

M U N I C I P A L

SEWER
&

WATER™

FOR SANITARY, STORM AND WATER SYSTEM MAINTENANCE PROFESSIONALS

April 2011

www.mswmag.com

THE LATEST PRODUCTS FOR
MANHOLE AND BASIN REHAB

PAGES 54 & 58

TECHNOLOGY TEST DRIVE:
PIPE RENEWAL PLANNER FROM
BENTLEY SYSTEMS

PAGE 46

BETTER MOUSETRAPS: FIXING A
TRUNK SEWER WITH UV-CURED LINING

PAGE 34

BUYING BACK CAPACITY

Fairfield (Ohio) gets aggressive
with manhole rehab
and I&I control

PAGE 10





THE STRENGTH TO CLEAN. THE SMARTS TO SAVE.

PROOF THAT VACTOR® 2100 PLUS IS THE SMARTER PARTNER.*



More than just a powerful combination sewer cleaner, the new Vactor 2100 Plus is the all-around smart partner you want working for you. Thanks to exclusive industry-leading innovations, the Vactor 2100 Plus is now quieter, more powerful and more fuel-efficient, saving you up to \$13,500 every year in fuel costs. Add to that a dealer support system that rivals none other and more standard features than ever before, and it's clear that the Vactor 2100 Plus is more than just muscle. It's a smarter, more powerful partner.

To find a Vactor Dealer near you,
call 1-815-672-3171.

VACTOR
A Powerful Partner

Click here to visit
www.vactor.com

©2009 Federal Signal Corporation. Listed in the NYSE by the symbol FSS.

*When compared to Vactor 2100 model. Source: Federal Signal engineering department. Fuel savings assumptions: 3 gallons/hour saved in combination mode (4" orifice at vacuum, 80 gpm @ 2500 psi), 1,500 hours per year at \$3.00/gallon.

M U N I C I P A L

SEWER
&

WATER™

FOR SANITARY, STORM AND WATER SYSTEM MAINTENANCE PROFESSIONALS

April 2011

www.mswmag.com

THE LATEST PRODUCTS FOR
MANHOLE AND BASIN REHAB

PAGES 54 & 58

TECHNOLOGY TEST DRIVE:
PIPE RENEWAL PLANNER FROM
BENTLEY SYSTEMS

PAGE 46

BETTER MOUSETRAPS: FIXING A
TRUNK SEWER WITH UV-CURED LINING

PAGE 34

BUYING BACK CAPACITY

Fairfield (Ohio) gets aggressive
with manhole rehab
and I&I control

PAGE 10



Everything new, All in one place.

Why consider outdated gear when EnviroSight technology delivers superior data, expandability, productivity and support.



New VeriSight™ Pro delivers all the functionality of the original, plus greater push power, improved image quality, sturdier construction and a lightweight controller with superior text, recording and annotation capability.

**VeriSight™
PRO**



Without confined space entry, new DiaMetrik™ measures all dimensions of manholes and pipes to within 0.1". Quick and easy, it helps you safely complete inspections and plan relining.

New ROVER™ X brings an advanced touchscreen interface and dozens of new features to pipe inspection's most proven brand. Its digital pendant grants precise, concurrent control over camera, crawler and reel functions; records MPEG video; lets you classify observations for upload to WinCan; exports data via USB; and supports online diagnostics and upgrades. With all this digital horsepower, it's easy to overlook the hardware features that make ROVER X the new benchmark for inspection capability.

**ROVER™
X**



quickview™



With powerful Haloptic™ technology and a built-in manhole camera, the new QuickView™ captures 400' of infrastructure in a single pass. It's all you need to inspect pipes and manholes, scope maintenance work, and avoid confined space entry. Join 2000-plus users who already trust QuickView for fast, thorough inspection.

DIGISEWER™

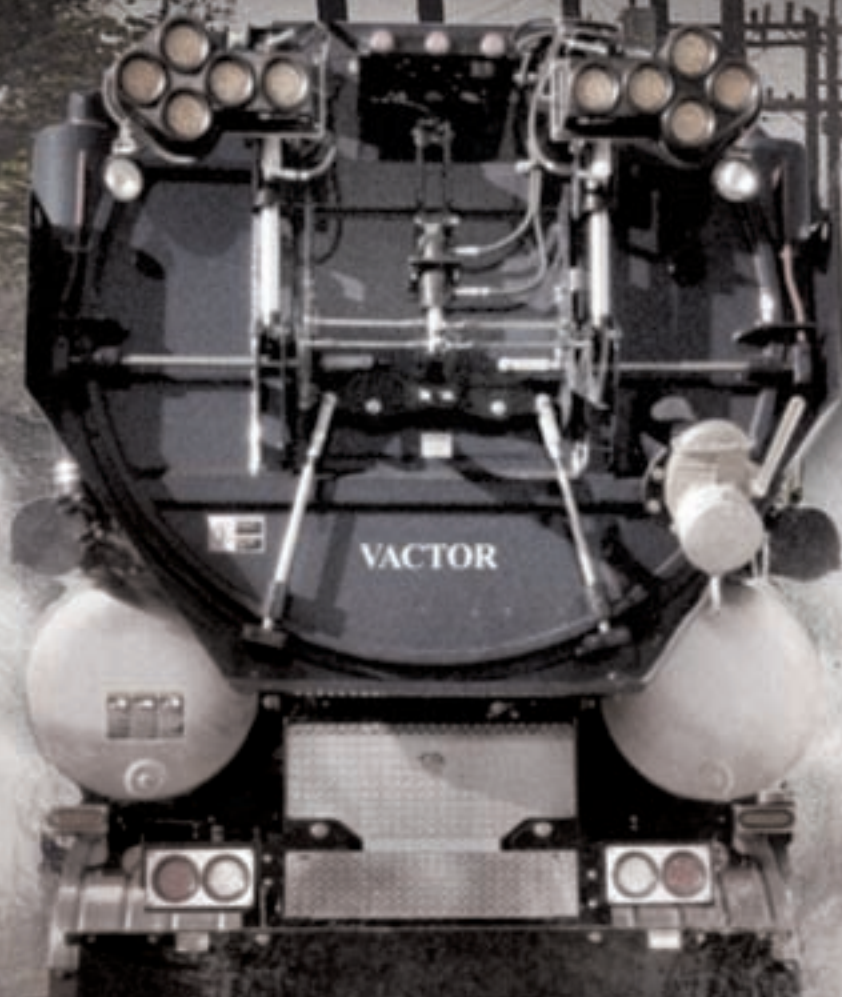
The new DigiSewer™ III side-scan camera captures brighter scans at higher resolution, imaging your infrastructure three times faster than CCTV. It is available for all EnviroSight crawlers, and works interchangeably with traditional video cameras.



**Envirosight™
LLC**

www.envirosight.com • (866) 936-8476

©2011 EnviroSight, LLC. All rights reserved. QuickView, Haloptic, ROVER X, VeriSight, DigiSewer and EnviroSight are trademarks of EnviroSight. QuickView carries patents 6,536,732 and 7,009,698; DigiSewer carries patent 7,163,376; others pending.



COME HELL OR HIGH WATER



Down in the trenches is no place to second-guess your equipment.

When you're being pushed to the limit, count on the sewer cleaner that never backs down — the Vactor® 2100 Plus. Redesigned to deliver even greater performance and fuel efficiency, this industry leader can handle anything the job demands. Again and again. Contact your Vactor dealer, call **800.627.3171** or visit **vactor.com** to discover how no one compares to the machine that won't quit.



INSIDE:

MANHOLES AND CATCH BASINS/
PUMPER & CLEANER EXPO RECAP



COVER:

Fairfield (Ohio) believes in thinking long term. The city's manhole inspection and rehabilitation program has been going strong for a quarter-century and is a key to combating I&I. Here, maintenance worker Chris Croucher applies primer while using the Flex-Seal manhole rehabilitation system from Sealing Systems. (Photography by Mark Young)



COMING IN MAY 2011

**Special Issue: Flow Control/Monitoring/
Stormwater Treatment/Dewatering and Pretreatment**

- ◆ The Human Side: Learning how to manage your boss
- ◆ Sewer: Flow metering and system upgrade in Girdwood, Alaska
- ◆ Sewer: Inspection and flow monitoring in Suburban Washington, D.C.
- ◆ Storm: Tackling challenges with people and technology in Waycross, Ga.

FEATURES

10 SEWER: Buying Back Capacity

Aggressive manhole rehabilitation and a larger I&I control effort help Fairfield, Ohio, prevent overflow and keep sewer user rates down.

By Erik Gunn

20 SEWER: Secure Connections

The City of Salem goes big with in-house grouting as part of a complete program of sewer inspection, maintenance and rehab for I&I control.

By Scottie Dayton

28 SEWER: Sealing the Deal

A court-ordered I&I control program in the City of Milwaukee includes a regular program on manhole inspection and repair that pays many dividends.

By Erik Gunn

34 BETTER MOUSETRAPS: Let There Be Light

A UV-cured liner enables a California contractor to rehabilitate a critical trunk sewer with minimal bypassing and no disruptive excavating.

By Scottie Dayton

38 The Latest on Display

Last Pumper & Cleaner Expo in Louisville features a wide range of new products for municipal and utility applications.

By Ted J. Rulseh

46 TECHNOLOGY TEST DRIVE: When the Time Is Right

Pipe Renewal Planner software from Bentley Systems helps managers develop sound, data-based plans for resolving water distribution reliability issues.

By Ted J. Rulseh

COLUMNS

8 FROM THE EDITOR: Sitting Ducks

Your streets are full of big and easy targets in the never-ending battle against inflow and infiltration and all its insidious costs.

By Ted J. Rulseh

44 BRAINSTORMS: How Big Is That Overflow?

By Ted J. Rulseh

50 THE HUMAN SIDE: Making It Personal

Building relationships with team members is the key to keeping morale high and sustaining productivity.

By Ken Wysocky

52 NASSCO CORNER: Quality Through Certification

NASSCO introduces recertification programs for PACP trainers to help ensure continuous excellence in pipeline assessment.

By Ted DeBoda, P.E.

54 PRODUCT FOCUS: Manholes and Catch Basins

By Benjamin Wideman

56 Industry News

58 CASE STUDIES: Manholes and Catch Basins

By Scottie Dayton

65 Worth Noting

People; Learning Opportunities; Calendar

APRIL 2011

MUNICIPAL
SEWER
&
WATER

Perma-Liner™ Sectional Main Line Point Repair™

- No Excavation - Eliminates Disruptive Digging And Restoration
- Repairs 6" to 54" Diameter Pipelines
- 100% Solids Epoxy
- Reinforced Materials With A PU Coated Finish
- Total Time of Repair Is Only Hours Compared To Days
- As Many As 7 Repairs In A Single Day
- Exceeds ASTM F1216 Specifications
- Manufactured In Kit Form, No Measuring Or Waste
- In Most Cases, No Bypass Pumping Needed
- Reduces Job Costs - Labor, Equipment, Materials, Traffic Control, and Unforeseen Liabilities



Turn-Key Trailers

Trenchless Tour

Chicago, IL
June 8th



Sectional Main Line Point Repair™ System

Sectional Point
Repair Kits



Bladder



500' Air Hose & Reel



Air Bottle



CALL














(866) 336-2568 Toll Free
(727) 507-9749 International

**PERMA-LINER™
INDUSTRIES, INC.**

VISIT

www.perma-liner.com

ADVERTISER INDEX

COMPANY	PAGE
Air Systems International	16
 American Highway Products, Ltd.	41
AP/M Permaform, Inc.	33
Applied Felts, Inc.	23
 Aries Industries, Inc.	7
Avanti International	24
B2 Business Brokers	49
 Cam Spray	56
Carboline	17
 Central Oklahoma Winnelson	18
 Chempace Corporation	29
Cloverleaf Tool Co.	33
Cretex Specialty Products	18
 CUES, Inc.	29
East Jordan Iron Works, Inc.	31
 Environmental Products & Accessories, LLC	36
 EnviroSight, LLC	2
 ENZ USA, Inc.	45
Epoxytec	37
 GapVax, Inc.	15
 Hi-Vac Corporation	25
Jetter Depot	37
Logiball Inc.	26
 LMK Technologies	67
McGard	43
Mr. Manhole Systems	13
 Municipal Sales, Inc.	24
 NozzTeq, Inc.	29
 Pat's Pump & Blower, LLC	13
 Perma-Liner Industries, Inc.	5

COMPANY	PAGE
 Pipeline Analytics	13
 PipeLogix, Inc.	31
 Prototek Corporation	48
 RapidView IBAK North America	36
Reliner/Duran, Inc.	37
 RootX, Inc.	66
 RS Technical Services, Inc.	27
 Safety Corporation of America	14
Sanitation Insurance Services	51
Savatech Corp.	16
 Sewer Equipment Co. of America	9
 Shamrock Pipe Tools, Inc.	60
Southland Tool Mfg. Inc.	44
SpectraShield Liner Systems	45
 Standard Equipment Company	64
 Street and Sewer Parts Superstore	24
Super Products, LLC	19
 T & T Tools, Inc.	45
The Strong Company, Inc.	11
 USABlueBook	57
 USB - Sewer Equipment Corporation	26
 Vac-Con, Inc.	68
 Vactor Manufacturing.....	3, 43
Vanair Manufacturing, Inc.	41
CLASSIFIEDS	65
MARKETPLACE	62

MUNICIPAL SEWER & WATER

FOR SANITARY, STORM AND WATER
SYSTEM MAINTENANCE PROFESSIONALS

Published monthly by:

 COLE publishing

1720 Maple Lake Dam Rd., PO Box 220, Three Lakes WI 54562

www.mswmag.com

© Copyright 2011, COLE Publishing Inc.

No part may be reproduced without permission of publisher.

In U.S. or Canada call toll-free 800-257-7222

Elsewhere call 715-546-3346

E-mail: info@mswmag.com

Fax: 715-546-3786

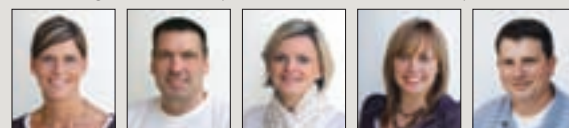
Office hours Mon.-Fri., 7:30 a.m.-5 p.m. CST

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

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 Nicole at nicolel@colepublishing.com.

CLASSIFIED ADVERTISING: 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 715-546-3786 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 one of our sales staff below 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.



Kim McGee Jim Flory Winnie May Kayla Wilkowski Jim Koshuta

EDITORIAL CORRESPONDENCE: Send to Editor, Municipal Sewer & Water, P.O. Box 220, Three Lakes, WI, 54562 or e-mail editor@mswmag.com.

REPRINTS AND BACK ISSUES: Visit www.mswmag.com for options and pricing. To order reprints, call Jeff Lane at 800-257-7222 (715-546-3346) or e-mail jeffl@colepublishing.com. To order back issues, call Nicole at 800-257-7222 (715-546-3346) or e-mail nicolel@colepublishing.com.

CIRCULATION: 2010 average circulation was 37,808 copies per month (U.S. and international distribution).



PUMPER & CLEANER ENVIRONMENTAL EXPO INTERNATIONAL

www.pumpershow.com

Education Day: March 2, 2011 ■ Exhibits Open: March 3-5, 2011
Kentucky Exposition Center, Louisville, Kentucky

RELENTLESS.



The Aries LETS (Lateral Evaluation Television System) sets the standard for productive, reliable and versatile mainline and lateral inspections. Feature-rich and customizable to serve your uniquely specific needs, the LETS is engineered to inspect a mainline up to a 36 inch diameter and lateral of more than 150 feet ... and that's just the start. Add the self-cleaning PE3600 Pan/Tilt camera and you have the most complete system available today for navigating and inspecting the toughest lateral line conditions.

Relentlessly pursuing **innovation**. Relentlessly ensuring reliable **performance**. Relentlessly dedicated to serving you with quality customer service. The Aries LETS. Relentlessly working with unmatched efficiency until the job is done. For more information, contact your Aries dealer or sales representative today.



Proudly Manufactured in the U.S.A. | ARIESINDUSTRIES.com | (800) 234-7205



SITTING DUCKS

Your streets are full of big and easy targets in the never-ending battle against inflow and infiltration and all its insidious costs

In the campaign against I&I, there are lots of enemies you can't readily see. Broken mains and laterals. Illegally connected sump pumps, downspouts and foundation drains. Pipe joints lying below seasonal high groundwater.

And then there are some you can see quite easily — manholes, which are part of the focus of this month's issue of *Municipal Sewer & Water*. You drive over them every day on the way to work. Your people pop them open regularly when cleaning and inspecting lines.

They are right there — and they can add a lot of clear water to your sewers and ultimately the treatment plant if they are old and decaying or are not properly sealed. While estimates vary, studies have shown that 30 to 50 percent of infiltration to sewer systems comes from manholes and other underground structures.

Of course, you knew this — or if not the actual numbers, the basic fact of leaky manholes and their costs. In a perfect world, you would have enough budget to go in and fix them all on some reasonable timetable. But you also know the reality, all too well.

It's black and white.

In each issue of *Municipal Sewer & Water*, you'll read about sanitary sewer, stormwater and water system professionals just like you. You'll discover:

- Who are the innovators in system repair and maintenance
- How they make sound decisions that improve service and save money
- What tools and technologies drive efficiency and performance
- Where to go to find the latest equipment and advice

No gray area here.

Municipal Sewer & Water has what you need. And it's **FREE**. Start your subscription today at mswmag.com or call 800-257-7222.

Finding fixes

This month's issue looks at three communities that are going hard after manhole leaks — with different tools and technologies, but with similar dedication. What strikes me after reporting on public infrastructure since we launched this magazine in 2006 is the sheer variety of remedies for manhole leakage.

They range from incredibly simple and cheap to highly sophisticated and effective. It seems any community that's at all serious about tightening manholes can find workable solu-

What strikes me after reporting on public infrastructure since we launched this magazine in 2006 is the sheer variety of remedies for manhole leakage.

tions that fit the budget. Here are some I'm aware of without resorting to much beyond a search of the memory banks:

- Inexpensive metal or plastic dish inserts that sit just under the manhole cover and keep water from entering there.
- Watertight manhole frames and covers that help seal water out.

- Internal chimney seals and external wraps that are cost-effective and easy to apply.
- Chimney and joint sealing compounds in a wide range of materials.
- Cured-in-place liners that essentially create a new leak-free interior.
- Poured-in-place concrete restoration that creates a new



FROM THE EDITOR

Ted J. Rulseh

structure inside the old.

- All manner of cements, mortars and patching products that can be applied directly to the structure.
- Chemical grouts that flow into the surrounding soil and stop leakage from the outside.
- Trowel-on or brush-on epoxy sealers.
- Machines that cut old manhole frames to enable easy replacement.
- Spray-on coatings that save time.
- Rapid-set sealers.

Many choices

Keep in mind that those are only the categories. There may be two, three, four or a dozen or more specific solutions within each of them. And that's not to mention all the tools for inspecting manholes and assessing their condition.

If you're declaring war on I&I, you have a lot of weapons at your disposal. You don't need to spend a fortune to get started, and you don't need a ton of training before your people can go to work on the problem.

All this is a long way of saying: Where there's a will, there's a way to put a dent in leakage from manholes. Explore this issue and see what potential solutions you can find. Poke around online for a while. You just might discover something you didn't know about that fits your manholes like a glove, and works within your budget, too.

The manholes are out there — like sitting ducks. Maybe now is the time to go on the attack. ♦

Comments on this column or about any article in this publication may be directed to editor Ted J. Rulseh, 877/953-3301; editor@mswmag.com.



Thanks for visiting us!

Search:

[Search](#)

Nozzles

Nozzles Extensions

Root Saws

Cutters

Hose

Pumps

Laterals & Small Line

Rodding Accessories

Rod

Mechanical Cleaning

Manhole Tools

Cleaning Accessories

Repair Parts

Vacuum Tools

Vacuum Excavation Tools

Sewer Dye

Cable Machine & Acc.

Pipe Plugs

Jetting Accessories

BestPRODUCTS.
BESTLocalSupport.
800-323-1604

FROM THE MAKERS OF:



All of your Jetter & Vacuum Parts on one site.

