging industrial environments and mediums. No other clamp-on flow meter is easier to install and operate.

Choose the **NEW PDFM 6.1** for the best in class flow measurement.



Scan the code for more details or visit: pulsarmeasurement.com/pdfm-6-1

Contact us at: northamerica@pulsarmeasurement.com



NEW PRODUCT AVAILABLE NOW!



Portable, Non-Contacting Doppler Ultrasonic Sensor

pulsar
MEASUREMENT



Wireless transmission, simplified.

Composites are the perfect solution to connect wirelessly to your smart grid. DUROSTREET® composite manhole covers are safe for roadway applications and feature no signal interference.

Learn more at ejco.com/composite or call 800 626 4653

Made in the USA



Product Spotlight

Company offers largest robotically produced test plugs to date

By **Craig Mandli**

Often municipal sewer work requires blocking a pipeline when either effluent flow needs to be temporarily stopped or when a new pipe is being air-tested for leaks. Inflatable blocking plugs can be used to effectively hold back air or water inside a pipe to seal it from outside materials. Cherne now offers larger 24- to 60-inch plugs in its I-Series line, featuring the safety and durability of innovative robotic technology.

According to Pete Rogers, inside sales specialist for Cherne, the manufacturing process of the robot sets a new standard for the company's plug products. "It's interesting to note that even though these products are meant for sewer use, their aesthetics are important," he says. "Beyond their visual appeal, these plugs outperform any others in the territory. By allowing for higher inflation pressure, they can withstand greater back pressure, making them crucial for specific field applications. The durability of these plugs saw a significant improvement when we shifted to manufacturing them on a robot."

Cherne's I-Series Test Plugs provide improved performance and safety through their optimized design. Because they are manufactured robotically, each plug's natural rubber core is mechanically bonded to its aluminum end plate, ensuring precision and consistency while eliminating failures that can



result from chemical bonding processes.

"Previously, our standard for pneumatic plugs entering the product line required them to endure 200 cycles while remaining functional," Rogers says. "With the implementation of the new robot to create I-Series plugs, we increased cycle testing to 1,000 and the plugs exhibited no degradation during this rigorous testing phase."

In addition, I-Series plugs feature corrosion-resistant aluminum base plates with laser-etched identifiers, replacing the use of raised rubber markings that eventually wear away with usage. The plugs are lightweight, short and flexible, while offering superior back pressure to accommodate the range of plug sizes offered. Protective sleeves are also available for the full range of I-Series plugs, helping further preserve the plugs for extended use.

"Our rental customers play a crucial role as they are the ones who take our products out to the field. They not only install the plugs but also provide training on their usage," says Rogers. "Their experiences resonate about our plugs being incredibly durable and reliable." **800-843-7584; www.cherneind.com**

SPECIAL REPORT

Reed Manufacturing Bevel Boss cordless plastic pipe beveler



The Bevel Boss cordless pipe beveler from Reed Manufacturing quickly and safely bevels plastic pipe. Its unique design provides fast and consistent results, reducing prep time. The lightweight tool can bevel multiple pipe lengths and can be used on PVC, CPVC and ABS pipe. It can add bevels on most glued joints and

some sizes of bell and gasket joints. An adjustable router bit permits a bevel length up to 1 inch with even cuts. The battery-powered tool produces no fumes. The guide plate rests against the pipe edge, eliminating guesswork during cuts. Recently, Reed introduced a vacuum accessory: an optional vacuum box that connects to suction plastic chips. For an environmentally safe option, vacuum in tandem with the beveler to collect debris in one step. Reed offers full kits and separately sells beveler adapter heads to fit Milwaukee, Bosch or DeWALT die grinders. Beveler adapters allow for temporary conversion of the user's die grinder to serve as a beveler.