SewerShop.com is your one stop shop for Jetting and Vacuum Machine parts and accessories. Find what you need when you need it. SewerShop.com is the best location to find everything from Nozzles to Sewer Hose. We have an extensive variety of parts and accessories for Rodders, Jetters, Vacuum Machines, Hydro Excavators, and Cable Machines.

10% OFF*

Take 10% off your next order on sewershop.com

Qty:

[Add to Cart](#)

Details

Enter Promo Code: **Sewer10** to receive a 10% discount.

Offer expires July 1, 2011.



* Take 10% off the list price of your next order on sewershop.com.

Fairfield uses the Flex-Seal system to seal manholes as part of its rehabilitation program. After sandblasting of the surface, a primer is applied, followed by a topcoat. Maintenance worker Johnny Morgan applies the topcoat. (Photography by Mark Lyons)

BUYING BACK CAPACITY

Aggressive manhole rehabilitation and a larger I&I control effort help Fairfield, Ohio, prevent overflow and keep sewer user rates down

By Erik Gunn

Fairfield, Ohio, just might be a poster child for the power of thinking ahead — and thinking long-term. The city, a Cincinnati suburb, has a program of manhole inspection and rehabilitation that has been going strong for a quarter-century. It's a key to the city's strategy for combating inflow and infiltration.

To control I&I, Fairfield uses a variety of tactics: regular televising of sewer lines, a five-year repair cycle, and close cooperation with other city departments. The work has paid off, says Drew Young, public utility sewer superintendent. Since the mid-1980s when the program started, the city's population has grown by nearly one-third, while average daily

wastewater flow has declined by 200,000 gallons.

"Our flows are lower today than they were 25 years ago," Young says. "And we've added more than 15,000 population. Not many communities can say that."

Suburban system

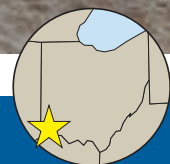
A bedroom community of 42,300 people with a mostly light commercial business base, Fairfield may have it easier than many cities. "If you can have an ideal flow, we are pretty textbook," Young says. "We don't have a high BOD — it's about 250 mg/l — and our total suspended solids are around 200 mg/l. We don't have slug loads from a lot of businesses. We have a very moderate stream coming into the treatment plant."

The system also is relatively new. The collection system was built starting in 1965, before which sewage treatment was handled by private septic systems and a couple of small neighborhood treatment systems (package plants). By 1986, though, the city was seeing storm-related sewage overflows caused by I&I. So the Fairfield staff took action.

Regular inspections and scheduled repairs followed, focusing on manholes. "We started videotaping all of our sewer lines," says Young. "By 1992, we had televised every public sewer line in the city. We were way ahead of most cities by that time."

Making repairs

In 1986, the city began a campaign of spot sewer line repairs,



PROFILE:
Fairfield, Ohio,
Public Utility
Wastewater Division

POPULATION SERVED:
42,300

AREA SERVED:
29 square miles

INFRASTRUCTURE:
180 miles of sewer mains;
4,500 manholes

WASTEWATER FLOW:
5 mgd (average)

ANNUAL BUDGET:
\$5 million (2009, sewer only)

STAFF:
21

WEBSITE:
www.fairfield-city.org

(continued)

Strong-Seal®

SYSTEMS

The Technology Leader in Manhole Rehabilitation



Strong-Seal® Systems

The fast, cost-effective solution for

- Stopping infiltration
- Restoring structural integrity
- Corrosion protection

Offering
Manhole
Rehabilitation
Solutions Since
1989

Complete Family of Strong-Seal® Engineered Products

- MS-2A - Portland cement based structural lining material
- MS-2C - Calcium Aluminate based structural lining material
- High Performance Mix - 100% pure fused Calcium Aluminate cement and aggregate structural lining material
- Profile Plus - Calcium Aluminate underlayment for epoxy/urethane coating
- Strong Plug
- Quick Set Repair (QSR)
- Bench Mix
- Strong-Seal® Ring Sealant
- Dependable and high output application equipment

THE
Strong Company
INC.

Toll-free: **(800) 982-8009**

Fax: (870) 850-6933

E-mail: info@strongseal.com

Web Site: **www.strongseal.com**



Left, a torch is used to dry the surface before priming of the manhole in preparation for sealing. Right, the manhole surface with the topcoat in place.

using Insituform cured-in-place pipe lining. At the same time, the city began a program of regular manhole rehabilitation. Inspections of the 4,500 manholes take place mainly in December and January, when the weather prevents crews from doing other work. The city is divided into 30 sewer basins. “We take a basin at a time, starting with older neighborhoods,” Young says. The sewer cleaning program targets one-fifth of the city every year.

When the manhole rehabilitation program began, risers were an early target. In the past, brick riser sections — the top of the manhole chimney immediately below the frame — might be as high as 30 to 36 inches. “The higher the riser section, the greater potential for the mortar to fail, allowing additional inflow into the system,” Young explains. “We redefined our ordinance to allow only 18 inches of riser.”

Riser bricks were regouted, but increasingly precast risers became the preferred style. After floods, crews would check the flooded areas; where manholes were submerged, the city replaced the vented lids with gasketed, solid models.

Varied solutions

Initially repairs to deteriorating manhole seals used non-shrink grout. Then the city experimented with chimney seals. For the last

decade, crews have used mainly Flex-Seal aromatic urethane rubber seal from Sealing Systems.

“With grout we found the freezing and thawing at that level would sometimes cause pieces to break off,” Young says. “It wasn’t what we would call a permanent repair such as we’re seeing with the Flex-Seal.”

City crews learned how to do the job in a factory-provided training program that took one day. The repair process begins with

the mid-winter inspection, which highlights the manholes in need of repairs (typically 60 to 75 per year) and the types of repairs needed.

Some manholes need to be raised. “You’re looking at casting conditions — whether the manhole is subject to ponding or surface inflow,” says Young. If a manhole has sunk to create an area that ponds in a storm, it is tagged to be raised to grade level. If a lid lets in water, it can be des-

“The higher the riser section, the greater potential for the mortar to fail, allowing additional inflow into the system. We redefined our ordinance to allow only 18 inches of riser.”

Drew Young



The Fairfield manhole rehabilitation crew includes, from left, maintenance operator Kim Campbell, and maintenance workers Tony Stephens, Chris Croucher and Johnny Morgan (shown with a Mary A manhole cover extractor made by Doug Meadows Company).

CAMERAS AND MAPS

In Fairfield, Ohio, sewer maintenance doesn’t stop with systematic manhole rehabilitation or the city’s five-year sewer cleaning cycle. Sewer lines get televised on a 10-year cycle, using one of four cameras, all from CUES.

“We have a pretty good arsenal of TV equipment,” says Drew Young, public utility sewer superintendent. Three of the mainline cameras are pan-and-tilt models, and the city also owns two SeeSnake push cameras from RIDGID for lateral inspection. Sewer crews also conduct regular inspections of the storm sewer system, which are under the public

works department.

Over time, the city has been mapping all manholes, sewer lines and laterals to its GIS database. “That’s always being updated,” says Young. “One of the most critical things in our operation is to have good maps.”

It’s a far cry from “the good old boy days” when veteran crewmembers carried the details in their heads and shared them via sketches on the back of an envelope or napkin. “When we started this, trying to determine what we had in the ground was difficult,” Young recalls.

(continued)

LOOK!



**Remove and Level
Manhole Frames
in Under 1 hour**



(419) 229-3015

www.mrmanhole.com

Now you have a choice! ***Announcing the*** ***3-Stage Turbo Blower*** ***by Dunbar Kappale***

***The Original
Fan Manufacturer***

- ***Turbo fan for sewer cleaning equipment***
- ***NEW coated housing for longer life***
- ***Easy-open ports for inspection and clean out***



www.PatsPump.com
Sales & Repair

Orlando, Florida
800-359-7867
(t) 407-841-7867
(f) 407-648-2096



What's Your Infrastructure Trying to Tell You?

Worldwide, More Users Trust WinCan™ to Understand Their Pipeline Assets.

When you choose underground infrastructure software, you're selecting more than specific capabilities at a given price—you're picking a partner to support and evolve the technology for decades to come. WinCan has been around 15 years—longer than anyone—and we've always been market leader. From small contractors to large cities, more users trust us to deliver responsive support, scalability, and ceaseless innovation.



With **WinCan GIS**, simply drag on a map to create projects prepopulated with section data; add linked map elements from observations; dispatch crews with ease; and much more.



WinCan Value Bundles deliver more functionality for your investment, with savings up to 60% off traditional pricing.



(877) 626-8386 • www.pipelineanalytics.com

WinCan and Pipeline Analytics are trademarks of Pipeline Analytics. ©2011. All rights reserved.

Roughly three-fourths of the manholes designated for repairs are likely candidates for Flex-Seal. The recommendation is up to the inspection crew's judgment. "Any manhole in a street that's got bricks on it gets Flex-Sealed, unless the mortar looks really, really good," Young says. "Clearly, if you see signs of leaking, that's pretty straightforward."

Young's department orders the material in May. Since Fairfield started using Flex-Seal in the late 1990s, about \$25,000 per year has been set aside to buy the product. At about two sealing kits per manhole, sealing costs about \$300 per manhole, plus labor. The annual order is more than enough to meet a yearly demand of 45 to 60 manholes needing the treatment.

Work crews use a custom-made trailer to store the tools and materials for the sealing process. Step one is to sandblast and pressure-wash the inside of the man-hole chimney to make sure it is completely clean for the sealant.

While the surface dries, the crew moves on to a second manhole. "They come back when it's dry and put the primer on it," Young says. "Then they come back the next day and seal it."

A dry surface is important. "If it's not good and dry, you get little bubbles behind it," Young says. Then the seal can fail. To date, that has happened only to one liner the city has installed. "The guys really take time with the prep work," says Young. "That's critical to longevity."

Crews usually complete two manholes a day. Young contends that the procedures Fairfield uses are more painstaking than he's seen outside contractors use, but he believes the result is a more durable seal. "We've found that ours holds up better," he says.

The product's elasticity allows it to expand and contract as the weather changes from cold to hot. "And it's impervious to hydrogen sulfide and salts that may get on



it," Young says. "The high durability of it is probably its best feature."

Sewer and manhole repairs are coordinated with the city's street department to avoid duplication of effort. When a street is desig-

field's success, but there isn't anything magic about it. "You don't let yourself get behind the 8-ball," says Young. "A lot of communities have become reactive instead of proactive."

But when it comes to making repairs, he concludes, "It's always

“We’re not under any findings and orders. We’re in an enviable position. But we’ve been at it a long time. Through aggressive manhole rehab and I&I reduction, we’ve bought back 15,000 people’s worth of capacity that we didn’t have.”

Drew Young

nated for repair or resurfacing, sewer department crewmembers inspect any manholes to see if they need to be fixed or replaced. Before roadwork starts, the sewer work comes first, including replacing castings or installing a seal.

Young points proudly to the rewards of I&I abatement. "Today, we really don't have an inflow and infiltration problem," he says. "We're not under any findings and orders. We're in an enviable position. But we've been at it a long time. Through aggressive manhole rehab and I&I reduction, we've bought back 15,000 people's worth of capacity that we didn't have."

Savings like that have helped contribute to Fairfield's ranking as the city with the second lowest combined sewer and water rates among 68 communities in the region, he says.

And that's where thinking ahead comes in. There's a secret to Fair-

cheaper to do it on your timetable than it is on an emergency timetable.” ♦

CUES, Inc.
800/327-7791
www.cuesinc.com
(See ad page 29)

Doug Meadows Co., LLC
800/588-3684
www.dougmeadows.com

Insituform Technologies, Inc.
800/234-2992
www.insituform.com

RIDGID
800/769-7743
www.ridgid.com

Sealing Systems, Inc.
800/478-2054
www.ssisealingsystems.com
(See ad page 62)

ultra

LIGHT – VERSATILE – SAFE

ultra

SHORE

ultra

PRODUCTS



Thanks
for
visiting us



Quick to Install.
As light as 130lbs.



Roll Your Own.
Optional wheel kit.



Stacks easily with
2' & 4' high panels.

This is What Aluminum Shoring Was Meant to be!



SAFETY CORPORATION OF AMERICA

1-800-SH-ORING

CALL TOLL-FREE NATIONWIDE • 1-800-746-7464

www.shoring.com

1-800-683-8837

GapVax®

888-442-7829



✓ better fuel efficiency ✓ easier to operate ✓ easier to maintain
✓ safer operation ✓ superior design



STAND OUT FROM THE OTHERS

At GapVax, Inc. we CUSTOM-BUILD trucks and equipment to fit YOU! Check out all of the equipment we've been manufacturing since 1989 on our website www.gapvax.com. Watch videos on our YouTube channel, photos and more on our Facebook page too!

Special thanks to all of you who stopped by the Pumper Show and to all of our loyal customers! Thank You!



NOW HIRING SALES REPS - CHECK DETAILS ON OUR WEBSITE OR SEND RESUME TO BETTY@GAPVAX.COM

AIR Systems International

Safety Essentials

Contractor Ventilation Fan Kits

CVF-15ACAN



Contractors Canister Fan Kit includes CVF-8AC Fan and 15 ft duct canister (25 ft duct canister available)



Rugged polyethylene housing and outdoor electrical approval, the new contractor fans are ideal for the most strenuous work sites. Lightweight and economical in cost, the contractor ventilation product line offers a fan for every job, big or small.

Applications

- Confined Space Ventilation
- Electrical Transformer Repair
- Boiler Work
- Utility Companies
- Telecommunications
- Open Trenching
- Construction
- Maintenance
- Manhole Entry



Contractors Ventilation Kit includes CVF-8AC Fan, 6 ft duct with canister and 15 ft duct, Saddle Vent®, 90° elbow, and universal mount (25 ft duct available)

CVF8A15KIT

CSA approved for outdoor use

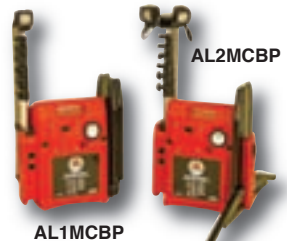
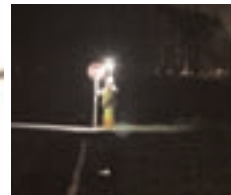
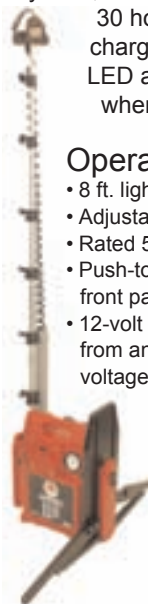
Mini-Cube™ Flagger & Area Lighting

Developed as a lightweight, high output, Portable Flagger & Area Lighting System, the Mini-Cube™ provides over 30 hours of runtime between charges and each 800 Lumen LED allows you to put the light where you need it the most!



Operational Features

- 8 ft. light elevation at full extension
- Adjustable directional lamphead(s)
- Rated 50,000 hours service on LED
- Push-to-test volt meter built in to front panel
- 12-volt power port for quick charge from an external battery source or voltage out to run 12-volt devices



AL1MCBP

AL2MCBP



For more information or to find a distributor: 1-800-866-8100, sales@airsystems.com or www.airsystems.com
The industry leader in breathing air filtration & confined space entry equipment

Sava

SAVA-HIGH PERFORMANCE PIPE PLUGS

SAVATECH CORP - PORT ORANGE - FLORIDA - 888-436-9778 - 386-760-0706
WWW.SAVATECH.COM SAME DAY SHIPPING - WORLDWIDE



MULTI-SIZE
PIPE PLUGS



HEAVY-DUTY KEVLAR
REINFORCED RUBBER



PILLOW
PLUGS
UP TO 108"



BYPASS
PLUGS



64 YEARS OF PROTECTION ...AND COUNTING

REACTAMINE 760 - ELASTOMERIC POLYURETHANE LINING

Ultimate protection of concrete and steel for wastewater service.

- Zero VOC & MOCA free
- Single coat application
- Low temp cure
- Quick return to service
- Available globally

REACTAMINE ET - EXTRA TOUGH POLYUREA

A tough, abrasion resistant elastomer with extremely fast cure times.

- Cures in seconds, quick to service
- Single coat application
- Excellent flexibility
- Zero VOC
- Moisture Tolerant

customer service- 888.227.2654 • technical service- 800.848.4645 • www.carboline.com





Thank you
for visiting us!



Dig it. Adjust it. Seal it.

Introducing PRO CUTTER™, the only manhole cutter offering both a diamond bit and a carbide bit for cutting everything from concrete with embedded rebar to asphalt. Cretex Specialty Products, the company that wrote the book on manhole seals, now brings you the all new PRO CUTTER™, the manhole cutter that's fast, clean and safe, along with the easy to install PRO RING™ grade adjustment rings, internal and external seals and wraps, brush on urethane sealant, grout products, and more.

From beginning to end, Cretex Specialty Products has your manhole needs covered! Contact us today and we'll help you get started!



Cretex Specialty Products (800) 345-3764

E-mail your inquiries to info@cretexseals.com • www.cretexseals.com

SPECIALTY MANHOLE SOLUTIONS FOR EVERY NEED

YOUR SOURCE FOR RIDGID



microEXPLORER™ Digital
Inspection Camera



CS1000
Digital
Recording
Monitor



LT1000 Laptop
Interface System



microDrain Reel



DVDPak

CENTRAL OKLAHOMA
Winnelson
COMPANY

6% ONE YEAR FINANCING AVAILABLE!
Longer lease rates also available. Call Keith for details.

BUYING A SEESNAKE?

**CALL US FOR
GREAT PRICING &
FREE SHIPPING!**

**WE
WILL NOT BE
UNDERSOLD**

- Call Us Evenings and Weekends -
Keith: 405-602-9155 &

Jim: 405-205-3974

CALL TOLL FREE: 888-947-8761

5037 NW 10th
Oklahoma City, OK 73127

www.centralwinnelson.com



TOUGH DAY AT WORK?



Super Products can make your job easier

Whatever challenges you encounter throughout the day, meeting them is easier with Super Products in your corner. In addition to offering the industry's most effective and easy-to-use equipment, the product support and training our experienced, responsive staff provides is second to none. And to help you reduce equipment downtime and keep your crews on the job, we offer an extensive inventory of parts, accessories and consumable items.



Welcome to Super Products

Living up to our name!



800.837.9711 • www.superproductscorp.com

SECURE CONNECTIONS



Maintenance service worker Steven Lynn and maintenance operator Tom Woolery of the liner crew prepare their equipment for a camera inspection. (Photography by Caryl Young)

The City of Salem goes big with in-house grouting as part of a complete program of sewer inspection, maintenance and rehab for I&I control

By *Scottie Dayton*

Wastewater Collection Services in Salem, Ore., has come a long way since its grouting van was a converted horse trailer towed by a pickup truck transporting the camera equipment.

The city's sewers, mostly 4- to 75-inch concrete pipe with some brick and vitrified clay tile, date to 1910. With 65 percent of 785 miles of pipe compromised by grease, roots, defective service lateral connections or structural damage, the 36-member department meets the challenges with an aggressive inspection and maintenance program.

Grouting has been an integral part of the city's inflow and infiltration (I&I) control program since 1971. "Bringing the work in-house instead of hiring contractors saves the taxpayers thousands of dollars a year and enables us to accomplish more even with a

shrinking budget," says Jeff Winchester, supervisor of the TV inspection and grouting section.

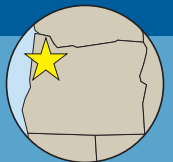
In 2008, the city invested in cured-in-place sectional liners to repair defective pipe in inaccessible easements, and dedicated a four-man crew to the job. Last fall, the men received training on how to install saddle liners to seal broken lateral connections. The department's efforts have reduced SSOs from an average of 50 a year throughout the 1990s to 15 in 2009. Just one of those was storm-related — the rest were due to roots or grease blockages.

Cost evaluations

Salem, built along the Willamette River and floodplain, has a high seasonally perched water table at 5 to 10 feet below the surface. During the wet season, October to April, sewers with bad joints act like dewatering systems. Once

PROFILE: Wastewater Collection Services, Salem, Ore.