800-666-3691; www.reedmfgco.com

SPECIAL REPORT

OZ Lifting Products CompOZite davit crane



OZ Lifting Products' patented CompOZite davit crane is made of advanced composite materials, making it 40% lighter than equivalent capacity steel davits. With a total weight of only 83 pounds for the boom, mast and winch combined, a single crane is commonly moved to multiple base locations throughout a treatment plant. A ratchet screw jack allows the user to adjust the boom from horizontal to 45 degrees while under load, and 360-degree rotation of the crane allows a full range of

motion. Smart Latch technology at the boom/mast means no tools are required for assembly. A zinc-plated finish on all noncomposite parts provides added corrosion protection. AC and DC electric winches are optional or the manual winch comes standard with a drill drive adapter. The cranes are made in the U.S. and each one is individually tested and certified at 125%. **800-749-1064; www.ozliftingproducts.com**

PRODUCT NEWS

RinnoVision RV-MAX 360 manhole inspection camera



RinnoVision's RV-MAX 360 high-resolution 360-degree manhole inspection camera is designed to optimize the manhole inspection process, enabling municipalities and contractors of all sizes to implement a comprehensive and efficient manhole asset management program at an affordable cost. The RV-MAX 360 boasts advanced technological capabilities packed in a simple and intuitive user experience where operators can name their videos, get an HD live video feed while recording and save the videos directly in geotagged MP4 videos using the embedded GPS. It also contains multiple light modes to ensure optimal illumination of big and small structures with an additional extra spotlight to inspect the inside the side pipes and mainlines. **833-230-4040; www.rinnovision.com**

CAS Dataloggers TL400-I level transmitter



CAS Dataloggers' new TL400-I level transmitter from Novus Automation is designed for nonintrusive level and volume measurement in tanks. It utilizes low-power infrared laser time-of-flight measurements to determine the exact distance between the sensor and the surface of the contents of the vessel. It can be used to measure liquids such as

water or solids like grains. An onboard processor provides advanced filtering capabilities to accurately measure stirred liquids and the ability to calibrate the output in volume with a 20-point linearization to accommodate irregularly shaped vessels. The TL400 can be easily configured using its Bluetooth interface and the Novus SigNow software for Windows PCs, iOS and Android devices.

800-956-4437; www.dataloggerinc.com

Smith & Loveless PISTA VIO grit removal chamber



The PISTA VIO grit removal chamber from Smith & Loveless features a versatile chamber design that brings grit removal performance to tight spaces with unique layout requirements. The innovative design of the PISTA VIO, which stands for variable inlet outlet, provides the ability to arrange the inlet and outlet channels at any angle up to the full 360 degrees of the chamber. The chamber achieves 95% grit removal efficiency of particles down to 100 microns in size across all flow conditions. Its flow maximizer baffle and tunnel system create an effective vortex flow pattern, while the effluent flume counteracts the weir effect, significantly reducing grit bypass. With a 5:1 turndown capability, the PISTA VIO delivers performance and reliability during low-flow, average daily and peak flow conditions without derating.

800-898-9122; www.smithandloveless.com ♦



WORKING WELL UNDER PRESSURE

PRICES GOOD THROUGH JULY 1ST OR WHILE QUANTITIES LAST

Pressure Washers & Drain Jetting Equipment



NEW
RCJ4008H
»8.2 gpm @ 4000 psi »200' x 3/8" Jet Hose
»800 cc EFI on Manual Reel
Honda Engine
30 GALLON TANK **\$8539 Plus Freight**



NEW
LJ4008H
»8.2 gpm @ 4000 psi »200' x 3/8" Jet Hose
»800 cc EFI on Manual Reel
Honda Engine
30 GALLON TANK **\$8399 Plus Freight**



NEW
4008H POWER UNIT
»8.2 gpm @ 4000 psi »400' x 3/8" Jet Hose
»800 cc EFI on DC Powered Reel
Honda Engine
Just Add A Tank! **\$12,719 Plus Freight**

3012H POWER UNIT
»12 gpm @ 3000 psi »400' x 1/2" Jet Hose
»800 cc EFI on DC Powered Reel
Honda Engine
Just Add A Tank! **\$13,159 Plus Freight**

3012H COMPACT SKID
»12 gpm @ 3000 psi »400' x 1/2" Jet Hose
»800 cc EFI on DC Powered Reel
Honda Engine
(100 GALLON TANK) **\$14,579 Plus Freight**

4008H COMPACT SKID
»8.2 gpm @ 4000 psi »400' x 3/8" Jet Hose
»800 cc EFI on DC Powered Reel
Honda Engine
(100 GALLON TANK) **\$14,129 Plus Freight**



VM4008H
»8.2 gpm @ 4000 psi
»690 cc
Honda Engine
»50' x 3/8" Washdown
Hose on DC Reel
\$13,399 Plus Freight



STB3012H
»12 gpm @ 3000 psi
»800 cc EFI
Honda Engine
»400' x 1/2" Jet Hose
on DC Reel
\$22,899 Plus Freight



STB4008H
»8.2 gpm @ 4000 psi
»690 cc Honda Engine
»50' x 3/8" Washdown
Hose on DC Reel
\$22,299 Plus Freight

All Jets Shown Come with Pulse Valve, 2 Jet Nozzles, Tool Box, Gloves, Safety Glasses, Tip Cleaner, Tiger Tail, Wash Down Trigger Gun with Nozzles.