INCORPORATED:	1910
SERVICE POPULATION:	227,000
AREA SERVED:	48 square miles
WASTEWATER FLOW:	34.6 mgd
EMPLOYEES:	55
INFRASTRUCTURE:	785 miles of sanitary sewers; 29 lift stations; 17,300 manholes
ANNUAL BUDGET:	\$6.5 million
WEBSITE:	www.cityofsalem.net





Maintenance operator Shawn Bernards, left, and sewer instrument technician Ric Hines prepare to lower the Logiball 2001JS mainline grout packer into a manhole.

the water table drops, exfiltration occurs through the openings.

Wastewater Collection Services has 10 workers in the TV inspection section, another 10 in hydro-cleaning, 10 in repairs, and six in technical support. Repair crews excavate and replace pipe or do sectional and saddle CIPP rehabilitation. Technical support handles paperwork, manages the map work and asset management database from Hansen Information Tech-

“Bringing the work in-house instead of hiring contractors saves the taxpayers thousands of dollars a year and enables us to accomplish more even with a shrinking budget.”

Jeff Winchester

nologies (Infor Public Sector), and generates work orders.

In 2007/08, Jerry Smith, a sewer maintenance technician in the TV inspection section, conducted an asset study to determine the remaining extent of I&I and the cost of repairs. The study identified defects in 11,475 joints; 9,198 lateral connections; and 1,803 manholes. Smith compiled his findings in a PowerPoint presentation for city officials.

“The numbers were eye-popping, even when Jerry used the lowest amounts,” says Winchester. “For example, 3,300 joints leaking one gallon per minute equals 1.74 billion gallons per year. Our esti-

mated treatment cost for that is 7 cents per 100 gallons, or \$1.2 million per year.”

While gathering data, Smith discovered that I&I defects had been historically under-reported because inspectors had counted consecutive similar defects as one. “The old reports read, ‘I&I medium (1 to 5 gpm) 5 to 110 feet,’ instead of recording 21 leaking joints in that section,” says Winchester.

Savings add up

Grouting, at \$5.04 per foot, proved the most economical solution because the barrels of concrete pipes were usually in stable condition. “Half the grouting cost is labor and equipment, and the other half is the injection chemical,” says Winchester. From 2007 to 2010, the city grouted 17,913 feet, 11,876 feet, 3,800 feet, and 10,700 feet for a cost of \$19,152 to \$90,282. Winchester projects 18,000 feet for 2011.

To understand the savings, Winchester cites a case when the city hired a contractor in 2007 to air-test 87 joints in 760 feet of 36-inch concrete pipe. The contractor found 22 defective joints and used 220 gallons of grout to seal them.

“It took him two days and cost us \$50,000,” says Winchester. “We could have done the same project for \$4,375, but we didn’t have a

Ric Hines at the control panel of the city’s TV/grout truck from Aries Industries.



SEEING FOR THEMSELVES

The TV inspection-grouting crews of Wastewater Collection Services in Salem, Ore., understand the importance of public relations and keeping the public aware of what they are doing.

That often begins when inspection technicians see roots coming from a lateral. To verify the house to which the lateral belongs, they ask homeowners to flush a dye tablet down the toilet. “Residents often don’t have a clue that they have a problem,” says supervisor Jeff Winchester. “They haven’t had a backup, and their sinks and showers aren’t gurgling, so they tend to be skeptical.”

The technician’s solution is to invite homeowners into the van to watch the live inspection. “There is no faster way to help them comprehend the extent of the problem,” says Winchester. “My people are very good at taking care of customer situations right in the field.”

36-inch packer at the time. Based on those figures, if the city were to contract for the testing and sealing of 51,000 feet of 36-inch pipe, it would cost \$3.4 million. Our people can do the same amount of work for just under \$300,000.”

That episode convinced the city to spend \$30,000 on more grout packers from Logiball. From 2005 to 2007, it purchased 10 units for pipes from 8 to 36 inches. To grout a defect, a winch pulls the packer and camera downstream. Guided by the camera, the technician positions the packer at a

joint, then inflates the ends to seal them against the pipe wall.

Separate hoses deliver the two-part AV100 chemical grout from Avanti International to the packer. Once injected, the grout fills the annular space around the packer, flows out the defective joint into the soil, and gels to form the seal.

This year, the city bought a lateral launcher from Logiball. The unit cleans 4- to 6-inch laterals as far as 50 feet from the connection. A motor, winched in tandem with the camera, rotates the launcher’s guiding arm and sewer nozzle.

When the water pump is turned on, back jets propel the hose into the lateral for cleaning and removing roots, grease and other buildups.

Building the fleet

In 1978, the city purchased a TV/grout step van, mainline packer, reinstatement tool, and Avanti grout from CUES Inc. In 2008, the city added four TV box-on-chassis trucks and one grouting van.

Inspection equipment includes color zoom-pan-tilt cameras with wheeled and tracked transporters and Seeker portable push cameras from Aries Industries. Two transporters have LETS lateral evaluation systems with PE3600 pan-and-tilt push cameras, also from Aries.

A main concern for Winchester is the potential for cave-ins when sections of sewer fail. "Salem experiences a lot of sinkholes that are always about to collapse the street," he says. "When dispatch reports one, we respond within an hour."

One of the worst sinkholes formed a 2-inch-deep depression

Winchester. "That project was especially difficult because of the depth, location, and working at night to avoid disrupting traffic or compromising public safety."

The city learned early on that successful grouting needs a technician who knows how to apply grout. That man is Ric Hines, a sewer instrument technician with 27 years of grouting experience. Hines, with an assistant to ensure his safety, worked manhole to manhole for three nights. He air-tested 176 joints and sealed 175 using a Logiball mainline packer and 616 gallons of Avanti grout. The job cost \$7,000.

"We looked at all repair options," says Winchester. "Hiring a grouting contractor averaged \$30,000, rehabilitating the section with CIPP pipe averaged \$80,000, and replacing the pipe averaged \$400,000. It was a very demanding job, and I'm really proud of Ric and his crew. He's a take-charge individual and a huge asset to our department."

Another demanding job at which Hines excels is sealing joints in 2-foot lengths of 8-inch concrete pipe. "It's touchy work and almost impossible to see the next joint without a pan-and-tilt camera," says Winchester.

"Setting up the packer requires an operator with finesse and a steady hand. Ric has both. A city is wise to search for an experienced

"A city is wise to search for an experienced technician, because the money he will save taxpayers will more than cover his salary."

Jeff Winchester



Maintenance operators make adjustments to the Aries pan-and-tilt camera.

in the center of a major downtown intersection. The street department filled the hole with cold mix, then a dye test confirmed the damaged line to be an 18-inch concrete pipe buried 14 feet deep. "We decided to air-test and seal the entire 440 feet of sewer," says

technician, because the money he will save taxpayers will more than cover his salary."

Sustaining flows

Salem's I&I program includes inspecting and cleaning problem clay and concrete lines every three



From left, sewer instrument technician Ric Hines, maintenance operator Shawn Bernards, and TV inspection/grouting supervisor Jeff Winchester.

years and PVC lines every five years. Crews smoke test 150,000 feet of pipe per year and dye test 80 locations. The city has 36 permanent flow-monitoring stations and 20 to 40 temporary sites during the wet season.

In winter, a dedicated two-man crew inspects 1,500 manholes to check the amount of infiltration and stay ahead of structural failure. Crews take two approaches to rehabilitating manholes.

"Grouting a structure costs \$542, and we do about 100 per year," says Winchester. Crews also pressure-wash manholes and grout active leaks before a contractor coats them with Parsonpoxy SEL-80 epoxy from Parson Environmental.

Keeping lines open is another challenge. When an inspection crew finds a buildup of roots, a call goes out and one of five hydro-cleaning crews responds immediately. After using a root cutter

with a spiral saw blade to clear the heaviest blockage, they remove the blade and attach a set of 1/2-inch cable brushes to remove the remaining buildup without harming the walls.

A contractor treats 100,000 feet of pipe per year with Sanafoam herbicide from Vaporooter. "We spot-check the results six months later," says Winchester. "If the kill is good, we wait a few years before treating the line again."

Attacking grease

Grease from residential laterals is the prime reason for FOG buildup on sewer main walls. A call from an inspection team brings a hydrocleaning crew on the double. They use trucks from Aquatech (a division of Hi-Vac Corporation), Super Products (Camel), and Vac-Con carrying tools from O'Brien Mfg. (a division of Hi-Vac Corporation), Shamrock Pipe Tools



Flow monitoring technician Archie Richardson prepares to enter a manhole to do urethane grouting. Maintenance operators Jay Smith, left, and Randy Tadlock assist.

Inc. and USB – Sewer Equipment Corp. Tools include root cutters, saw blades, brushes and chain flails.

A major concern for Winchester was grease accumulating in easement lines with no access. “We had to think of something as we couldn’t find an answer anywhere,” he says. “Scott Branch, the lift station supervisor, said that he used Flow-Mate (Certified Laboratories) to cut grease in the wet wells. We tried it on two lines in 2009 and it worked great.”

A technician punches a small hole in the two-gallon jug and suspends it in a manhole. The product, dripping into the flow line, dissolves grease downstream.

The need to reach leaks beyond the limit of 500-foot grout hoses led the city to invest in the Performance Liner sectional process for point repairs of radial cracks and fractured pipes, and the T-liner system for repairing broken connections at the main. Both products are from LMK Technologies. A dedicated four-man crew works manhole to manhole with the liner trailer and a CUES camera van.

Winchester finds it gratifying to see how well the crews work together. “They accomplish a lot in a safe, productive manner,” he says. “They are the city’s front line, the people who make things happen.” ♦

NOBODY DEALS YOU A BETTER HAND ON FELT.



When you combine our high-performance cured-in-place pipe (CIPP) liners with our world-class customer service, you have what it takes to go all in. A global leader with unrivaled 24/7 technical support, Applied Felts provides industry expertise, guidance in the field, and custom CIPP liners designed to your unique specifications—wherever in the world your installation may be. Play to win with Applied Felts, the industry’s leading independent manufacturer of quality CIPP liners. Visit appliedfelts.com for more info.



ISO 9001:2008
FM 56735
FM 35725

MORE INFO:

Aries Industries, Inc.
800/234-7205
www.ariesindustries.com
(See ad page 7)

Logiball, Inc.
800/246-5988
www.logiball.com
(See ad page 26)

Avanti International
800/877-2570
www.avantigrout.com
(See ad page 24)

Parson Environmental Products, Inc.
800/356-9023
www.parsonenvironmental.com

Certified Laboratories
800/527-9929
www.certifiedlabs.com

Shamrock Pipe Tools, Inc.
800/633-7696
www.shamrocktools.com
(See ad page 60)

CUES, Inc.
800/327-7791
www.cuesinc.com
(See ad page 29)

Super Products, LLC
800/837-9711
www.superproductscorp.com
(See ad page 19)

Hi-Vac Corporation
800/752-2400
www.hi-vac.com
(See ad page 25)

USB – Sewer Equipment Corporation
866/408-2814
www.usbsec.com
(See ad page 26)

**Infor Public Sector/
Hansen Technologies**
800/821-9316
www.infor.com

Vac-Con, Inc.
904/284-4200
www.vac-con.com
(See ad page 68)

LMK Technologies
815/433-1275
www.performanceliner.com
(See ad page 67)

Vaporooter
800/841-1444
www.vaporooter.com



AVANTI

AvantiGrout stops leaks. Permanently.

*The most cost-effective way
to seal laterals, mainlines, and manholes.*

Lateral Grouting with Liner Installed



Leaking lateral



Liner installed



Continues to leak in annular space



Water infiltration at lateral



Lateral packer injecting grout



Grout collar stops infiltration

Manhole Grouting



Leaking manhole



Curtain grouting with wand



Grout curtain stops infiltration

Mainline Grouting



Leaking joint in mainline sewer



Chemical grout injected into soil



Grout collar stops infiltration

www.AvantiGrout.com

800.877.2570 // sales@avantigrout.com

MUNICIPAL SALES

A Root and Grease Control Company

www.municipalsales.net



Professional
Chemical Root
Control Services



Thanks for
visiting us

518.747.2044

fax: 518.747.5490

mark@municipalsales.net

STREET & SEWER PARTS SUPERSTORE

PURCHASE YOUR SEWER PARTS ONLINE:

- ◆ Sewer Nozzles
- ◆ Sewer Hose
- ◆ Vacuum Pipe & Hose
- ◆ Quick Clamps
- ◆ Sectional & Continuous Rod
- ◆ Couplings & Valves
- ◆ Root Saws
- ◆ Root Cutters
- ◆ Tools For Manual Rod
- ◆ Lighting Packages
- ◆ Rear Vision Camera Systems
- ◆ Sewer Dye Tablets & Smoke Bombs
- ◆ Rental Equipment
- ◆ Used Equipment

YOUR ONLINE PARTS STORE!

www.StreetAndSewer.com

1.251.285.SHOP (7467) • sales@streetandsewer.com

How Do You Define The **Complete** package?



AQUATECH

Combination Jet/Vac Systems

Your complete satisfaction is our mission every day.

If you define "The Complete Package" just like we do, learn more about the Hi-Vac line of products specifically designed for the Municipal market at www.hi-vac.com/municipalities.html



O'BRIEN



X-VAC

- ✓ Complete line of combination sewer cleaning equipment
- ✓ Lowest operational cost in the industry
- ✓ Over 40 years of experience serving the municipal and contractor markets
- ✓ World-class brands designed and engineered by experts
- ✓ Leaders in safety and ergonomic design
- ✓ A knowledgeable sales team that really understands the product
- ✓ Expert OEM-technical support after the sale
- ✓ Manufacturing plants on three continents—sales and support worldwide
- ✓ A financing division ready to help

That's how we define The Complete Package.
800.752.2400 740.374.2306
sales@hi-vac.com

HI-VAC

CORPORATION

ENVIRONMENTAL PRODUCTS FOR A CLEANER WORLD

Collection System Maintenance & Rehabilitation Equipment

Proven Infiltration Control With Chemical Grouting

Lateral connections and lines can be tested & sealed from the mainline access with the Logiball Lateral Test & Seal Packers (6"-24" mains with 4"-6" laterals), in relined or non relined pipes. Conforms with ASTM F 2454-05

Logiball Multisize Plugs, flow thru, testing & blocking, manhole bypass, bypass pumping etc.



Laterals coming into manholes or man entry pipes can be sealed with the Logiball Man Entry Lateral Packers (4"-6")



Logiball Multi Size Sleeve Installers for your CIP point repairs (4"-36").



Logiball Lateral Cleaning Launchers to clean lateral lines from the mainline sewer, NOW available for 6" mainline pipe.



Mainline joints can be tested & sealed with the Logiball Test & Seal Mainline Packers (6"-144" pipe). Packers available for box culverts & elliptical pipes. Conforms with ASTM F 2304-03



Lateral lines can be tested & sealed from an above ground access with the Logiball Flexible Push Type Packers (4"-6")



Logiball™

Tel: 1-800-246-5988 Tel: 1-418-656-9767
Fax: 1-418-653-5746 www.logiball.com



USB - SEC

High Quality SEWER CLEANING EQUIPMENT

Your JETTER comes to LIFE with our UNRIVALED EQUIPMENT!



When cleaning efficiency and performance matters, USB-SEC offers the best sewer cleaning nozzles on the market!

The Dredger nozzles use Advanced Optimized 3D Hydro Mechanics™ to convert the water coming from a pressurized sewer hose into unrivalled cleaning power. The nozzle is constructed of stainless steel and has rollover bars to allow the nozzle to upright itself in the line. The Dredger nozzle is available with 6, 8, 10, or 14 threaded one piece ceramic nozzle inserts which carry a warranty for 3 years.

This nozzle is designed for use in large sewer or storm-water lines while reducing water consumption and operating costs. It can also be operated with recycled water.



USB - SEC

USB-Sewer Equipment Corporation

1700 Enterprise Way • Suite 116 • Marietta, GA 30067

TOLL FREE 866-408-2814

PHONE 770-984-8880 • FAX 770-984-2802

EMAIL info@usbsec.com • WEB www.usbsec.com



Indy 2012

Education Day: MONDAY, FEBRUARY 27, 2012

Exhibits Open: TUESDAY, FEBRUARY 28-THURSDAY, MARCH 1, 2012

INDIANA CONVENTION CENTER
INDIANAPOLIS, INDIANA

Scan this tag for more information



Get the free mobile app at
<http://gettag.mobi>

visitindy.com/pumpershow



THE *conductor* SINGLE SOLUTION

New OmniEye 360

Increase production distances and defect identification accuracy with our **NEW panomorph technology**

Simultaneously view live forward and unwrapped video footage. Precise, automatic measurement and distance recognition. Simplified inspection process—crews only need to clean the line and then run a continuous inspection. Post processing can be accomplished in the field or office.

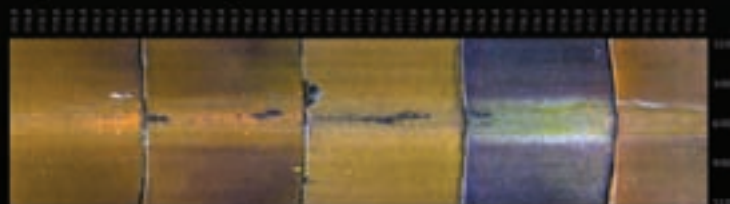
compatible with existing RST portable and mainline inspection systems and can be modified for use with most multi-conductor systems.

Quick Specs: 6 inch and larger Lines
up to 2500 feet in length
capture 30 to 70 feet p/minute

Call today for more information about the OmniEye 360 and our complete line of single conductor inspection solutions.



POWERED BY
PSM panomorph



RS Technical Services Inc.
Design and Manufacture of Video Pipeline Inspection Systems

800 767 1974
WWW.RSTECHSERV.COM

GET MORE. DO MORE. RST.

One Complete Package

mswmag.com

promonthly.com

cleaner.com

pumper.com

tpomag.com

onsiteinstaller.com

pumpershow.com

pumpertrader.com

gomcmag.com

septicyellowpages.com

sewerpages.com

COLEPUBLISHING **1.800.257.7222 | 715.546.3346**

FOCUS: SEWER

SEALING THE DEAL

A court-ordered I&I control program in the City of Milwaukee includes a regular program on manhole inspection and repair that pays many dividends

By Erik Gunn

In 2004, multiple storms in Milwaukee caused a series of overflows that sent untreated sewage into waterways that empty into Lake Michigan. While the area sewerage district's "deep tunnel" inline storage system helped keep the number of overflows down, it was impossible to eliminate them.



A tool is used to tighten the steel bands on the chimney seal.

Inflow and infiltration of stormwater runoff into the sanitary sewer was a big contributor to the problem. In response, the 28 communities that comprise the Milwaukee Metropolitan Sewerage District (MMSD) are looking at ways to curtail I&I.

For the district's biggest member, the City of Milwaukee, manholes have been a big area of focus. As part of a legal settlement reached in 2005 between the Wisconsin Department of Justice and the 28 MMSD municipalities, Milwaukee has launched a citywide program to inspect and repair its 22,824 manholes.

Inspecting about 20 percent of its inventory every year for the past five, the city has looked closely at all those manholes. This year the city will make repairs on the final 20 percent of manholes, while also beginning a new five-year-round of inspections.

It's a project that brings a certain satisfaction, says Timothy Thur, chief sewer design manager for the city. A solid manhole inspection and repair program "is a good cost-benefit project," he says. "It's clear up front that we can do the work — it's in the public right-of-



City crew members Wayne Zwicker (left) and Brandon Ottson prepare to install a second set of compression bands on a manhole chimney seal from Cretex Specialty Products. (Photography by Erik Gunn)

way, it's relatively straightforward, and you can remove a lot of I&I by doing that. It's low-hanging fruit."

Facing the elements

Manhole rehabilitation has long been a part of the city's public works agenda, encouraged by sewerage district mandates to reduce stormwater in the sanitary sewer system. Programs have gone as far back as the 1970s and 1980s. In those years, dye and smoke testing found manhole chimney defects that required repairs.

As a snowbelt city, Milwaukee endures annual freezing and thawing, and so do its manholes. The expansion and contraction of bricks and concrete can crack the manhole chimneys and shift the positions of the iron manhole frames.

"This section of the manhole is usually constructed with brick or concrete rings that are a couple of inches thick and have mortar joints between the layers," says Kurt Sprangers, a city engineer who works on the manhole inspec-

PROFILE:

City of Milwaukee (Wis.) Department of Public Works

POPULATION SERVED:
602,000

SERVICE AREA:
96 square miles

INFRASTRUCTURE:
2,446 miles of sewer mains
(940 sanitary, 961 storm, 547 combined); 22,824 manholes

ANNUAL BUDGET:
\$73.8 million (sewer maintenance, capital and operating)

WEBSITE:
www.city.milwaukee.gov

tion and repair program. "Therefore you have several joints between the brick or rings located in the freeze/thaw zone that could potentially deteriorate and become an opportunity for clear water to enter the sanitary system."

Because of that, starting about two decades ago, the city began requiring the installation of internal chimney seals on manholes.

(continued)

chempace[®] corporation

www.chempace.com

One-Stop-Solutions For MUNICIPALITIES!

CONTINUOUS TREATMENT!

bioFORCE LIFT STATION BLOCK

\$40 EA
(4 Per Case)

Provides continuous bacterial treatment, controls odors & reduces grease accumulation



SEWER FOAM
\$50.00 (Per Pail)

Dual-action, foaming cleaner with long-lasting bacterial treatment. Eliminates sewer line solids & hydrogen sulfide odors!

ECONOMICAL SEWER MAINTENANCE!



FR2 DEODORANT PAIL
\$55.00

Activated charcoal "draws" in malodors and neutralizes them anywhere
REPLACES PARABLOCKS!



Thank you for visiting us!

BUY DIRECT! CALL 800-423-5350



Lumberjack[®]



Jaws[®]
10-Year Limited Warranty



Paikert[™]



Orca[™]



Spinner[™]



Hammerhead[™]
5-Year Limited Warranty



C-Ray[™] 800



BL Swiper[™]



IceBear[™]



NozzTeq[®]

Taking Science to the Sewer![®]



C-Ray[™] 400

Equipment Engineered for Long Lasting Performance.[™]

Rental and Leasing Services Available!
Call For FREE DVD

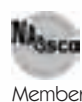


Check out our online store at
colemart cole-mart.com/nozzteq

www.nozzteq.com

Phone: **1.866.620.5915**

Fax: 603.413.6744



Member

"The Standard of the Industry"



IT'S ALL IN ONE PLACE.

**QUALITY, SERVICE,
AND THE BROADEST PRODUCT LINE.**

- rugged, reliable equipment means a lasting R.O.I.
- cameras, transporters, and data decision support software to satisfy all condition assessment needs
- depth of resources; more regional sales managers & dealers throughout the world to better serve you
- unparalleled software functionality
- custom truck, van, ATV, and trailer configurations are available
- exceptional performance
- superior customer service & parts turn-around



Custom Truck,
Van, ATV, &
Trailer-mounted
Systems are
available!



**LATERAL &
MAINLINE INSPECTION**

**PORTABLE
SYSTEMS**



**CAMERAS &
TRANSPORTERS**



**CUSTOM
REPORT CREATION**

MADE IN AMERICA



www.cuesinc.com

800.327.7791



John Fuller, operating a backhoe, removes the frame and chimney rubble from the manhole area.



Timothy Thur



Kurt Sprangers

Products, based in nearby Waukesha, and NPC Inc., now Trelleborg Pipe Seals Milford, in Milford, N.H.

Legal resolution

“We’ve been installing chimney seals on any new manhole installations or when replacing existing sewers,” says Thur.

The seals consist of rubber sleeves held in place by stainless steel expansion bands and cover the seam or seams between the manhole frame and the masonry rings and manhole chimney.

Installation and replacement can be completed in just a few minutes. After releasing the expansion bands on an old seal and using a tool such as a crowbar to pry off the rubber, workers then apply quick-set patching mortar if needed to smooth out the interior of the chimney where the seal will go. The new rubber seal is positioned against the manhole frame and the chimney area and then held in place with the two or more expansion bands, which can be tightened with a hydraulic or manually operated tool.

“We prefer internal seals so that they can be inspected, and removed or replaced as needed,” Sprangers says. Replacing external seals requires excavation around the manhole chimney.

The city’s principal chimney seal suppliers are Cretex Specialty

The current round of inspection and repairs grew out of a court settlement with the state after the 2004 overflows. The litigation arose from alleged violations of permits issued by the state Department of Natural Resources. The 2005 settlement of that suit between the state and the 28 communities in MMSD required a manhole inspection program, followed by repairs within 18 months of the inspection.

The lawsuit and the resulting inspection program apply only to the city’s separate sanitary sewer system, not to the combined sewers that serve about 36 percent of the city’s wastewater collection needs, primarily in older parts of the city.

With nearly 23,000 manholes, “There was no way to do it in one year, especially from a budget standpoint,” Thur says. Instead the staff divided the city into five sectors from north to south and inspected 4,000 to 5,000 manholes a year starting in 2006. The year after inspection in each sector, crews followed up with rehabilitation as needed.

Milwaukee contracts with private firms to inspect and repair manholes. For the inspection, two-

member crews go out with system maps to each assigned manhole. “They take a couple of pictures of the manhole from the surface with

“It’s clear up front that we can do the work — it’s in the public right-of-way, it’s relatively straightforward, and you can remove a lot of I&I by doing that. It’s low-hanging fruit.”

Timothy Thur

the lid closed, so you can see pavement cracks around it,” Sprangers says. “Then they take pictures of the interior of the manhole from the surface — from street grade.”

As the contractors inspect the site, they enter data into laptop computers loaded with the city’s own database. “They fill out about 40 pieces of information about each manhole,” Sprangers says. Questions cover everything from the condition of the manhole lid and frames to the need, if any, for substantial repairs.

INSPECTION WITH A MOUSE

To help make inspections run more smoothly and consistently, the City of Milwaukee has gone digital. The city uses a database built in Microsoft Access to compile the information inspectors collect on each manhole, explains Kurt Sprangers, an engineer with the Department of Public Works who oversees the manhole inspection and repair program.

“In the last three years or so, we decided we didn’t even want the paper copies of the survey from the inspection contractors,” Sprangers says. “We only work with the database version. The inspectors enter it directly into a laptop, and that information gets fed back to us at the end of the contract.”

Owning Access is a condition that qualifies bidders on inspection contracts. The city then provides the contractor with a blank template and database of the list of manholes and their precise locations, derived from the city’s GIS.

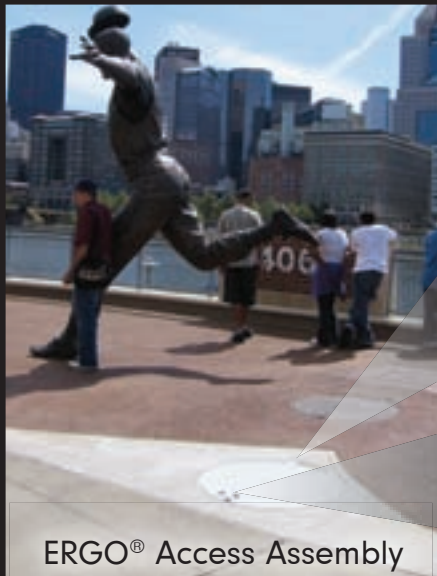
The program is designed to set up a cascading list of decisions and specifications as appropriate. For instance, an inspector who determines that a chimney needs replacing takes note of the needed materials (two feet of brickwork, say), and flags the need to remove the frame while the work proceeds and to install new chimney seals.

“It builds upon what previous work has already been determined is needed,” Sprangers says. “So when we have our final quantities of materials for the manhole, it lists all the work that needs to be done for that specific manhole based on the answers.”

The database makes it easy to double-check inspection accuracy. It also means faster assembly of the rehabilitation contract, says Timothy Thur, chief sewer design manager. “It automates the whole process,” Thur says, “so that we can take the 4,500 manholes we inspected in a year and put together the list of work in a day or two, versus weeks at a time.”

(continued)

Innovative Access Solutions.



ERGO® Access Assembly



Customized



Ergonomic



Security



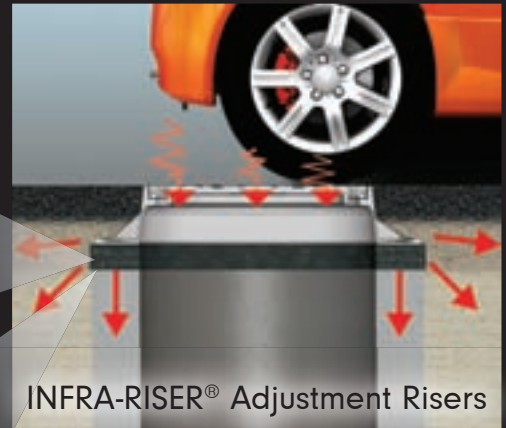
92% Recycled



Eliminates Infiltration



Absorbs Vibrations



INFRA-RISER® Adjustment Risers

EJIW EAST JORDAN
IRON WORKS EST.1883

800.626.4653 | www.ejiw.com | MADE IN THE USA

Surveys...not just for mainlines anymore

Mainlines , Laterals and Manholes

PIPELOGIX® handles all of your survey needs efficiently and with ease. Collect, analyze and share data about all your infrastructure assets—mainlines, storm drains, laterals and manholes with NASSCO PACP, LACP and MACP certified software that is backed by the industry's best support program.

Call today to schedule your online demonstration of our innovative tools for inspection professionals.

866.299.3150 | www.pipelogix.com
info@pipelogix.com



"They inspect the condition of the existing seal, if there is one, or notify us if there is no seal," Sprangers says. Inspectors look for damaged brickwork and concrete in manhole chimneys and for other I&I indicators, such as calcium buildup or water stains.

The inspection proceeds down the barrel of the manhole to the flow line and the bench. Inspectors record measurements including the depth of the manhole and the chimney diameter.

Up to now, the city has not included pole camera or other specialty sewer camera work in its manhole inspections — only standard digital cameras. Those became the standard in the 1990s as the city made its manhole inspection process more detailed and standardized. The pictures have helped ensure accuracy in the inspection reports.

Three out of four

In the past three years, roughly three of every four manholes inspected have required at least some repairs. "A lot of times it's very minor — just replacing a manhole cover with a cover that has a solid lid — no venting holes of any kind," Sprangers says. Solid covers, instead of those with vents

More troubling, though, was the number of manholes for which the tops had become misaligned with the rest of the barrel by as much as six inches to a foot, often from repaving mishaps. Inspections found as many as 100 to 150 such cases per year.

"A lot of manholes did require digging up and fixing that top foot of chimney and frame," Thur says. "That surprised me. The whole frame shifts over so it creates gaps where water can get in." The shifts also make it more difficult for workers to enter manholes. Frost heave, meanwhile, creates mostly vertical dislocation.

Making it better

As work has progressed, technology has changed. For instance, chimney seals were once just 6 to 8 inches deep and had to be stacked one atop another to stop leaks that went deeper down the manhole barrel. Today, seals are available in a wide range of sizes, to as deep as 24 inches if needed.

The city has also changed how it writes its repair contracts. "We learned early on that we had to limit how many manholes could be worked on at any one given time," says Thur.

The city also sets strict time limits for completion. "We had



Mason Ryan Vandergalien applies mortar inside the rebuilt manhole chimney. (Photo by David Hoel)

a timely manner."

City staffers continually evaluate the program and tweak it as necessary based on consultations with inspection and rehabilitation contractors, and on feedback from the city's own inspectors. "Each year it's gotten to be an easier project, because of that continuing evaluation and improvement," Thur says.

Thur's office, the environmental engineering section, also stays in regular touch with the transportation group in charge of street repairs to coordinate manhole and other sewer repairs with street work as much as possible.

A job worth doing

The inspection program started out at an annual cost of nearly \$200,000, but that has dropped to about \$125,000 a year. For repair contracts, the city has budgeted \$2.5 million a year for each of the past four years. Thur thinks that figure will drop when the city returns to re-inspect areas already inspected and repaired previously.

The biggest challenge is probably the sheer size of the program. That translates to a huge volume of data for each manhole. "Trying to keep track of all that gets a little challenging," Thur says. But the project has its rewards.

"You'd come across sites where you could see a sanitary manhole in a depression with a hole in the lid or something like that," says Sprangers. "That was a situation where you knew water was getting in, and now you're out there actively resolving that issue. It was some-



An example of deterioration in a manhole needing rehabilitation.

thing that was visibly fixable."

While Milwaukee's manhole inspection program was imposed by the court, Thur is "absolutely" glad to have undertaken it. While he can't yet point to hard numbers to quantify the benefits, he knows they exist. "The city has experienced a number of large storms the last few years," he says. "We're seeing an awful lot of homes that get backwater as a result of it."

"When it's happening to a homeowner two or three years in a row, it's very frustrating, for them and for us. This is something that we can do. It's not going to solve all the problems, but it certainly eliminates some sources of the problem."

Manhole inspection and repair also has benefits beyond I&I reduction. "It helps the street itself," Thur says. "It helps prevent potential liabilities, such as when a cover sinks in, cars drive over it, and the city gets claims for car damage. It just made good sense to do it." ♦

"They take a couple of pictures of the manhole from the surface with the lid closed, so you can see pavement cracks around it. Then they take pictures of the interior of the manhole from the surface — from street grade."

Kurt Sprangers

for sewer gas, have become the city's standard.

"In our system there's enough movement of the water, there's enough pitch in the sewers, that we don't see a buildup of sewer gases," Sprangers says. Besides solid covers, the MMSD requires the city to put rubber gaskets under each manhole lid.

Some repairs demand a lot more than a new lid — perhaps new chimney seals or even partial or complete rebuilding of the chimney. Thur says the most reassuring finding from the inspection program has been how few manholes had to be completely replaced. "Every year we might have done 10 to 15 replacements for the whole manhole," he says.

neighborhoods where they had 100 manholes open and streets cut up around the manholes," says Thur. "They were sitting for too long a time, and residents were getting very frustrated."

Now, contractors are required to do the jobs in smaller batches, perhaps 20 at a time, and to complete them faster. The city also has tightened specifications for how much pavement contractors should remove around a manhole. "We sit down with the city construction inspectors annually and discuss what's working and not working on our contracts," says Thur. "Then we try to modify it to make the work go smoothly, have less impact on the residents, and make it easier for the work to get done in

MORE INFO:

Cretex Specialty Products
800/345-3764
www.cretexseals.com
(See ad page 18)

Trelleborg Pipe Seals Milford
800/626-2180
www.trelleborg.com/npc

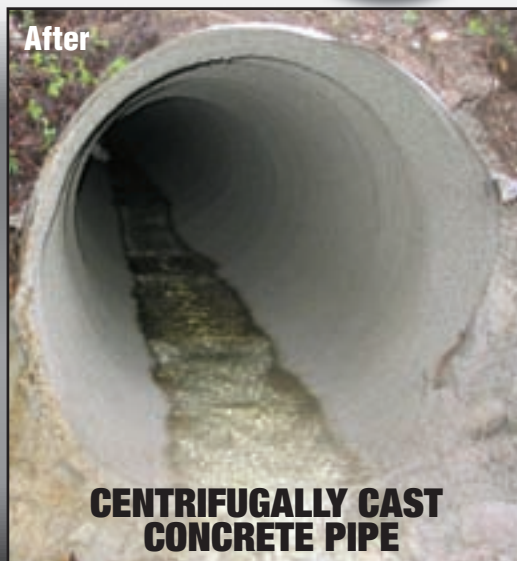
Thank you
for visiting us at
The Pumper Show

CENTRIPIPE™

REPLACE FAILING CULVERTS BEFORE THEY COLLAPSE

- Fully Structural
- Centrifugally Spun Cast
- High Strength Concrete
- No Dig
- Cost Effective

See how it works at
www.centripipe.com



**CENTRIFUGALLY CAST
CONCRETE PIPE**



AP/M PERMAFORM
the trenchless solutions company



800-662-6465

Now looking for Applicators in U.S. and Canada



Pipeline Cleaning & Maintenance Equipment



Thanks for
visiting us

JETTERS & JET VACS

Penetrators

1/4"-15°	\$24.00
3/8"-15°	\$33.00
1/2"-25°	\$46.00
1/2"-25°LT	\$49.00
3/4"-12°	\$55.00
3/4"-12°LT	\$65.00
1"-12°	\$69.00
1"-12°LT	\$81.00

Aluminum Sand

3/4"-24°	\$139.00
1"-17°/24°	\$153.00
1"-24°	\$139.00

Swivel Joints

T-M® Style	
90° or Straight, 6000 psi	
3/4" & 1"	\$188.00
1-1/4"	\$199.00
1-1/2"	\$495.00
2"	\$570.00

Aluminum Grease

3/4" or 1"-17° ..\$122.00

Truder

1"\$345.00

Shark

1"\$480.00

1" Big Shark ...\$595.00

Stainless Steel Nozzles

1/8"	\$30.00
1/4"	\$33.00
3/8"	\$39.00
1/2"	\$54.00
3/4"	\$59.00
1"	\$105.00

Ball Valves

Dyna Quip® Style	
3000 psi	
1"	\$227.00
1-1/4"	\$243.00

Radial Bullet

3/4"-18° or 35°	\$50.00
3/4"-18°/24°	\$53.00
1"-18° or 30°	\$66.00
1"-15° or 30°	\$68.00
1-1/4"-18 or 35°	\$85.00

Steel Sand

1"-12°\$70.00

NEW Storm/Culvert Floor Cleaner Nozzles

Parker & Piranha Jetter Hose

1/8"-1-1/4"

Saw Blades

NEW Chain Root Cutters
4"-48", All Stainless Steel, No Lubrication



Root Cutter Assemblies

Skid Mounted	
w/flat blades	\$888.00
w/concave blades	\$930.00
w/spiral blades	\$930.00
Donut Mounted	
w/flat blades	\$867.00
w/concave blades	\$909.00
w/spiral blades	\$909.00
Lateral Mounted	
w/flat blades	\$850.00
w/concave blades	\$920.00
Assemblies come with one ea. of 6, 8, 10 and 12" blades, saw blades, hub, skids, etc.	

Sewer Hose Guides

TigerTail™ Style	
3" x 36"	\$40.00
2" x 36"	\$34.00
with 24' rope	



Clamps

Power Clamps	
8"	\$13.00
3"-6" available	
King Clamps	
8"	\$29.75
4"-6" available	
Bandlock® Clamps	
8"	\$24.00
3"-6" available	
Quick Clamps	
8"	\$26.50
3"-6" available	



Hycon® Valves

2 & 3-way Ball Valves

5000 psi	
1/2" 2-way	\$65.00
3/4" 2-way	\$89.00
1" 2-way	\$119.00
1-1/4" 2-way	\$226.00

4500 psi	
3/8" 3-way	\$115.00
1/2" 3-way	\$160.00
3/4" 3-way	\$180.00
1" 3-way	\$190.00
1-1/4" 3-way	\$440.00



HD Washdown Gun

25 gpm @ 850 psi
1/2" Inlet\$155.00

Pipe/Sewer Plugs • Hose Reels • Aluminum Intake Tubes
Kanaflex™/Rubber Debris Hose • Full Line Of Warthog Nozzles



SARASOTA, FLORIDA • PHONE: 941-739-0707 • FAX: 941-739-0001

Toll Free: 800-365-6583
www.cloverleafatool.com

Full Catalog Online with Prices



MANY OTHER STYLES, SHAPES & SIZES AVAILABLE

CALL FOR OUR COMPLETE CATALOG WITH PRICES



The UV light train cures a segment of 12-inch liner. (Photos courtesy of Dexal Construction)

BETTER MOUSETRAPS

PRODUCT:

StreamLinerUV-cured fiberglass reinforced lining system

APPLICATION:

Rehabilitation of buried pipelines

BENEFITS:

Enables large and lasting repairs without excavation

USER:

City of Pacifica, Calif.