Building Drain and Sewer Equipment since 1981.

We Build Electric, Gas and Diesel powered models up to 4000 psi, flows up to 40 gallons per minute.

Don't see exactly what you want...

We will custom build exactly what you want!

800-648-5011 | www.camspray.com | sales@camspray.com

CASE STUDIES

MANHOLE EQUIPMENT AND REHABILITATION

By Craig Mandli

Contractor chooses steel manhole risers for multiple projects

Problem:

Founded in 1969, Herzog Contracting Corporation is a giant, with six divisions spread across rail, waste management and roadway construction and maintenance. In 2014, Herzog began implementing a roadway contracting innovation from another firm, the Pivoted Turnbuckle Manhole Riser from American Highway Products. “We’d been using cast-iron risers exclusively to raise manholes to grade,” says Bryan Jones, vice president of project delivery in Herzog’s Heavy Highway Division. “They were effective in many ways, but inventory was a persistent challenge. We perform work for a lot of different municipalities, all with differently sized manholes, and it was difficult to keep every size of riser we may need in inventory.”



Solution:

For Jones, the chief advantage of the risers was adjustability. They’re sturdy, flexible rings made of galvanized steel, are easy to set into original utility rims and the pivoted turnbuckle enables fast adjustment to securely fit variously sized manholes. “We first used AHP manhole risers for Wathena, Kansas. I ordered almost 100 risers for that project — we knew from the start they would be a great fit for our operations.”

RESULT:

Since then, Herzog has installed over 1,000 Pivoted Turnbuckle Manhole Risers, keeps a year’s inventory on hand, and has not had any failures to date. Summing up, Jones says, “The AHP risers are a great asset to our operations, and they’ve been incredible to work with over the years.”
888-272-2397; www.ahp1.com

Epoxy used for protection of new manholes

Problem:

Thirty-three new 60-inch manholes (all over 10 feet deep) were installed at CantaMia housing development in Goodyear, Arizona. To protect the new infrastructure from corrosion, city engineers required an epoxy coating to be applied to all manholes.

Solution:

Manhole Coatings coated the new manholes with 125 mils of Neopoxy NPR-5304 epoxy using plural component spray equipment.



RESULT:

The project was completed successfully and the manholes were in service shortly thereafter. Through the application of the Neopoxy NPR-5304, the critical new infrastructure will be protected for decades to come.
510-782-1290; www.neopoxy.com

Composite covers reduce I&I for municipality

Problem:

For decades, sewer spills in Fulton County, Georgia, introduced over 30 million gallons per year of pollution into the Chattahoochee River. Sewer overflows caused by inflow and infiltration led to EPA fines, high treatment costs, increased lift station operation, unnecessary rain guards and over-capacity at plants designed for high rain-water events.



Solution:

Completely watertight submerged composite manhole covers made by Composite Access Products (CAP) were credited as a major reason for this success. The composite process reduces part-to-part dimensional variation compared to iron casting. Reduced variation allows for a closely mated cover-frame fit. Secondly, dimensional precision and repeatability ensure that bolt holes are aligned and completely secure the cover to the frame, sufficiently squeezing the gaskets. Because composites resist corrosion, assemblies can be designed with smaller gaps, cover/frame degradation will not hamper fasteners, and corrosion holes are avoided.

RESULT:

Under the leadership of Roy Barnes, deputy director of Public Works, the county sealed their system and annual sewer spills have been eliminated. As a bonus, pump run times decreased 50%. Annual electric bills, maintenance and replacement cost reductions for decreased pump run times are estimated in the hundreds of thousands of dollars. Chemical treatment costs will also drop at a similar factor with reduced treatment volumes.

844-344-2271; www.justcapthat.com ♦



MSW is FREE!