MANUFACTURER:

LightStream, LP
619/671-0445
www.lightstreamliner.com

LET THERE BE LIGHT

A UV-cured liner enables a California contractor to rehabilitate a critical trunk sewer with minimal bypassing and no disruptive excavating

By *Scottie Dayton*

“In places, the material accounted for one-quarter of the pipe’s diameter, and it had the consistency of asphalt. It was extremely cantankerous and didn’t want to come out.”

Pasqual Hernandez

Workers cleaning the Palmetto Avenue trunk line in Pacifica, Calif., began bringing back large pieces of the asbestos concrete pipe with their Warthog spinner nozzle (StoneAge Tools).

They immediately shut down the operation and called for the inspection crew. A SuperVision 140 system from Envirosight revealed that hydrogen sulfide gas had corroded 0.75 to 1 inch of the 1.5-inch-thick crown. Furthermore, cleaning the pipe was causing the layers to delaminate.

Brian Martinez, manager of the Pacifica Sanitary Sewer Col-

lection System Division, and Maria Aguilar, P.E., associate engineer, researched solutions. Martinez had read European studies on fiberglass-reinforced UV-cured liners. Looking for U.S. manufacturers, he found LightStream LP in San Diego and a list of certified installers.

“With more than half the crown of the sewer missing, we needed a liner with structural strength,” says Martinez. “ASTM D790 tests showed that the Stream-LinerUV had a flexural modulus of more than 1.8 million psi and a flexural strength of more than 60,000 psi. Furthermore, the UV-cure process significantly reduces

bypass time, which lessens the chance of SSOs.”

Another major factor was the Calera Creek Water Recycling Plant, which uses autothermal aerobic digesters. Martinez was concerned that contaminants from styrene-based polyester resins would kill the extremely sensitive nitrifying organisms.

Lining 8,996 feet of the 9,100-foot sewer was one of the city’s largest infrastructure upgrades since the early 1980s. Despite unexpected obstacles, working at night and on steep hills, and never having installed UV-cured liners before, Dexal Construction Inc. in

Santa Rosa, Calif., completed the work safely and successfully.

Big and mean

The trunk line moves much of the city's waste. Its failure would cause major property and environmental damage. The sewer begins as 2,400 feet of 12-inch pipe with multiple 6-inch mains. As it runs downhill to a pump station, it increases to 1,650 feet of 15-inch pipe. The last transition is 5,050 feet of 18-inch pipe. The pipes change diameters at manholes.



The 13-foot-long light train includes eight UV lights. Joe Kauwe from the North Marin Water District in Novato, Calif., watches the liner installation.



Rory Simon, a LightStream consultant, tightens the straps that hold the folded-back liner nose together.

The project began with the 18-inch segment along Palmetto Avenue. The sewer's height made it necessary to work at night. "We didn't start traffic control until 7 p.m.," says Pasqual (Paz) Hernandez, general manager for Dexal Construction. "We began bypassing sewage between 8 and 9 p.m., and had to finish before 8 a.m. when heavy flows resumed."

Once crews bypassed a segment, city workers cleaned it using a Vac-Con combination sewer cleaner (3,000 psi/55 gpm), fitted with a C-Ray bottom-cleaner nozzle (NozzTeq) with downward-facing jets to avoid delaminating more pipe. Upstream of most 90-degree turns, they encountered 3-inch-thick deposits of impacted sediment extending one or two feet.

"In places, the material accounted for one-quarter of the pipe's diameter, and it had the consistency of asphalt," says Hernandez. "It was extremely cantankerous and didn't want to come out."

City crews used a chain flail nozzle (ENZ USA) to fracture the sediment, then flushed out the pieces with the C-Ray nozzle. Some deposits took all night to remove, extending the project from the expected one-month duration to one-and-a-half months.

Before installing a liner, the inspection team guaranteed that the pipe was spotless with no protruding taps that would interfere with the pull. The longest run was 641 feet of 18-inch liner.

Down the hole

Although Hernandez and his crew were experienced with cured-in-place pipe felt liners, this was their first job after certifying as StreamLinerUV installers. Consequently, LightStream sent consultants Rory Simon and Ron Evergreen to oversee the project.

The wetted-out liners, weighing 9 to 12 pounds per foot, arrived from the San Diego factory wrapped in UV-protective yellow foil and folded in crates. The 18-inch liners were 6-mm thick, and the 12- and 15-inch liners were 5-mm thick. The shrinkage factor was zero to 0.2 percent.

To install the liners, two workers laid a roller assembly over a manhole, set up two tables behind it, and used a forklift to position a crate behind the second table. A drum in back of that table held 200-mm white sliding foil, which protected the liner and facilitated its passage as it was dragged along the pipe.

The sliding foil went under the liner as it was delivered onto the table, where the crew folded it in half so the width fit over the roller and went down the manhole. They then folded the nose back over a nylon choker with a cable attachment and secured the nose with two nylon straps. Hernandez used a 505 Condux winch rated at 5.5 tons to pull the liners from downstream to upstream manholes. Installation moved slowly, an average of 10 feet per minute, to protect the liner.

Air and light

When the liner reached the other manhole, the crew freed it, but left enough material to slip over round cylindrical cans called gate valves, one in each end of the liner. They were duct-taped, then winched down with a ratchet strap for an airtight seal.

"I inflated the liner to 8 psi from the command station in the liner truck parked at the downstream manhole," says Hernandez. "The crew then removed the upstream can to insert the 13-foot-

long Light Train and reattached the can. Then I pressurized the liner again."

As the men pulled a rope attached to the light source, a camera on each end of it enabled Hernandez to inspect the liner for imperfections and fit. "If something were wrong, I could collapse the liner and fix the problem," he says. The cameras found no imperfections.

Communicating by two-way radio, Hernandez told workers when to stop pulling as the light source reached the end of the liner. After setting certain fields in the operating program, he ignited the eight UV lights and the computer controlled the speed of the cable reel, which pulled the lights upstream as they cured the resin.

Gravity rules

A hillside easement with 20 percent slope at the uppermost segment was the most challenging of the 12-inch installations. "We saved that run for last to give us time to plan the secondary bypass requirements," says Hernandez. "The topmost and middle manholes each had two 6-inch mains, and two laterals tied in along the easement. The setup required seven pumps." To avoid adding more pumps, Hernandez used a single 250-foot-long liner and pulled it through the middle manhole.

His crew worked nonstop to complete the setup and bypass and position the liner. The most crucial aspect was winching it into the downstream manhole, then holding the liner against the pull of gravity. "If we hadn't set chocks in the manhole, the liner would have been skating down the pipe," says Hernandez. It took 24 hours to complete the job, including reinstatements.

Final inspections of the pipe showed that the liner had formed a slick, smooth surface. The trunk line was rehabilitated with no sewer overflows or safety incidents. ♦

With our cameras it is easy to see that **QUALITY SAVES MONEY.**

Thank you to everyone who stopped by our booth at Louisville this year!

IBAK has been working for over 50 years to make your job safer and give you less headaches at the end of the day. Our pipeline inspection equipment is *not* the cheapest equipment you can buy, but we will guarantee you it is the highest quality, most reliable investment you can make.

We have the industry's largest research and development team with over 15% of IBAK devoted entirely to new product development. Adherence to core principles of quality and technological innovation have driven IBAK to remain the industry leader since they invented sewer cameras in 1957.



Mainline | Drainline | Lateral Launch | Laser Profilers | PANORAMO 360° Pipeline and Manhole

800-656-4225 | www.rapidview.com



**BUY
ONLINE!**

**One Stop
for all your
Jetting & Vacuum Parts**

**** Custom orders welcome ****

EPA ENVIRONMENTAL
PRODUCTS &
ACCESSORIES

866-448-5547
WWW.EPASALES.COM
INFO@EPASALES.COM

**FREE PARTS
CATALOG
WITH PRICES**
Over 1,000 Parts

Find me on
facebook



Jetter & Vacuum Truck Hose



Pipe



Hydrant Hose



Tiger Tails



Hose Reel Swivel



Nozzles—100's of styles....



Clamps



Float Balls



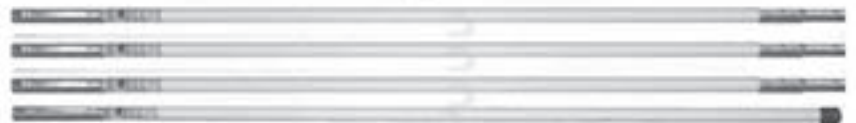
Grit Catchers



Scrapers, Guides, Hooks, Grabbers etc...



Valves!!!!!!!



Manhole Fiberglass Poles

Your Trucks.....Our Parts



**Nozzles
Hoses
Accessories**



Jetter Depot - Fair Prices - Quality Service - Guaranteed



**Thanks for
visiting us**



www.jetterdepot.com • Call 678 549 2621

COATING AND REHAB CONTRACTORS...

As an Epoxytec Certified Application Partner, you can count on complete product support and training to build your rehab business together.

- ✓ No licensing fees
- ✓ Minimal investment
- ✓ Opportunity development

@mail us

to receive
a FREE startup package:
cleanad@epoxytec.com

**Partner
with us!**

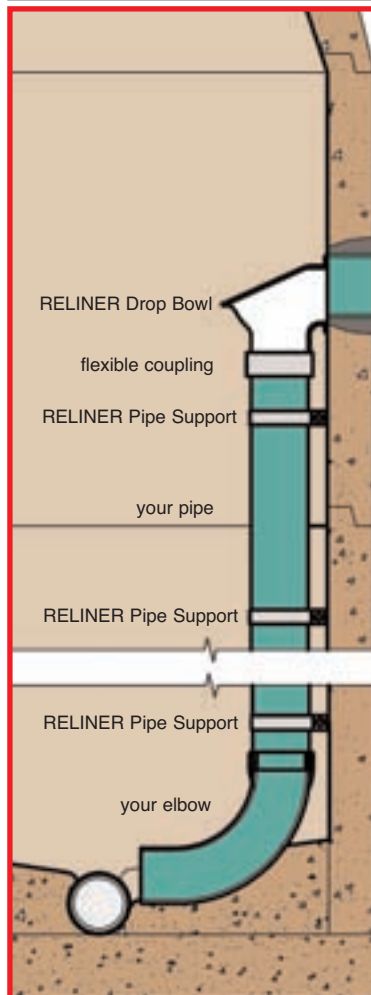
EPOXYTEC
REPAIR | PROTECT | MAINTAIN
Try it Today!!! 877.GO.EPOXY
epoxytec.com
"High performance products that work where others fail"

ECAP
Epoxytec Certified
Application Partner

INSIDE DROP SYSTEM

by RELINER® / Duran Inc.

U.S. Patent 6074130 Canadian Patent 2269565



Drop Bowl



Drop Bowl with Hood



Stainless Pipe Support

Drop Bowl & Pipe Supports

**Eliminate troublesome outside drops
Reduce maintenance
Simplify inspection
Clean from above
Install quickly
Simply bolts to manhole wall
Stop corrosion
Ideal for wet wells - Increase pump life
Made in the U.S.A.**

www.reliner.com
800-508-6001



2011 EXPO

THE LATEST ON DISPLAY

Last Pumper & Cleaner Expo in Louisville features a wide range of new products for municipal and utility applications

By Ted J. Rulseh

The 31st Annual Pumper & Cleaner Environmental Expo International closed a four-year run in Louisville with 3,644 companies, cities and utilities represented and 8,286 total attendees. The Expo moves to Indianapolis for 2012, running Feb. 27 to March 1 at the Indiana Convention Center.

The 2011 Expo offered a full slate of educational seminars spread over three days and included 477 exhibits of new and familiar products and technologies. Here is a sampling of the new offerings on display for municipal and utility professionals in charge of cleaning and maintaining underground infrastructure:



Versatile vacuum truck

The **Baron** industrial vacuum truck from **Keith Huber** combines the safety and deep vacuum power of a liquid ring pump with high airflow and quiet operation. It fills a need for highway transportation of larger payloads.

The truck offers high power with innovative vacuum and filtration technology in an operator-friendly package that is conservatively priced. The liquid ring pump makes it safe to use in pumping hydrocarbons. The unit's light weight allows for larger payloads. A standard remote control allows operation away from the control cabinet. 228/832-0992; www.keithhuber.com.



Wireless base station

The **K2 Summit** wireless base station for portable video inspection from **CUES** includes a compact, lightweight, weatherproof enclosure that mounts in an ATV, pickup truck, trailer or van. Wireless control enables operation of the system from any angle at a distance up to 100 feet. A partition separates the video cable reel with tractor and camera storage from the power control unit, monitor, and computer-based data acquisition system. The system operates all CUES wheeled and tracked transporters to accommodate inspection of pipes from 6 to 200 inches. All controllers, the TV monitor, and power control are rack-mounted to maximize ergonomic operation and are protected by a sealed, lockable hatch. 800/327-7791; www.cuesinc.com.



Three-stage fan system

The **AllJetVac** combination sewer cleaner from **Vacall** uses a three-stage fan system for high vacuum performance and reliability at reduced cost. The vacuum and jetting system lets users cost-effectively open clogged sewer lines and remove debris.

The AllSmartFlow CAN bus control system lets operators make precise adjustments in boom movement. Units are available with 6- to 12-cubic-yard debris tanks and 1,000- to 1,500-gallon water tanks. The 8-foot 6-inch extending boom has 320-degree rotation. Blower and water pump choices include an 85 gpm/2,000 psi water pump with 30-minute run-dry guarantee. 330/339-2211; www.vacallindustries.com.



Lateral launch system

The **LISY 3.0** lateral launcher from **RapidView IBAK North America** includes an articulating launcher mounted on a crawler with multiple wheelsets and high-strength folding waterproof connector. The lateral camera includes pan-and-tilt capability and an L-stick that allows steering around fittings. Cable protection helps avoid cable damage and repair. Auxiliary lighting with super-bright LEDs is available for lines up to 24 inches. The system is expandable for 6- to 48-inch mainlines. 800/656-4225; www.rapidview.com.



Pavement cutter

The **PRO-CUTTER Model 1060** from **Cretex Specialty Products** reduces the labor required to remove a manhole frame from asphalt or concrete pavement. It quickly cuts a 60-inch round hole using carbide or diamond bits. The system mounts to a heavy-duty skid-steer or track loader. Electric-over-hydraulic controls operated by joystick-mounted push-buttons simplify operation. The device also has an adjustable automatic feed rate and internal guards for safe operation. 800/345-3764; www.cretexseals.com.



Manhole repair trailer

The **Sewer Manhole Masters** trailer from **Standard Cement** is designed for on-the-spot repairs of manholes, lift stations and stormwater pipes and can be used for pipeline abandonment, cement mortar placement, and cement slurry fill. Equipment comes mounted on a 20-foot, 12,000-pound GVW trailer with 7,000-pound axle capacity. Equipment includes an S5G cement pump with 18 hp Honda engine and 11 cfm air compressor and BG Stone mixer with 5.5-cubic-foot capacity. 888/278-1337; www.standardcement.com.



Enhanced vacuum truck

The **Guzzler NX** vacuum truck from **Guzzler Mfg.** has been redesigned to enhance productivity and achieve a more attractive price. The cyclone and baghouses are configured together to maximize efficiency and reduce overall weight. An increased filter area and offline cleaning extend bag life while forcing carryover back to the debris tank. Seventy-two 70-inch bags provide a low 4:1 air-to-cloth ratio, keeping the system clean and filtered for reliable performance and high productivity.

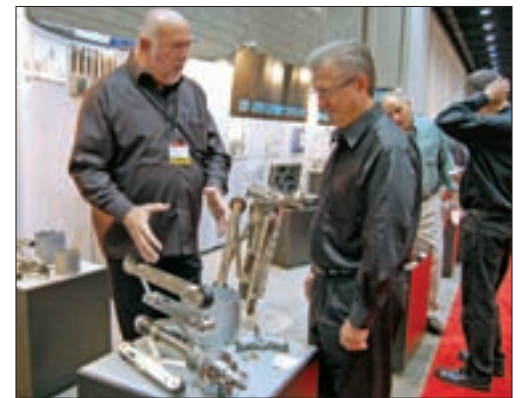
The truck carries a Robuschi blower delivering 5,435 cfm with vacuum capability to 28 inches Hg. The blower, combined with simple air routing, makes more air available at the hose inlet and so moves more material. The large blower lets users load more material at a lower engine rpm, conserving fuel and reducing noise. The truck has a Tested Operating Sound Level of 88.9 dB per SAE J1372 test. 815/672-3171; www.guzzler.com.



Hydrostatic drive

The **PFT-PCH/3000** transmission from **OMSI Transmissions** is designed for trucks from 26 to 42 tons and offers torque-mechanical drive of 30,000 Nm, torque-hydrostatic drive of 9,200 Nm, and power-pump output of 380 kW. The transmission has multiple outputs available, including a creep drive for high-rail vehicle applications.

The reduction box has a mounting flange for a hydraulic motor that connects to a pump operated by the diesel engine or from the transmission, permitting the conversion, in a working load at low speed, of the vehicle's traction from mechanical to hydrostatic. A wide range of ratios up to 14.6 allows very low speed and the opportunity to use a small-displacement hydro motor or electric motor, keeping a high-output torque during hydrostatic drive. 330/405-7530; www.omsitransmissions.com.



Turbo chain cutter

The **S400 turbo chain cutter** from **USB-Sewer Equipment Corp.** includes user-friendly attachments including a chain retainer, barrel cutter and mineral deposit cutters to remove roots, protruding laterals and hard deposits from sewers. A continuously adjustable guide skid accommodates pipes from 8 to 15 inches, and up to 24 inches with an additional expansion kit.

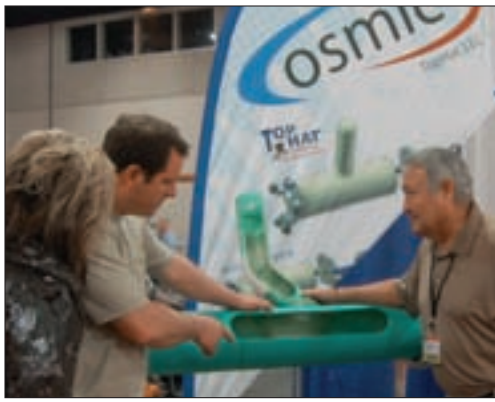
High-performance turbine technology and sealed bearings deliver extremely high torque and rotation speed. The mostly stainless steel tool is lightweight and low maintenance, requiring no lubrication. Operators can handle the tool easily and can quickly change attachments in the field. The cutter can be used with recycled water. 770/984-8880; www.usbsec.com.



Water-recycling cleaner

The **CAP-RECY** sewer cleaner from **Cappellotto** recycles jetting water as it cleans the pipe. The system reduces refills for clean water, limiting cleaning downtime.

The truck can work without shutting off secondary lines and can operate with high water volume in sewers. Multistep filtration removes impurities from recycled water and safeguards the high-pressure water pump. www.cappellotto.com.



Lateral junction seal

The **Cosmic TOP-HAT** system securely seals the junction between sewer laterals and mainlines. The system includes repair robots, applicators, and a seamless insert laminate, allowing pipes to be rehabilitated from the inside in a few simple steps. The glass fiber laminate liner cures in seven minutes using UV light. 424/288-9053; www.cosmic.at.



Pump package

Duplex grinder pump packages from **Liberty Pumps** are available in sizes to fit applications from residential to small municipal. The factory-assembled systems are controlled by the IP-Series intelligent panel with floatless technology. The D3648-Series (shown) includes a 36- by 48-inch (depth) fiberglass basin with two 2 hp grinder pumps. 800/543-2550; www.libertypumps.com.



Sewer pipe plugs

High Performance municipal pipe plugs from **Sava** are designed for use where higher backpressures are present or whenever a robust, heavy-duty plug is desirable. The plugs can be used with protective sleeves to achieve the thickest available rubber for difficult situations. A variety of sizes and flow-through designs are available. 386/760-0706; www.savatech.com.



Wheeled lateral camera

The wheeled **Lateral Evaluation Television System (LETS)** from **Aries Industries** enables mainline and lateral inspections in challenging conditions. It combines robust pulling capability with fast and efficient camera launching. A 4- or 6-wheel steerable drive design helps negotiate debris in 8-inch and larger pipes. Various wheel styles and sizes are available to suit pipe conditions. Two high-resolution cameras provide video detail on mainlines and laterals. The lateral camera is easily retrieved with an automatic rewind reel. 800/234-7205; www.ariesindustries.com.