Subscribe/Renew Online at www.MSWmag.com



VALVE-OUT TOOL

FLANGE SPREADING & VALVE REPLACEMENT



Spread outside flanges & remove old valve



Prepare gasket surfaces



Reinstall new valve

VALVE-OUT TOOL WORKS ON FLANGES WITH BOLT HOLES FROM 3/4" TO 1-3/8" (STUD SIZES 5/8" TO 1-1/4")

CAN BE USED ON ANY VALVE WIDTH

REQUIRES NO GAP AND CAN BE USED TO SPREAD FLANGES AND REPLACE GASKET

SAFER, FASTER, EASIER

EMAIL: SALES@SMPTOOLS.COM

PHONE: 713-667-4402

Watch it in Action Right Now!



ASK ABOUT OUR **Water Service Kit**



Come and visit us.
ACE24
American Water Works Association
Anaheim | CA | June 10-13, 2024
Booth No. 1231



While others are still searching...
...WE ARE FINDING LEAKS!



SePem 155

Noise logger for mobile and/or permanent use

Hermann Sewerin GmbH | Office +1 888 592 9916 | Cell +1 888 592 9916 ext. 103 | sewerin-usa@sewerin.net | www.sewerin.com

CUES software recognized as Esri Cornerstone Partner

CUES' GraniteNet Asset Inspection/Decision Support Software was recognized as an Esri Cornerstone Partner at the 2024 ESRI Partner Conference on March 10-11 in Palm Springs, California, for 20 years of commitment to Esri and ArcGIS technology. Developed by CUES in 2004, the inclusion of GIS spatial mapping to asset infrastructure data is now used by over one thousand municipal utilities and contractors.

Zoeller names Bill Zoeller as chief executive officer

Zoeller Co. announced that Bill Zoeller became CEO May 1. Zoeller's board of directors, with the support of executive search firm Kensington International, selected Zoeller, previously chief operating officer, to lead the company as CEO upon the retirement of John Zoeller, who has served for 22 years.

"As the chief operating officer at Zoeller Company, Bill Zoeller has shepherded the company through several acquisitions, significant growth and the COVID-19 pandemic, cementing the company's position as a leader in the water solutions industry," says Christopher Carmicle, chair of the Board of Zoeller Co. Prior to this role, Bill Zoeller served as the president of Louisville Operations and director of risk management of Zoeller Co. Before joining Zoeller Company in 2011, Zoeller spent more than a decade at LG&E and KU Energy and KPMG.



Bill Zoeller

Thompson Pump names new Colorado-based dealer

Thompson Pump has partnered with Aurora, Colorado-based Wagner Rents, The Cat Rental Store, making Wagner the exclusive, authorized dis-

tributor of Thompson Pump's dewatering and bypass pumps, equipment and services for all of Colorado, New Mexico and El Paso, Texas. Wagner sells and rents quality Cat machines used in heavy construction, building construction, mining, waste handling, paving, municipal and governmental applications, forestry, agriculture and more.

Flomatic appoints Scott Shimer as VP of sales

Flomatic has appointed Scott S. Shimer to vice president of sales. With over 30 years' experience, Shimer will lead the sales team, foster strategic partnerships and spearhead initiatives to expand Flomatic's market presence.



Scott Shimer

Kellar Equipment added to Aries Industries' North American network

Aries Industries has strengthened its western U.S. market reach by adding Kellar Equipment to its dealer network. Based in Yucaipa, California, Kellar Equipment specializes in providing top-quality used construction equipment at competitive prices. Its offerings also include new vacuum and sweeping vehicles, plus a broad selection of rental equipment. Kellar Equipment is the sole authorized California dealer for X-Broom street sweepers, and sole southern California/Nevada dealer for VACALL vacuum trucks and sewer cleaners.

New York City completes \$4.7 million expansion project

The NYC Department of Environmental Protection, NYC Department of Transportation and NYC Department of Design and Construction announced the completion of a \$4.7 million infrastructure project in West-erleigh, Staten Island that upgraded water mains and sanitary sewers. The project also added new storm sewers to combat flooding in the area and improvements to roads and sidewalks. The project, which was finished on time and \$1 million under budget, was managed by DDC for DEP and DOT.

King County fills labor shortage with recruitment program

An award-winning approach to recruiting and training talent is providing Washington state's King County with a new generation of skilled trades-people to operate the region's wastewater system and protect Puget Sound. The Operator-in-Training Program has filled a critical labor shortage by filling more than 70 wastewater operator positions and increasing the racial and gender diversity of the wastewater treatment division's workforce. The National Association of Clean Water Agencies honored the program with its National Environmental Achievement Award for "initiatives that have made a remarkable impact on environmental protection, the advancement of the water sector, and the betterment of their communities."

TruGrit Traction announces expansion to Europe

TruGrit Traction is expanding into Europe and will be establishing manufacturing facilities and shipping operations. In anticipation of the full expansion, the company is introducing flat-rate shipping from the United States to all EU countries. This initiative aims to provide customers in Europe with convenient and cost-effective shipping options while setting up the local operations. ♦

What you learn on these pages
can save your community
\$1,000s.
It's all yours for — FREE.

Each issue will show you new techniques, tips on building a stronger staff, money-saving deals and much more.

MUNICIPAL SEWER & WATER Don't miss an issue!
www.MSWmag.com

JOIN
The Conversation.
The Camaraderie.
The Community.

www.facebook.com/MSWmag
www.twitter.com/MSWmagazine
www.plus.google.com
www.youtube.com/MunicipalSewerWater
www.linkedin.com/company/municipal-sewer-&-water-magazine

RELINER® / Duran Inc.

Invert Channel System, Inside Drop System, Stainless Brackets



Before

After



Before

After

The RELINER® Modular Manhole Invert Channel System provides durable factory quality flumes for optimum flow conditions.

The RELINER® Inside Drop System is the solution to troublesome outside drops and interior tee's.

Simple to install
Cost effective
Reduces maintenance
Simplifies cleaning

www.reliner.com
1-800-508-6001



BUY IT
SELL IT
PLACE IT

www.MSWmag.com/Classifieds

AVAILABLE
ANYTIME, ANYWHERE, ANY DAY

PROTECT YOUR INFRASTRUCTURE WITH WRAPIDSEAL™ & JOINT SEAL™



Features & Benefits:


- Fast & easy installation
- Cost-effective
- Aggressive adhesive
- Flexible material
- Conforms easily
- Supports ground movement



CCPIPE.COM
800-867-2772

HOTJET II

OUR BEST SELLING DRAIN LINE JETTER COMBINED WITH A POWERFUL HYDRO-EXCAVATOR/VACUUM SYSTEM



- JETTER
- HYDRO-EXCAVATOR
- VACUUM
- POWER WASHER

OVER 30 YEARS BUILDING QUALITY EQUIPMENT

HotJetUSA

1-800-624-8186
WWW.HOTJETUSA.COM

PRICES SUBJECT TO CHANGE - CONTACT US FOR A QUOTE!

Protect Camera Lines, Jetter Hose, and CIPP Liners With The MPR 100.




Leading the industry in edge protection



www.H2TR.com
(517) 204-2121
Made in the U.S.A.



AMERICAN JETTER.COM

INTERNO PLUMBER

Up to 67% MORE EFFICIENT



51T Trailer Jetter Hot or Cold
18 GPM @ 5000 PSI / 20 GPM @ 4000 PSI
76 HP Kohler EFI
FREE Shipping/Delivery



58 Trailer Jetter Hot or Cold
10 GPM @ 4000 PSI
38 HP Kohler EFI
Free Shipping/Delivery

866-944-3569

It's your magazine.

Tell us your story.



At *Municipal Sewer & Water*, we're looking for municipal wastewater operations with interesting stories to tell. If you'd like to share your story, send us a note at editor@mswmag.com.

Superior SMOKE

for SEWER TESTING

Reduce Sanitary Sewer Overflows with Superior Smoke Fluid Systems



Smoke Testing
The most cost effective method to find Sources of Surface Inflow

www.SuperiorSignal.com/MSW

MANHOLE SOLUTIONS



MANHOLE INFLOW PROTECTORS

Control Excess Rainwater Inflow and Save Processing Costs



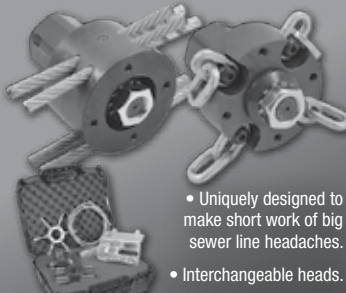
MANHOLE ODOR INSERTS

Solve Those Pesky Odor Complaints Now with Saturation Indicator Sticker

Wastewater Systems, Manufacturing Plants, Breweries, Mines & More


866-NO-STINK (866-667-8465)
Simple Solutions DISTRIBUTING LLC 973-846-7817 in NJ
sales@industrialodorcontrol.com
IndustrialOdorControl.com

RAT OUT YOUR ROOT PROBLEMS



- Uniquely designed to make short work of big sewer line headaches.
- Interchangeable heads.
- Use the chain rotor for major obstructions and the cable rotor for less aggressive problems.