Green jetting truck

An **800-HPR** truck jet with the Eco Jet System, built by **Sewer Equipment Co. of America** for the City of Fort Wayne, Ind., has a hybrid-drive chassis from International designed to conserve fuel both in road travel and on job sites.

Regenerative braking charges a battery system that provides power assist to the engine during travel and also enables the crew to shut off the engine during job setup, using battery power when laying out traffic control, deploying the hose reel, extending the hose, affixing nozzles, and jetting at up to 30 gpm. 847/729-3316; www.sewerequipment.com.



Carbide cutter

Carbide-tipped root cutters from **Cloverleaf Tool Co.** have carbide teeth and carbide grit for cutting PVC taps or roots from sewer lines. 941/739-0707; www.cloverleaftool.com. ♦

ON TO INDIANAPOLIS

In 2012, the 32nd Annual Pumper & Cleaner Environmental Expo International moves to the Indiana Convention Center in Indianapolis, Feb. 27 - March 1. For information visit www.pumpershow.com or call 866/933-2653.



MOBILE POWER KNOW-HOW

Our forty years of engineering and manufacturing know-how is in every one of our vehicle-mounted air compressors, generators and welders. With many of our units in the field for over 30 years... you know you can depend on our expertise to turn your truck into a mobile workshop that delivers:

- Innovative engineering based on operator needs
- Maximum performance to increase productivity
- Durability to reduce breakdowns
- Multi-configuration flexibility to deliver the power when and where you need it

Ranges of 15 -1000 cfm of air, 4-25 kW of AC power and 150-300 amps of welding capabilities

THE WORLD'S MOST COMPREHENSIVE LINE OF MADE IN THE USA MOBILE POWER PRODUCTS... Vehicle-Mounted Air Compressors | Generators
Air N Arc® ALL-IN-ONE Power Systems® | Welders | Battery Boosters

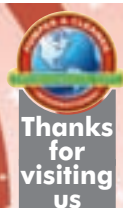


Call us to learn how to improve your mobile power performance.



800.526.8817 | vanair.com

YOUR MOBILE POWER EXPERT SINCE 1972™



AMERICAN HIGHWAY PRODUCTS LTD. RAISING AMERICA, ONE INCH AT A TIME

the **PIVOTED TURNBUCKLE** Manhole Riser



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

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



EZ Lift will unseat, lift, and set down a manhole cover in one smooth motion



SAFETY RAMPS **ELIMINATE**

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



Toll Free 1-888-272-2397 • www.ahp1.com • e-mail: sales@ahp1.com • Free DVD/CD ROM



February 27 - March 1, 2012

Indiana Convention Center • Indianapolis, Indiana

Monday - Education Day • Tuesday - Thursday - Exhibits

Indianapolis 2012

NEWLY EXPANDED INDIANA
CONVENTION CENTER

TOP TEN REASONS INDIANAPOLIS IS THE BEST PLACE FOR THE 2012 PUMPER & CLEANER EXPO

10. David Letterman is from Indianapolis, so Top Ten lists are everywhere.
9. If they can handle 80,000 Super Bowl fans, 15,000 Pumper & Cleaners should be doable.
8. 4,700 hotel rooms connected to the convention center - that's nearly 2,000 more than Opryland.
7. Over 200 restaurants, bars, and entertainment options all within walking distance - close walking distance.
6. Climate controlled skywalks mean never having to wear a coat - or scarf, or mittens, or stocking cap.
5. Send your significant other shopping - the Convention Center is attached to a mall!
4. No matter what state you are from, there's only one way to pronounce "Indianapolis".
3. The last major crime spree in the city was by Indianapolis native John Dillinger in 1931.
2. 35 cities fly non-stop to Indy's brand-new airport - opened in November 2008.
1. Horses don't race there, cars do!



Price. Availability. Quality.

And the **VECTOR** name to back it all.

Need a reliable source for your sewer cleaning hose? Vector Manufacturing and their worldwide dealer network have partnered with Piranha Hose to bring you Vector branded rodder hose. The new Vector Rodder Hose is constructed with a yellow polyolefin tube, high tensile synthetic braid reinforcement to reach the desired pressure rating, and then covered with a high abrasion resistant polyether-urethane cover for long life and reliable sewer line cleaning performance.

And you don't have to worry about availability - we carry all of the Piranha hose products, sizes from 1/2" - 1 1/4" are in-stock and available at competitive prices for quick delivery from your Vector dealer.

To find out if there are specials or to order call your Vector dealer today or visit us at www.vector.com to find a dealer near you.

**Now
Improved
For High H2S
Applications!**

FiberShield™

A New Lightweight Composite Manhole Cover Secured by McGard

FIBERSHIELD

- ▼ No Scrap Value
- ▼ Prevents Unauthorized Access
- ▼ Durable Composite Material
- ▼ Traffic Rated
- ▼ Reduces Injuries
- ▼ Reduces Workers Comp Claims
- ▼ No Expensive Lifting Equipment Needed
- ▼ Easy to Handle and Transport
- ▼ Registered Key Patterns
- ▼ Various Size/Color Options

The Intimidator
Line Of Security Products

McGard



COMPLIANCE
MANAGEMENT SYSTEM
REGISTERED AND
AUDITED



1-888-888-9192 or visit us at www.mcgard.com/security
McGard, 3875 California Road, Orchard Park, New York 14127-4198

US Patent
#7,896,574 B2

HOW BIG IS THAT OVERFLOW?

By Ted J. Rulseh

When you see a manhole gushing, how do you estimate the size of the overflow? The Southern Section Collection Systems Committee, a part of the California Water Environment Federation, is offering collection system operators in that state a simple visual tool for estimating (see photos).

These handy rulers picture manhole overflows gauged at various flow rates in gallons per minute (gpm). The intent is to help collection personnel accurately determine the severity of overflows they encounter in the field.

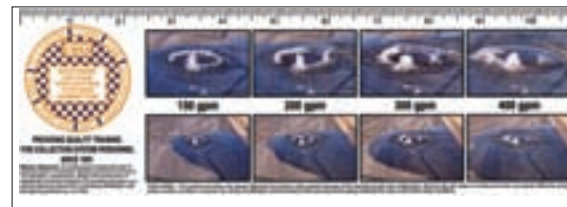
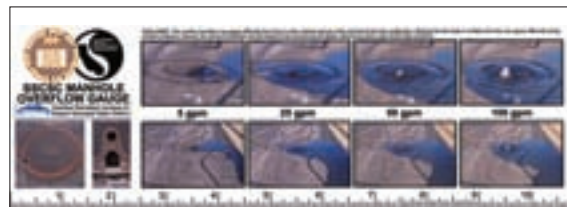
For years, says SSCSC representative Jim Aanderud, collection

personnel have been using pictures from overflow simulations taken 12 to 15 years ago. "For various reasons, those pictures were not great," he says. "SSCSC decided to re-shoot these pictures at a local water district.

"The pictures start at 5 gpm and go up to 400 gpm. What's different about them is that we include not only a close-up of the water spilling out of the manhole,

but also a picture showing the surrounding wet area.

"Our intent is for every collection person in California to have one of these rulers so they can better gauge the quantity of water coming out of a manhole during a sewer overflow. The estimating of quantity is very important, because that is what is reported to the EPA, and fines are levied according to the number of gallons released."



Share Your Brainstorms

Have you found a way to make your work life easier or more efficient? *Municipal Sewer & Water* would like to share your ideas through this occasional column. E-mail your Brainstorms ideas to editor@mswmag.com.

The SSCSC is printing 8,000 to 10,000 rulers to be handed out to collection system personnel. ♦

This Manhole Overflow Gauge helps collection system personnel estimate the size of sanitary sewer overflows in gallons per minute.

Everyone talks about creating a greener environment.

You actually do it.

Find the tools you need to keep your communities green at

www.colepublishing.com. Publishing environmental trade magazines since 1979.

SOUTHLAND TOOL MFG. INC.

Innovative Tools for Municipalities



Rodding tools, Sectional and Continuous
Sewer rods, 1/4", 5/16" and 3/8"
Continuous wire all sizes and lengths

Flat Traps (New Design), Catchers etc...
Lightweight and HD Rod guide hoses
Finned and Football nozzle extensions

Vacuum Traps, Sand Traps, Hooks
Fiberglass and Wood pole sets
Telescopic Camera Pole

Call us for a free quote and literature

714.632.8198

Sales@SouthlandTool.com

READY FOR ACTION!

★ YOUR TOUGHEST JOBS START AND END WITH ENZ! ★



**STRONG, FAST AND
ENGINEERED TO LAST!**

★ THE ULTIMATE CHAIN SYSTEM

When it comes to aggressive pipe cleaning, we have the widest, most versatile, selection in the industry.

★ FAST & EFFICIENT

Clean and remove ROOTS, GREASE, mineral deposits, concrete slush, etc.

★ ENGINEERED TO LAST

Multi-Purpose tools are designed for ease of use and maintenance under extreme work conditions

★ APPLICATIONS FROM 1.5" TO 48"

CALL 1-877-ENZUSA1

369-8721

FOR A DEALER NEAR YOU

www.enz.com



Thank you
for visiting us!

ENZ USA INC

1585 Beverly Ct., Unit 115 • Aurora, IL 60502

SPECTRASHIELD LINER SYSTEMS

MANHOLE & WETWELL RESTORATION



Prevents Corrosion & Stops Infiltration
Stress Skin Panel Adds Structural Strength
Restores Structure Walls to Original Levels
Cost Competitive

10-YEAR WARRANTY

A 7' DEEP MANHOLE CAN BE LINED IN
LESS THAN 1 HOUR

SpectraShield® Liner System

www.spectrashield.com



T&T Tools, Inc.
800.521.6893

Probes & Hooks

T&T Tools, Inc.

Probes & Hooks



Hooks...

- Heat treat 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 shafts: 3/8 round or hex
- Replaceable hardened tips
- Optional "slide" available to make your probe a mini-slide hammer

Call for a FREE Catalog

www.MightyProbe.com

Email: sales@tandttools.com

Fax: 800.521.3260

WHEN THE TIME IS RIGHT

Pipe Renewal Planner software from Bentley Systems helps water system managers develop sound, data-based plans for resolving water distribution reliability issues

By Ted J. Rulseh

A key to maintaining water distribution assets is knowing when to replace or rehabilitate aging pipes or address system reliability issues in other ways. Historically, such

decisions have been based on rules of thumb, intuition and experience.

Now, a software tool from Bentley Systems gives managers a way to make decisions using data and quantifiable, reproducible best

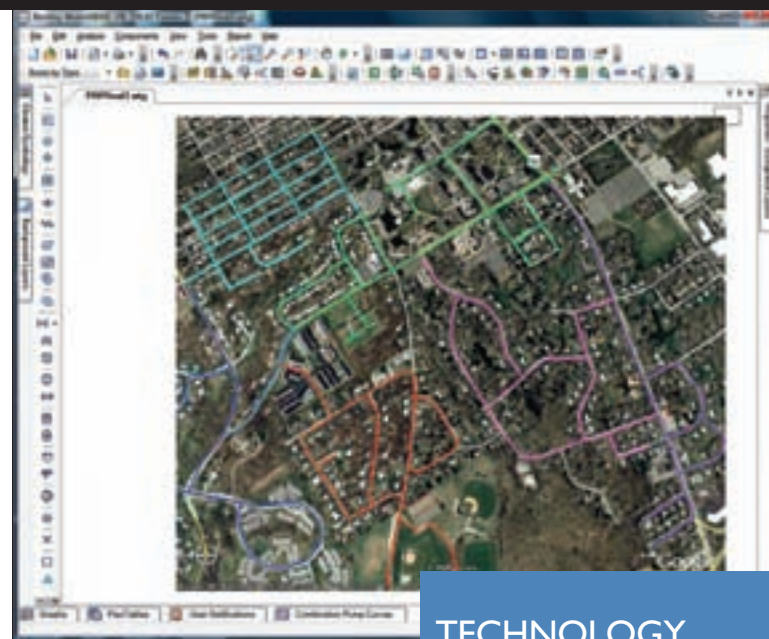


FIGURE 1. Distribution System Map. Water pipes are overlaid on an aerial photo. Pipe colors indicate sections of the distribution system built at different times and from different materials. (Screen captures courtesy of Bentley Systems)

TECHNOLOGY TEST DRIVE

PRODUCT:

Pipe Renewal Planner software

MANUFACTURER:

Bentley Systems Inc.,
Watertown, Conn.
800/727-6555
www.bentley.com

LOCATION OF DEMO:

Via Internet

DEMONSTRATED BY:

Tom Walski, senior product manager, Bentley Systems

LIST PRICE:

WaterGEMS (which includes the Pipe Renewal Planner module) starts at \$4,995 for a perpetual license; actual price depends on the size of the model

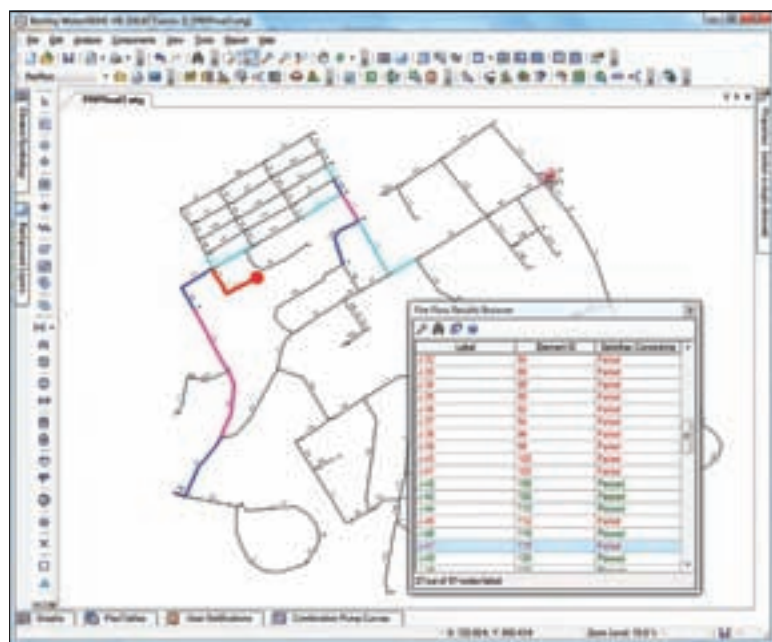


FIGURE 2. Fire Flow Analysis. The red dot indicates a hydrant location. Red lines indicate problem pipes. The chart shows pipe segments that passed and failed.

practices. The software tool produces rankings that help managers identify the pipes most likely to have an impact on system reliability and set priorities for repairs, system modifications or upgrades.

The software module can rank pipes based on criteria such as their year of installation, materials of construction, break history, hydraulic performance, fire flow capacity and criticality.

The information helps managers improve asset planning, increase distribution capacity, and maximize return on capital, while helping to decrease pipe breaks, leakage, lost revenues and outages.

The Pipe Renewal Planner module is included with the latest release of Bentley's WaterGEMS distribution modeling tool and is an add-on for the latest version of the company's WaterCAD distribution modeling and management application. Tom Walski, senior product manager with Bentley, demonstrated the application in an Internet meeting.

Walk-around

Pipe Renewal Planner is a Micro-

soft Windows-based module that assigns scores and rankings to individual pipes within a water distribution system. It analyzes data already entered into WaterGEMS.

Based on the user's instructions, Pipe Renewal Planner automatically generates flexible, sortable tabular presentations showing pipe rankings based on specific conditions or combinations of criteria. It also creates color-coded distribution system maps that highlight pipe segments of potential concern.

Bentley recommends using the Pipe Renewal Planner module to

integrate pipe scoring and ranking as part of the overall asset management process. Users can load the module with their preferred condition-related attributes and assign weights to each. The reports are generated mainly by using simple drop-down menus to select the pipe criteria against which to run the models and to choose the formats of the tabular and map displays.

The software module can rank pipes based on criteria such as their year of installation, materials of construction, break history, hydraulic performance, fire flow capacity and criticality.

Operation

Walski opened WaterGEMS and the Pipe Renewal Planner module and displayed an aerial photograph of a small city with the water distribution system represented by colored “pipes” overlaid on the streets (Figure 1). The layout was of an actual city (not identified), but the water distribution system was fictitious and was designed for software demonstrations.

To make it easier to visualize the water system, Walski turned off the aerial photo layer so that the pipe network appeared in colors on a white background. He pointed out the locations of the water treatment plant, water tank and pump stations. Under his scenario, those facilities were built in the 1920s and 1930s. A green network of piping consisted of cast-iron pipes built in the same period.

Other sections of the system included an addition built hastily with asbestos cement pipe during World War II, a new water tank on a hill added in the late 1940s, another section built in the 1950s with ductile iron pipe, and the most recent addition built in the 1990s using PVC pipe. This scenario encompasses varied types of

pipe at different ages and covers a range of reliability issues.

Walski then demonstrated the use of the software to display scores and rankings of pipe segments based on three separate reliability criteria — fire flow analysis, criticality and pipe break history.

He began by using the menus to generate a view of fire flow analysis. The software automatically pulled data from WaterGEMS to generate a table listing pipes that did and did not meet the community’s fire flow criteria. He then created a corresponding map on which a red dot represented a fire hydrant location and red lines indicated pipes with limited fire flow (Figure 2).

The chart listed pipes as “passed” and “failed” according to the fire flow criteria; the pipe colors represented the flow velocity and indicated the locations of bottlenecks. The most problematic pipes appeared as red. (Walski noted that users can customize the color-coding to suit their preferences.)

Walski then used the menus to rank pipes according to criticality — in essence how many homes would be without water or experience low pressure if a given pipe were to break or be taken out of service.

He first used the software to identify areas of the system capable of being isolated by valving and then ran the criticality analysis. The resulting table listed the

“The software tells you which pipes have the highest score, and then it’s up to utility management to decide what to do about it. The software doesn’t take the engineers’ judgment out of the picture.”

Tom Walski

most critical pipe segments ranked by the water shortfall that would result from their loss (Figure 3).

Next Walski performed a pipe break analysis, which depends on loading the WaterGEMS software with a pipe break history database. “Communities usually have

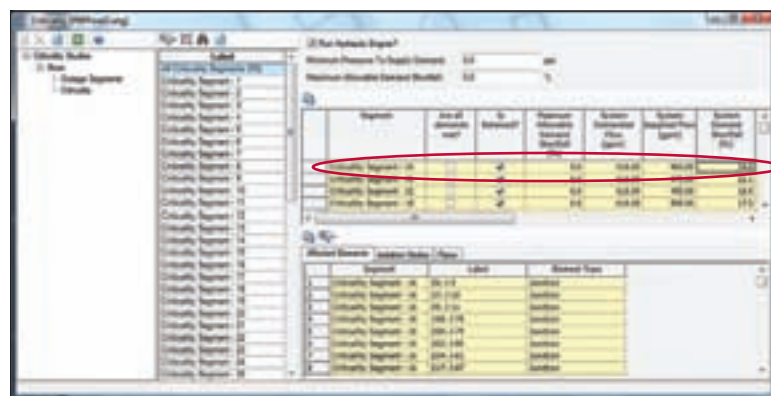


FIGURE 3. Pipe Segment Criticality Analysis. Pipes are ranked according to the shortfall in flow if a given segment were to fail. Note that if criticality Segment 16 were to fail, more than 20 percent of residents would have no water or would see reduced pressure.