3/8", 1/2", 1" nozzles come in kit form.




330.874.4300
Patented • Made in USA • www.rootrat.net

SEWER CRAWLER PARTS & MANHOLE TOOLS

GRITTED WHEELS
GRITTED TRACKS
PIGTAILS & MOTOR CABLES
FIBERGLASS POLES
JETCAMs & MORE...
FITTING ALL MAJOR BRANDS

TRUGRITTRACTION.COM
407-900-1091



TRUGRIT TRACTION

NeoPoxy

Neopoxy is a leading manufacturer of sprayable and hand-applied epoxy systems and one-step kits



23964 Clawlter Road
Hayward, CA 94545
Phone: 510-782-1290
www.neopoxy.com

MSW IS FREE

GET:

- New techniques that boost efficiency and drive out costs.
- Tips for building a stronger, more productive staff.
- Bargains on a wide range of tools and equipment.
- And much more.

MUNICIPAL SEWER & WATER
visit MSWMag.com

Socially Accepted



facebook.com/MSWmag
twitter.com/MSWmagazine
youtube.com/MunicipalSewerWater
linkedin.com/company/municipal-sewer-&-water-magazine

JETTERS-TRAILER



The HotJetII® is a best-selling hot- and cold-water drainline cleaner featuring a 35hp Vanguard engine by Toyota and delivering 10gpm @ 4,000psi that cleans drains up to 300' and 12" in diameter. The HotJet II® is American made using nonproprietary parts for affordability and ease in serviceability making its return on investment truly impressive. Prices subject to change. Financing available. Contact us for current pricing and availability. **800-624-8186; sales@hotjetusa.com; www.hotjetusa.com** (MBM)

SERVICE/REPAIR

Dynamic Repairs - Inspection Camera Repairs: 48-hr. turn-around time. General Wire, Ratech, Ridgid, Hathorn, Electric Eel, Gator Cams, Insight Vision, Vision Intruders. Quality service on all brands. Rental equipment available. For more info, call Jack at **973-478-0893**. Lodi, New Jersey. www.dynamicrepairs.biz (MBM)

TV INSPECTION



CUES TV/LAMP2 Inspection Truck on 2017 Chevy Express Chassis For Sale! The unit is in excellent condition. It was a lightly used Municipal Truck. There are 7,985 miles on the chassis, and the CUES equipment package has multiple cameras, transport-

ers, and accessories. LAMP2 Transporter and Camera, Steerable Pipe Ranger with OZII, DUC Camera, 14-Foot Box with Walkthrough. Asking \$175,000 - The unit is located in Brooksville, FL. Contact Mason at 321-508-8879. (M06)

NEED TRACTION? We make aftermarket gritted/gripping pads for all chain-driven camera transporters. Custom fabrication secured to a high-quality, nickel-plated carbon-steel chain that doesn't stretch. Also have non-gritted pads, wheels, and tires for all different brands. Pad samples upon request.

Pipe Tool Specialties LLC: 888-390-6794; Fax 888-390-6670; pipetoolspecialties.com or email pts4422llc@gmail.com (MBM)

CAMERA OPERATORS, STOP SPINNING YOUR WHEELS IN GREASY PIPE! Aftermarket gritted polymer wheels, steel carbide wheels, gritted and treaded tracks, tow cables, kiel sticks and more. Fitting Aries, CUES, EnviroSight, Ibak, Rausch, RST, Schwalm & IDtec. **ORDER TODAY at www.TruGritTraction.com; info@trugrittraction.com; 407-900-1091** (MBM)

SUBMIT
YOUR
CLASSIFIED AD
ONLINE at
www.mswmag.com

CORROSION CONQUERED.

- Resistant to H₂S and treatment chemicals.
- ASTM D7234 bond strength to concrete failure
- Zero VOCs
- 100% solids epoxy linings
- Can be applied to SSD concrete
- New construction and rehab applications

SAUEREISEN
SEWERGUARD 210
ULTIMATE CORROSION PROTECTION

OPEN

24/7/365

MSWmag.com

Get News & Stories, Product News, E-Zines, Upcoming Events, Product Guides, Reprints, Classifieds, and Much More.