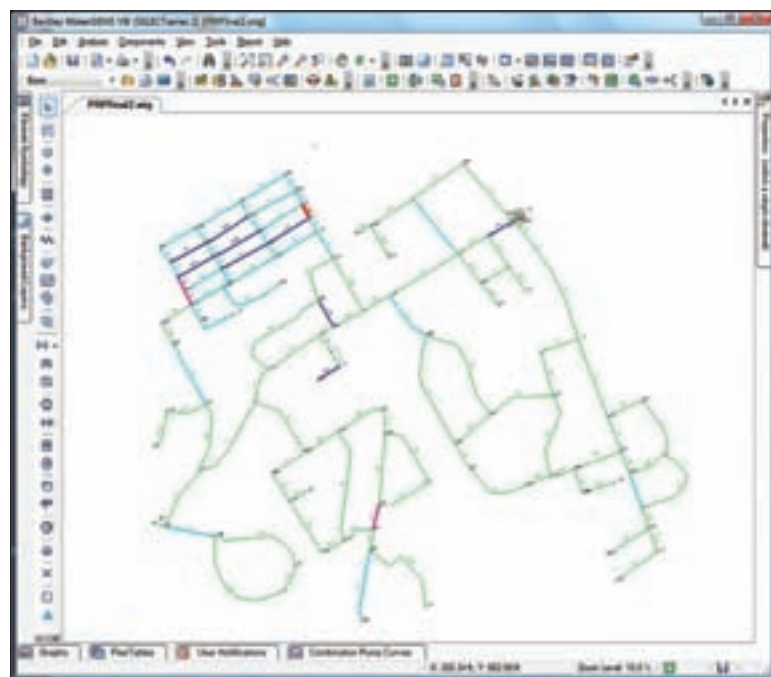


FIGURE 4. Pipes With High Break Rates. Red and magenta lines indicate pipes in the water system most prone to breaking.

pipes in descending order, starting with those having the highest rate of breaks per year per mile. A color-coded map showed the most break-prone pipe segments in red and magenta (Figure 4).

To create an overall assessment of pipe reliability, Walski then ran a ranking/scoring operation that combined fire flow, criticality, and break analysis, giving equal weight to each of those three variables. A tabular report listed pipes in descending order from those with the highest (poor-

pipe maintenance logs or software from which they can import that data,” Walski said. Break projections are based on each specific pipe’s history and on the histories of all pipes with similar characteristics.

He generated a table ranking

Line	ID	Lat	Long	Age (Years)	Material	Condition	Score	Notes
1	100-0-100	40.000	-95.000	10	Cast Iron	Good	85	
2	100-0-100	40.000	-95.000	10	Cast Iron	Good	85	
3	100-0-100	40.000	-95.000	10	Cast Iron	Good	85	
4	100-0-100	40.000	-95.000	10	Cast Iron	Good	85	
5	100-0-100	40.000	-95.000	10	Cast Iron	Good	85	
6	100-0-100	40.000	-95.000	10	Cast Iron	Good	85	
7	100-0-100	40.000	-95.000	10	Cast Iron	Good	85	
8	100-0-100	40.000	-95.000	10	Cast Iron	Good	85	
9	100-0-100	40.000	-95.000	10	Cast Iron	Good	85	
10	100-0-100	40.000	-95.000	10	Cast Iron	Good	85	

FIGURE 5. Pipe Scores Based on Three Variables. Table shows relative pipe scores based on a combination of fire flow, criticality and break analysis.

est) scores (Figure 5).

Finally, Walski demonstrated how similar pipe scores, tables and color-coded system maps could be generated by adding more criteria, such as material, water-quality complaints (older cast-iron pipes may experience red water or other quality issues), and soil types (expansive clay soils or fault lines can contribute to pipe breakage).

Observer comments

Pipe Renewal Planner appeared easy to use in generating useful pipe scoring reports for assessing water system reliability, so long as the community has accurate data in its underlying software. Charts and color-coded maps enable users to see reliability issues at a glance that otherwise would be difficult to extract and analyze.

The pipe scores alone would not constitute a basis for making decisions on pipe repair or replacement or other system improvements but would provide objective data to use with experience and engineering judgment in planning a system maintenance and rehabilitation strategy.

Manufacturer comments

A high pipe score does not necessarily indicate a pipe that must be replaced, Walski observed. For example, a relatively new pipe, in good condition, might have a high score largely because it is

highly critical. In that event, a utility might reconfigure the system to provide multiple feeds to the affected neighborhood and so make the pipe less critical.

"That's the kind of judgment you have to bring to these analyses," Walski said. "The software tells you which pipes have the highest scores, and then it's up to utility management to decide what to do about it. The software doesn't take the engineers' judgment out of the picture.

"It's a good management tool. Rather than just saying, 'I think we ought to do this or that,' you've got a quantitative way of looking at your system. Communities that make decisions strictly by pipe age, for example, get tricked sometimes. They may dig up an old pipe and find that it's in excellent shape, and the next block over there's a 10-year-old pipe that's popping out of the ground."

Walski noted that the WaterGEMS software, and by extension the Pipe Renewal Planner module, scales well to cities of all sizes. "It takes longer to build the distribution model for a mega-city, but these days much of the model building is done automatically from GIS files," he said. "There isn't much manual entry of data anymore. If you have a good-quality GIS, most of the data you need to build a model is in the GIS." ♦

LIFE IS COMPLICATED. OUR RECEIVER IS NOT.



OUR LF2200 RECEIVER MAKES TRAINING SIMPLE!

- WORKS WITH ANY SONDE OR LINE EXCITER, FROM 16 HZ TO 100 KHZ
- LESS INTERFERENCE FROM POWER-LINE NOISE
- MODULAR DESIGN FOR EASY UPDATES
- AUTOMATIC DEPTH READOUT—DEEPER THAN EVER BEFORE
- STRONGER UNI-BODY HANDLE
- MORE SENSITIVE WORKS DEEPER
- 3 SOURCES OF FEEDBACK: SCREEN, VIBRATING HANDLE AND SPEAKER



CALL US TO FIND OUT HOW
WE CAN HELP SIMPLIFY
YOUR BUSINESS LIFE.



Prototek

800-541-9123

Web: www.prototek.net

Email: prototeksales@prototek.net



B² BUSINESS BROKERAGE Marketing & Brokering

TRYING TO SELL YOUR BUSINESS?

We can effectively market your business to more than 60,000 potential buyers in the commercial drain and sewer maintenance industry, your local markets, and other

venues. No upfront fees – you don't pay anything unless your business sells. To learn more about brokering your business through B², call 800-257-7222.

LOOKING TO BUY?

Call us, and we can add you to our VIP Buyer List

LISTINGS

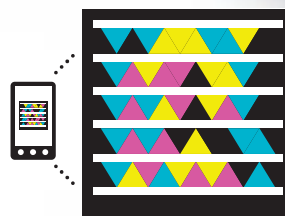
Dallas/Fort Worth Texas Area Sewer/Rehab Business For Sale. Drain Cleaning, TV inspection, Pipeline & Manhole Rehab/Relining, Municipal Cleaning and Maintenance business for sale. Excellent opportunity to expand or start your own business. Good revenue history and priced to sell. Includes all equipment to get started. **Asking \$195,000.**

Amarillo, Texas sewer, drain & plumbing business established in 1976. Owner wants to retire, so take the keys to a 2004 Sprinter outfitted with all of the equipment you'll need to run this business. Price includes real estate with 80x100 shop/office on two city lots. Good gross, good profit, financials available with signed non-disclosure. **Offered at \$495,000.**

Successful business with a large amount of equipment and inventory. Profitable sewer and septic business in central Pennsylvania. Increasing revenue over the past 3 years and a large amount of equipment and inventory. Equipment is a mix of old and new, but all is working and making money. **Selling price \$349,000.**

New Jersey/Pennsylvania drain cleaning and pipe service business has all the elements for an ample start to a new foundation or an addition to your existing business. Established in 1994, well-rounded client base, customer contracts, and owner is willing to train. Modern equipment and inventory. Real estate optional. **Reasonably priced at \$425,000.**

Chicago-Area Biosolids, Land Application, Dredging and Industrial Services Business. Established in 1985, owner is retiring. Reputable business includes real estate servicing the entire Chicagoland area with sludge and biosolids disposal and treatment services. Real estate and shop included with sale valued at \$750,000, business grosses in excess of \$3 million annually, \$6.3 million in equipment and assets including several TerraGators, Vac Trailers, dump trailers, loaders and much more. **\$4,900,000.** Huge potential, good profit and priced right. Non-disclosure Agreement required, all P&L statements, list of assets, and financials available to qualified buyers.



Get the free mobile app at
<http://gettag.mobi>

Well-Established and Profitable Texas Septic, Sewer & Installation Business For Sale. **Price reduced.** Grossing in excess of \$600,000 annually, customer list of nearly 2,000 accounts and 430 contracted customers. Includes nice late model equipment, most are 2007, 2008 model years. Owner retiring after nearly 40 years in business. Real estate available upon request. **Reduced to \$450,000.**

New Jersey VIP Restroom/ Portable Toilet Business. Servicing Metro Philadelphia and South-west New Jersey with VIP restroom trailers and portables. Many late model assets including 2 nice service trucks, 1 back-up service truck, pick-up truck, 4 VIP restroom trailers, nearly 300 restrooms, sinks, holding tanks, slide-in unit, 2 forklifts, and more. Assets worth over \$300,000 - priced to sell at **\$399,000.**

WANTED. Very serious and well qualified buyer looking for sewer, septic or industrial business in Dallas, Texas area. Must be grossing between \$500,000-\$1,000,000. All inquiries are kept confidential.

Established portable restroom and septic service business located in central Virginia. Excellent gross each of the past 3 years with no decline in revenue makes this business recession-proof. Steady work including many contracts and repeat customers. Extensive equipment inventory, good revenue, and owner willing to train. Great opportunity for expansion or a new career. **Asking price \$775,000.**

MAKING IT PERSONAL

Building relationships with team members is the key to keeping morale high and sustaining productivity

By Ken Wysocky

With many municipal departments facing budget cuts and layoffs, low morale and reduced productivity might be serious issues. So what's a manager or supervisor to do?

Management consultant Drew Stevens says there's a simple solution, and it won't cost a dime: Put on some comfortable shoes, take a stroll around your office and field work sites and start to get personal. Get out of your comfort zone and out from behind your desk and meet your team members. Get to know them and what makes them tick.

"The key thing is getting to know staff — being visible," says Stevens, who has provided management and employee development advice for more than 20 years. "We call it management by walking around."

"Go out on their routes or inspections. Get to know what's going on in their lives. Get to understand what motivates them and what their strengths and weaknesses are."

Drew Stevens

"With all the craziness in today's crazy world, managers and supervisors are so busy that they're often not visible. But you're with people for 8 or 10 hours a day, so get off your carcass and start walking around."

"Go out on their routes or inspections. Get to know what's going on in their lives. Get to understand what motivates them and what their strengths and weaknesses are. In the long run, this also will help you determine if they're promotable and in line to help you and the organization in years to come."

Productivity studies back Stevens up. In particular, he cites a Gallup survey showing that poor supervisor/employee relationships led to higher levels of insubordination, tardiness and absenteeism.

Overcoming suspicion

Stevens concedes that supervisors who have been office hermits for a long time may at first find employees resistant to their sudden change in approach. To get over that hump, he suggests being honest and telling them you're trying to right a wrong.

"Being candid is not a bad thing," Stevens says. "But walk before you run. Do something simple, like have coffee with folks. Or go out and buy them breakfast. People may be a little suspicious, but it's okay to let them know you realize morale is down and you want to put your best foot forward to help

make things better."

Overworked managers may feel they just don't have time to make the effort and may fear taking up employees' time and causing them more stress. To avoid those issues, Stevens suggests having quick conversations at the start of a day, or at the end of a shift, when encounters won't be seen as interruptions. "Even a simple, 'How you doing?' is better than nothing at all," he says.

Rewarding and recognizing employees can also get results. No matter how long people have been

with an employer, everyone wants to be recognized. "Research supports that when people feel they're part of a collaborative team, they will perform better and work better as a team," he says.

"Sometimes it's as simple as telling them they did a good job. Or giving them something small but personal, like a birthday card. If their hobby is gardening, give them a gift certificate to a garden center, or give movie tickets to a cinema buff. The more personal the reward, the better. Then they know it's coming from the heart."

Benefits abound

Getting to know employees better offers long-term benefits. It often makes it easier for supervisors and employees to have what Stevens calls "crucial conversations" about work issues. When good relationships are in place, it's easier to soothe anxious employees who just lost long-time colleagues to budget cuts.

"In the wake of layoffs, communication is where the rubber meets the road," Stevens says. "You have to tell people that it's unfortunate what happened, but this is what we need to do to function and move forward. That's a much more difficult conversation if you have no relationship with your employees. You must take ownership of the situation — let them know what's happening and why and move forward from there."

The same holds true for confronting people about performance issues. For example, a supervisor who has good relationships with direct reports will have an easier time dealing with situations such as an employee who's chronically

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 Ted Rulseh at 800/257-7222, or e-mail editor@mswmag.com.

tardy. Managers with poor staff relationships may shy away from dealing with the situation, which then spirals downward as staff resentment builds.

Snowball effect

"Employees start to complain that the supervisor or manager doesn't do anything about it, so everyone starts coming in late," Stevens says. "They now have a morale problem that has created a domino effect of productivity issues."

In addition, managers who know their staffs well can better handle employees who bring personal problems to work. In those situations, having that crucial conversation is a must. Sometimes it is easier to have the conversation away from the office, as that shows a personal interest in what's going on.

"Take the employee out for lunch and have the conversation there," Stevens suggests. "Let them know you have concerns about some things you've observed. Maybe they're coming in late or lashing out at fellow employees, and you need to understand what's going on and why."

"It all goes back to building good relationships with employees. If there's no relationship built, things can spiral out of control."

The bottom line: Good relationships can help weather a lot of storms, and that helps minimize turnover. When the chips are down, employees who feel connected and valued are more likely to stick around. As Stevens notes, employees don't leave organizations, they leave bad managers. ♦

ARE YOU COVERED?

Don't lose your business and life earnings to spotty insurance coverage



The majority of insurance brokers don't know your business as well as we do.

With an estimated 26 million septic systems serving U.S. residences, there's a considerable amount of work in the pipeline for septic contractors. However, until now, septic contractors haven't had an all-lines insurance solution that would cover all of their business exposure from design and installation to the rental of portable toilets.

To address this need, Sanitation Insurance Services specializes in offering a comprehensive insurance program specifically for septic contractors and portable restroom operators. While some policies provide coverage for pumping or portable toilet rental, our program addresses design, installation, inspection, service and repair, vandalism as well as pumping and portable toilet rental.

You need an insurance program that addresses the specific exposures you face, such as errors and omissions (E&O) coverage for the various services you provide.

WE HAVE YOU COVERED.



 **SANITATION**
INSURANCE SERVICES

1-877-877-1555

www.SanitationIns.com

QUALITY THROUGH CERTIFICATION

NASSCO introduces recertification programs for PACP trainers to help ensure continuous excellence in pipeline assessment

By Ted DeBoda, P.E.

NASSCO has a mantra when it comes to the Pipeline Assessment Certification Program: PACP is only as good as the data. In keeping with our goal to ensure that PACP is consistent and reliable, we are putting a number of new measures in place.

NASSCO has always required certification of PACP trainers. In the past, we offered automatic recertification to trainers based on the number of classes taught, but this did not adequately measure knowledge and experience with PACP or training ability.

New to the process this year is a comprehensive application process and a more structured syllabus that leads the trainers through the program. The testing includes a written knowledge-based exam and an in-class evaluation by a NASSCO-certified master trainer who evaluates the trainer's ability to lead, educate, encourage and instill high-level knowledge among

a class of 10 participants.

All trainers must now become recertified, testing their knowledge and training skills every 18 months. Recertification costs \$250. Good PACP data starts with good training, so maintaining excellent trainers is a high priority.

Another strategy to increase PACP quality is the new user recertification program. Training modules are being developed, and we anticipate an introduction date of June 2011.

It is critical that we at NASSCO take responsibility to ensure that professionals assessing pipeline conditions have the most current, up-to-date knowledge and information to maintain the highest levels of quality.

Previously, users who completed the PACP training were not required to test their knowledge. But let's face it — do you remember everything you learned in college or high school? Even though we have the diplomas or certi-

cates, it doesn't mean we've retained all the knowledge.

PACP is no different. It is critical that we at NASSCO take responsibility to ensure that professionals assessing pipeline conditions have the most current, up-to-date knowledge and information to maintain the highest levels of quality.

It is also important that cities and organizations budget for user recertification, which will be required every three years. For a

total cost of \$175 for NASSCO members and \$225 for nonmembers, PACP user recertification training will be offered online and through approved trainers.

Upon completion of the online version, users have to pass a final



exam, proctored at approved local facilities throughout the U.S. and Canada. The online portion will allow users to be refreshed without attending a PACP class or participating at one of our trade show events. It allows users to be tested without incurring long-distance travel or other out-of-office expenses.

Our focus on quality through certification supports successful rehabilitation and repairs and works to further NASSCO's mission to set industry standards for the assessment and rehabilitation of underground pipelines, and to assure the continued acceptance of trenchless technologies. ♦

Ted DeBoda is executive director of NASSCO. He can be reached at director@nassco.org. NASSCO is located at 11521 Cronridge Drive, Suite J, Owings Mills, MD 21117.

STEP UP

Take a stand for better and higher quality CIPP installations.

Complete Nassco's two-day Inspector Training Certification Program (ITCP) and expand your knowledge of CIPP technology, the fastest-growing method for sewer pipeline rehabilitation.

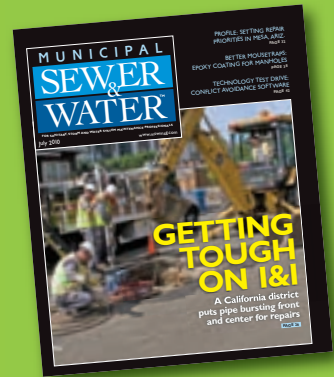
Why is this training important? Because it's critical to everyone involved in CIPP design and inspection. Consulting engineers know their reputation depends on successful installations, and municipalities can relax when they hire an ITCP-trained expert, knowing the job will be properly inspected. But most importantly, with NASSCO's ITCP, the industry's most rigorous and well-respected training programs, everyone wins by improving standards for higher quality CIPP installations.

Please call or visit our website for training dates and registration information.



NASSCO, Inc. (410) 486-3500 www.nassco.org





What you learn on these pages can **save** your community **\$1,000s.**

It's all yours for —
FREE.

That's right. Some 35,000 of your industry peers welcome *Municipal Sewer & Water* every month for the value it brings — in saving money and improving customer service and satisfaction. Each issue shows you:

- 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.

Best of all, you'll learn from **other** community **managers** — how they did it, and how you can, too.

Don't miss an issue —
subscribe today!

M U N I C I P A L
**SEWER &
WATER™**

www.mswmag.com

MANHOLES AND CATCH BASINS

By Benjamin Wideman



External seal

The **Infi-Shield** external seal from Sealing Systems prevents erosion and infiltration in manholes or catch basins. The one-piece molded seal is made from EPDM rubber and has a reinforced, preformed L-shaped corner. The product is bonded with non-hardening butyl mastic and it will pass a vacuum test. It installs in minutes without special tools. **800/478-2054; www.ssisealing.com.**



High-speed nozzle

The **Model SPN** nozzle from RFI Construction Products is a high-speed spinning nozzle for applying wet shotcrete mortars, grouts and epoxies to circular surfaces such as manholes. It can line 4- to 120-inch diameters. Linings can range from 1/8 to 4 inches thick, and output depends on size of pump and nozzle. The spraying head is powered by its own air motor, which is controlled by the operator. Various capacity nozzles from 1/2 to 2 inches in diameter handle fibers and aggregate up to 3/8-inch diameter. **631/752-8899; www.rficonstructionproducts.com.**



Fast-reacting grout

Parson Seal-Tite from Parson Environmental Products is a moisture-insensitive, two-component, fast-reacting hydrophobic polyurethane grout designed to stop high-volume active leaks up to 50 gpm in manholes, pump stations and other structures. The chemical-resistant formula cures to a dense, rigid mass in about 30 seconds. The product is packaged in a dual cartridge with a static mixer and is injected at or near the source of the leak, using a manual dual-component caulk gun. The material contains no solvents, CFCs or HFCs. **800/356-9023; www.parsonenvironmental.com.**



Flexible coating

Green Monster Liner from GML Coatings is a flexible coating that protects concrete, steel and fiberglass structures. The process uses sandblasting and waterblasting to remove corrosion in existing structures. The structures are then built back to their original thickness with 100 percent fused calcium aluminate mortar.