T&T Tools, Inc.

800-521-6893

MADE IN THE USA | 30 YEARS OF EXPERIENCE | FAMILY BUSINESS

HOOKS...

- » Heat treated for long life
- » Manhole Cover Hooks
- » Septic Tank Lid Hooks
- » Many styles available
- » "T" handles for two hands or compact "D" handles

PROBES...

- » Insulated, standard, and specialty
- » Metal shaft sizes: 3/8" round, 3/8" hex or 7/16" hex
- » Replaceable hardened tips
- » Optional "slide" available to make your probe a mini-slide hammer

Call for a **FREE** Catalog

Email: sales@mightyprobe.com Fax: 800-521-3260

PEOPLE/AWARDS

Vermont Gov. Phil Scott and the state of **Vermont Agency of Natural Resources** announced \$13.3 million in Healthy Homes Initiative awards and \$2.2 million in Three-Acre Stormwater Initiative awards to help 46 mobile home parks spanning 13 counties repair, replace and upgrade water infrastructure. Most of the awards will address problems with inadequate or failing stormwater, wastewater and drinking water systems.

Union City Borough (Pennsylvania) received a \$69,461 grant from the **Erie County Municipal Infrastructure GAP Funding Program** to help fund a stormwater sewer project from Waterford Street across Route 97 to French Creek.

The city of **Tulsa** (Oklahoma) received a \$19.6 million Building Resilient Infrastructure and Communities grant from the **Federal Emergency Management Agency**. The funds will be used to build out the area's stormwater infrastructure and build out two storm detention ponds. ♦

CALENDAR

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 5-9

Water Environment Federation Technical Exhibition and Conference, Morial Convention Center, New Orleans. Visit weftec.org.

October 9-11

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

October 21-23

California Stormwater Quality Association Annual Conference, SAFE Credit Union Convention Center, Sacramento, California. Visit casqa.org.

Municipal Sewer & Water invites your national, state or local association to post notices and news items in this column. Send contributions to editor@mswmag.com.

What's New With You?
Send In Your Industry News To Us!

Send your company's latest business news to editor@mswmag.com. Newsworthy items may include business expansion, honors and awards, new contract announcements, employee promotions and executive hires, and new services. Please include high-resolution digital photos with the news releases.



DISASTER CLEANUP & RECOVERY
DCR
CONTRACTOR
AVAILABLE NOW
FREE SUBSCRIPTION AT DCRCONTRACTOR.COM



FEATURED
IN AN
ARTICLE?

Make the most of it!

REPRINTS AVAILABLE:

Electronic reprints

Go To MSWmag.com/order/reprint
for articles and pricing

BUILT BY THE OPERATOR, FOR THE OPERATOR



GapVax®

GapVax custom builds to meet YOUR needs. Industrial vacuum equipment built FOR THE OPERATOR, BY THE OPERATOR. Air movers, hydro excavators, combination jetvac, recycle jetvac, trailer jettors, skid mounted vacuum units, parts and accessories - we've got what you need! Give us a call today to request a demo or speak with a sales manager!

Stay up to date with us on social to see where we're going next!

281-884-8658
LA PORTE, TX


GAPVAX.COM

888-442-7829
JOHNSTOWN, PA



SAVE THE DATE! GAPVAX OPEN HOUSE SEPTEMBER 26, 2024



IntuiTouch 

Vactor 2100i Combination Sewer Cleaner

EASY DOES IT

intuitive. intelligent. innovative.

Your toughest sewer-cleaning jobs just got easier, faster and safer. The Vactor 2100i is an operator's dream, with **IntuiTouch**® in-cab controls for all operational systems and for the fully integrated front hose reel station. Industry-leading innovations and features include:

- **Modul-Flex**® design to customize your ideal machine
- **IntuiTouch**® controls for precision, comfort and safety
- Safety interlocks, non-destructive e-stops and boom alarms
- Convenient mid-ship water valve control station
- Pump and blower configurations for your exact needs
- Performance-driven options and upgrades available
- Backed by service excellence and the support of the industries strongest dealer network.

All this power, control and ease of operation is backed by our commitment to keep you up and running with operator training and Vactor's unmatched service and support.

VACTOR
2100i®



Visit [Vactor.com/2100i](https://www.vactor.com/2100i) to learn more.