After the surface has been brought to a smoothed brushed finish, a primer is applied followed by the final protective barrier of Green Monster. The product is highly resistant to hydrogen sulfide gas and other chemicals. It is spray-applied from the ring of the manhole down to the coating of the bench. Its flexibility prevents cracking of the topcoat and hydrogen sulfide gases from attacking the substrate. **941/755-2176; www.gmlcoatings.com.**



Seamless tubing

Tuff Tube vacuum tubing from UEMSI is seamless tubing with a wall thickness of 0.100 inch used for manhole and catch basin cleaning. Its high-strength alloy allows it to last three times longer than standard aluminum tubing and makes it 28 percent more dent resistant. The material is extruded from 6061 aluminum and heat-treated for extra strength. During its use, the product gets stronger as the material being vacuumed comes in contact with the tube walls. **800/666-0766; www.uemsi.com.**



Zoom camera

With Haloptic technology, the new **QuickView** pole camera from

Envirosight doubles the range of zoom inspection while targeting illumination with improved precision. It is suited for rapid, complete assessments of pipeline infrastructure. The design also includes an auxiliary wide-angle camera with diffuse illumination, allowing inspection of manholes and vessels with the flip of a switch. **866/936-8476; www.envirosight.com.**



Pole-mounted inspection system

The **QZ2** from CUES is a lightweight, portable, pole-mounted video inspection system that can be operated by one person. It is mounted on a lightweight carbon fiber adjustable telescopic pole that can extend up to 24 feet (34-foot pole is available).

It has a 420:1 zoom with built-in image stabilization, automatic focus and self-contained waterproof lighting for enhanced detailed viewing of cracks, breaks, pipe separations, scale and various defect. It can be used to identify a blockage at a manhole, access

port, or other entry point without entry. The device includes two high-intensity discharge lights. **800/327-7791; www.cuesinc.com.**



Chemically activated gel

AV-100 from Avanti is an ultra-low viscosity chemically activated gel available as a powder or liquid. Having the same viscosity as water, it quickly permeates the substrate and cures to form a matrix with soil and porous rock, creating an effective, long-lasting water barrier and soil stabilizer. **800/877-2570; www.avantigrout.com.**



Thermosetting epoxy

The **Manhole Rehab System** from Infrastructure Repair Systems is a two-component, 100 percent solids thermosetting epoxy that comes in two trowel-on applications to seal and stop leaks by creating a new lining within the manhole. Chim Coat, for chimney rehab of the manhole, expands and contracts with changing temperatures nearest to the surface. Infragard Topcoat can be applied as a patch or to the rest of the manhole as needed. The system can be used as a coating or sealant for catch basins. The corrosion-resistant product bonds to wet or dry surfaces and conforms to any shape. **877/327-4216; www.irs.net.**



One size fits all

The **CIPMH** manhole system from LMK Technologies is a universal, stretchable, one-size-fits-all system that produces a structural cured-in-place seal to resist freeze-thaw conditions. The stretchable liner allows site preparation and installation to occur the same day, eliminating lead time for ordering. The product can be installed as a structural chimney seal or full-depth CIPP manhole lining. Once the liner has been vacuum impregnated and manually inverted into the manhole, it cures ambiently under pressure for one to two hours, depending on depth. **815/433-1275; www.performanceliner.com.**



Grade adjustment

The **Pro-Ring** manhole grade adjustment system from Cretex Specialty Products replaces heavy concrete rings and brick in construction of manhole chimneys. It is HS-25 load rated and can seal the chimney section from water inflow and infiltration. The rings, with one-tenth the weight of concrete, come in one-quarter-inch height increments and eliminate shims and mortar. Manufactured from expanded polypropylene (EPP), the rings outlast concrete and protect the cone and barrel section from impact loads of traffic. **800/345-3764; www.cretexseals.com.**



Polymer manhole cover

The **FiberShield** manhole cover from McGard reduces the risk of injury when pulling manhole covers. The polymer cover weighs 80 percent less than cast iron. The integrated locking system (necessary because of its light weight) prevents removal and requires a registered key to operate. **716/662-8980; www.mcgard.com.**



Pipe-to-manhole connector

The **A-LOK Premium** from A-LOK Products is a pipe-to-manhole connector for stormwater containment systems. It can change shape with the outside diameter of the pipe as the liquid-filled core material inside the device redistributes itself to maintain seal pressure. This flexibility allows easier pipe installation and accepts a wide range of pipe diameters. **215/547-3366; www.a-lok.com.**

Odor filter insert

Simple Solutions offers a green odor-control solution in the **Wolverine** manhole odor filter insert. The device is custom made to fit exact dimensions, ensuring quality installation. Each unit is manufactured from a durable high-density polyethylene copolymer that meets ASTM D-1248 Class A, Category 5, Type III. The carbon canister is made of PVC and corrosion-resistant components. **866/667-8465; www.industrialodorcontrol.com.**



Thermal smoke generator

The **TURBO-FOG MH75** thermal smoke generator from King-sco Chemicals operates in manhole openings from 19 to 30 inches. Designed to be totally self-contained, it uses the company's leak-proof liquid smoke cartridges to generate dense and uninterrupted white smoke. The unit generates more than 7,500 cfm of airflow and is constructed from 11 gauge steel, laser-cut and powder-coated for precision and durability. A foam cell bottom gasket is applied to create a leak-free seal around the manhole and reduce vibration and noise. **800/394-0678; www.turbo-fog.com.** ♦

TREATMENT PLANT OPERATOR

tpo

Dedicated to
Municipal Wastewater
Professionals

Now there's a magazine written solely for professionals who manage and operate municipal wastewater treatment facilities:

Treatment Plant Operator.™

Get your **FREE** subscription today at **tpomag.com**

US Jetting Launches Online Store

US Jetting has launched an online store at www.cole-mart.com/usjetting. The store offers 24-hour shopping, a simple order process and the ability to research and compare products.



Bill Gaff

Vacuum Truck Rentals Names Gaff VP of Sales and Marketing

Vacuum Truck Rentals and Vacuum Truck Sales and Service named Bill Gaff vice president of sales and marketing. Gaff brings 30 years experience in the industrial and municipal markets to his position. He also serves as chairman of the board for WJTA/IMCA.

Nu Flow Receives Patent, European, PMG Approvals

The U.S. Patent Office has granted Nu Flow a patent for its cured-in-place pipe liner, capable of lining around multiple 90-degree bends. The patent covers the company's pull-in-place method of installing the liner as well as a liner assembly for installing liner at a junction between a main and lateral pipe. Nu Flow also received CE approval for its potable pipe lining equipment in Europe, BelgAqua acceptance for its potable epoxy in Belgium and PMG listing from ICC Evaluation Service LLC.

Keep It Flowing!

- Reliable Products
- Excellent Delivery
- Incredible Support
- Personal Service

Manufacturing Drain and Sewer Jetting Equipment since 1985. Cold and hot water Portable, stationary and trailer mounted models for lines up to 24\"/>

Custom built equipment to your specifications.

CAM Spray

520 Brooks Road 800-648-5011
Iowa Falls, IA 50126 www.CamSpray.com

Synagro Acquires HyPex Centrifuge Repair Service

Synagro Technologies Inc. acquired HyPex Inc's Centrifuge Repair Service, Lansdale, Pa. The acquisition enables Synagro to add maintenance, process optimization and emergency repair to its dewatering services.

Big's Easy Lift Launches Online Store

Big's Easy Lift's online store, www.cole-mart.com/bigseasylift, features products, equipment and 24-hour shopping, as well as the ability to research and compare products.



Karl Schlifke

Jamko Names Schlifke Business Development Manager

Jamko Technical Solutions Inc. named Karl Schlifke business development director. He has 20 years of operations, engineering, product and sales management experience. Schlifke earned a bachelor's degree in manufacturing engineering technology from Texas A&M University.

Gamajet Names Wolff VP of Distributor Relations

Tadd Wolf has been promoted from sanitary division manager to vice president of distributor relations for Gamajet Cleaning Systems. He will be responsible for growing distribution within the United States and internationally. He brings 15 years of experience to his position and holds a Bachelor of Arts degree in interpersonal communications from West Virginia University.

Vac-Con Celebrates 25th Anniversary

Vac-Con, manufacturer of combination sewer cleaning vacuum trucks, celebrates its 25th anniversary in 2011. Beginning with five employees in 1986, the Green Cove Springs, Fla., company today employs hundreds of workers and has a worldwide network of dealers.

Posey Hydro Changes Name to Sattler Pump Solutions

Sattler Companies Inc. has changed the name of Posey Hydro Solutions to Sattler Pump Solutions. Sattler acquired Posey Hydro four years ago and has continued providing after market pump parts to the fluid transfer and hydroblasting industries. Sattler Pump Solutions also named David E. Chandler director to manage business growth strategies. He brings 43 years experience to the high-pressure pump industry, serving the municipal and oil-gas markets.

Wachs Water Services Names Executives

Wachs Water Services named Cliff Jones vice president, business development; Matt Wassam Western Region business development manager; and Mike Stadnyckj director of strategic marketing. Jones has 30 years of experience in operations and sales, including nine years in the pipeline condition assessment industry. ♦

Dedicated to Municipal Wastewater Professionals

FREE subscription at: tpomag.com

Control Grease—Before it Controls You!

Eliminate stoppages, bad odors & service interruptions in your collection system!

Jetfoam™, EHC-33™, Big Blue Bio-Blocks and Formula 52 Odor-Eliminating Enzymes form a powerful solution for system-wide grease and odor control. Together these products keep your lines running clean and odor-free to full capacity. For more information, USABlueBook offers a free training DVD/Video. Just call and request **Stock # DVD** to get your personal copy today.

Now, for a limited time, USABlueBook offers a **10%** introductory discount on this grease control system. Just call 1-800-548-1234 and mention **Promo Offer CMW** when placing your order. Offer ends December 31, 2011.

**10%
OFF**



Jetfoam



EHC-33 Bioenzyme comes in convenient drop-in packets!



Big Blue Bio-Block for Lift Stations



USABlueBook Formula 52 Odor-Eliminating Enzymes

DESCRIPTION	STOCK #	REG. PRICE	PROMO PRICE
Jetfoam Emulsifier, 5-Gal Pail	MS-48163	\$ 134.95	\$ 121.46
EHC-33 Bioenzyme, 25-lb Pail	MS-48165	399.95	359.96
Big Blue Bio-Block, 5-lb	MS-49828	99.95	89.96
Big Blue Bio-Block, 10-lb	MS-49829	199.95	179.96
Big Blue Bio-Block, 30-lb	MS-49831	399.95	359.96
Formula 52, 1-Gal Jug	MS-64702	36.95	33.26
Formula 52, 5-Gal Jug	MS-64703	176.95	159.26

USABlueBook®

1-800-548-1234 • www.usabluebook.com

The industry's most complete line of grease control products

USABlueBook is your one-stop shop for all of your collection system needs. We offer the equipment and supplies you need to not only clear current blockages, but to prevent future blockages from occurring.

With over 27,000 items in stock, we have what you need, when you need it.

FREE!

Call 1-800-548-1234 today to request your FREE Master Catalog 121

and receive a **FREE New Products Catalog!**



**Featured in
an article?**

**Make the
most of it!**

REPRINTS AVAILABLE

We offer:

Hard copy color reprints

Electronic reprints

Visit mswmag.com/order/reprint for articles and pricing

Expandable rings raise manholes to grade

Problem

The City of Winston-Salem, N.C., annually raises about 100 manholes to grade. “The risers were somewhat difficult to install because they had setscrews, didn’t seat well, and the lids sometimes rattled and popped out,” says streets supervisor Larry Cauthen. “We needed a product that would reduce our materials, time and labor.”

Solution

The city purchased **turnbuckle manhole rings from American Highway Products**. The installer sets the galvanized steel ring into the manhole rim, then uses a screwdriver to turn the pivoted turnbuckle plus or minus 0.5 inches. A 60-pound force exerts a 5,600-pound tangential force, locking the ring against the opening and preventing rattles. The one-piece assembly takes five minutes to install and provides a flat surface for seating manhole covers. The rings will not break from uneven seats or installation forces.

RESULT

“The rings are lighter and easier to handle than the old risers,” says Cauthen. “We also save about \$30 in materials per manhole, and our installation costs are less because they go in so fast.” The city has yet to have a ring fail. 888/272-2397; www.ahpl.com.



Lining system adds new life

Problem

A 54-inch ductile iron main in Monroe, La., carries 70 percent of the city’s wastewater to the treatment plant. While the pipe was in good condition, the 30 concrete manholes and five junction boxes were badly deteriorated from hydrogen sulfide. In some places, the concrete was completely missing. After rehabilitating the structures, the city searched for a way to protect the new concrete from the corrosive environment.

Solution

Officials invited Gulf Coast Underground in Fort Myers, Fla., to demonstrate the **SpectraShield multi-component stress skin panel liner system from CCI Spectrum Inc.**

After workers cleaned and abraded the manhole walls, they bored into them and injected fast-acting SpectraGrout to stop severe leaks. They plugged minor ones with quick-setting hydraulic cement.

The first layer of the SpectraShield system is a primer designed for saturated concrete. The thin film provides adhesion to the substrate. After



the primer dried for the required four hours, the crew sprayed on a layer of silicone-modified polyurea, followed by a layer of tight closed-cell polyurethane foam to fill voids and restore placement.

The foam dried tack-free in 8 to 12 seconds. The crew then applied a second thin film of silicone-modified polyurea as the final corrosion barrier. It dried just as quickly.

RESULT

“The only way to know what will work in a corrosive area like this one is to see a product in action,” says head project manager Arthur Holland. “The quick installation and cure time were real selling points.” The city lined all its repaired manholes and junction boxes with the SpectraShield system. 904/704-9786; www.spectrashield.com.

Grout stabilizes box culverts

Problem

Water had established flow paths under a reinforced concrete box culvert in Panama City Beach, Fla., causing the structure to settle and damage the roadway above. City crews filled the voids with concrete, but the heavy repairs quickly sank into the loose soils, causing the culvert to settle further.

Solution

Stormwater director William Scruggs called Ed Paradis, southeast regional manager for **De Neef Construction Chemicals Inc.**

He inspected the culvert, then recommended injecting **Hydro Active Cut polyurethane grout** into the voids. After training by Paradis, city crews drove two rows of probes on 3-foot centers 6 feet deep on the upstream side of the road. “We didn’t have to halt traffic or set up bypass pumping,” says Scruggs. The lightweight, waterproof grout filled the voids and flow paths under the culvert and stabilized the surrounding soils. The men completed the work in two days.

RESULT

A follow-up inspection by the city two years later showed no signs of the previous problems. 800/732-0166; www.deneef.com.



Manhole inspection system meets assessment goals

Problem

The City of Tacoma (Wash.) Public Works Environmental Services wanted crews to inspect 100 manholes per week to meet assessment goals and collect data to make effective rehabilitation decisions. The city has more than 12,000 manholes.



Solution

In January 2010, Atlas Inspection Technologies of Seattle demonstrated the **Panoramo SI 360-degree manhole inspection system from RapidView IBAK North America**. In seconds, two high-resolution digital cameras with specially designed distortion-free wide-angle lenses scanned the interior of a manhole in one vertical run. The system allowed operators to stop the scan in any position, do a 360-degree pan-zoom, take snapshots, and generate an unfolded view of the structure. The 3D point cloud feature let them measure nearly any feature, then export the data to a CAD program.

RESULT

The demonstration team inspected 41 manholes in 4 hours and 22 minutes, averaging 9.46 manholes per hour and proving to the city that its goal was attainable. **800/656-4225; www.rapidview.com.**

Manhole replacement without excavation

Problem

The manholes near City Hall in Hampton, Va., were severely deteriorated from high levels of hydrogen sulfide gas. The city tested ConMIC-Shield liquid concrete preservative from AP/M Permaform in a comparison of two manholes.

Solution

City crews assembled lightweight steel panels inside the manholes, then poured vibrating **high-strength AP/M Permaform concrete** into the 3-inch space between the form and wall. They added the U.S. EPA registered antibacterial agent to the mix for the first manhole. The liquid kills sulfuric acid-producing bacteria on contact, and its molecules bond to the cement particles so it cannot wash off, chip off, peel off, delaminate, or pinhole.

RESULT

After five years, the corrosion-protected manhole showed no sign of deterioration, but the unprotected one had severe structural damage. **877/543-2094; www.conshield.com.**

Concrete rehabilitated with epoxy lining

Problem

Jacksonville (Fla.) Naval Air Station, along the St. Johns River, has a high water table. Water coursing into corroded box culverts,



catch basin vaults, and storm drains eroded the surrounding soil, causing roads to sink and creating potholes. Infiltration of sand and mud restricted flows, creating backups that flooded parking lots and sometimes buildings. Unwilling to close the heavily traveled roads, the Navy filled and paved over the sinkholes to keep traffic moving.

Solution

Officials began an extensive program that included rehabilitating the structures with **Epoxytec CPP (concrete polymer paste) from Epoxytec International Inc.** The coating has no volatile organic compounds that could contaminate the river. It also has high moisture tolerance, adheres to wet concrete, and cures submerged in water.

A two-man crew from Engineered Lining Systems Inc. (ELS) in Jacksonville removed compromised liners, then prepared the underlying concrete to specifications. As part of the resurfacing process, some areas were rubbed down with Hydrxx-3 quick-curing hydraulic paste for filling large voids. Once the mortar dried, the men troweled on a 1/8-inch-thick layer of CPP. The two-part epoxy liner dried in 30 minutes.

RESULT

Rehabilitating the structures has reduced I&I, erosion and sinkholes on the base. "The walls of the structure do not have to be dry before applying Epoxytec CPP," says ELS vice president Gary Pender. "Having moisture-tolerant products is very important in Florida's damp environment." **877/463-7699; www.epoxytec.com.**

Structural lining stops surcharges and infiltration

Problem

Infiltration and a new service tying into a sewer in Palm Beach, Fla., caused a deteriorated brick manhole to surcharge. Workers found that hydrogen sulfide gas had eroded the bench and inverts. The city wanted the manhole rehabilitated quickly.

Solution

SAK Construction of Palmetto, Fla., turned to **SprayWall, a 100 percent volatile organic compounds-free self-priming polyurethane coating from Sprayroq Inc.** After pressure washing the manhole at 3,000 psi, a certified company technician applied a hydraulic cementitious mortar, providing a smooth substrate for the lining. He also created a new bench and trough for a smooth transitional channel.

To stop inflow and infiltration, the technician drilled a 1-inch hole at the intrusion points, then pumped in acrylamide grout with a topcoat of Octoplug mortar from IPA Systems. After mixing the A and B components, the technician sprayed the coating on the manhole walls. The coating gelled in about 8 seconds and was tack-free after one minute. The initial cure occurred in 30 minutes, when the manhole was returned to service. The curing process continued for 4 to 6 hours.



(continued)

RESULT

The manhole has a monolithic, corrosion- and abrasion-resistant surface. The walls are rigid enough to withstand vacuum truck tubes and workers dropping sharp tools against them. **800/634-0504; www.sprayroq.net.**

Liner system stops severe infiltration

Problem

Infiltration was pouring in around the riser joints and bench area of a precast manhole in a subdivision of Wilsonville, Ore. The city hired several contractors to repair the structure with chemical grout, but the fix proved only temporary.

Solution

The city contacted sewer rehabilitation specialist Jim Atchison of SunCoast Environmental Northwest in Vancouver, Wash. He pro-



posed lining the manhole with **Poly-Triplex three-ply fiberglass-reinforced liner from Poly-Triplex Technologies**. Workers stopped the infiltration with chemical grout and hydraulic cement, then cleaned and prepared the manhole walls. The custom-made PTL-6800 liner has an internal nonporous PVC membrane layer, which the crew impregnated with a two-part epoxy resin that cures even in wet conditions.

Once the liner was in position, they applied air pressure sufficient to offset hydrostatic head pressure and injected steam at 300 degrees F to speed curing. The procedure expanded a removable inflation bladder that forced the liner into gaps and bonded it to the walls and benches. The liner cured in less than two hours, and the bladder was removed.

RESULT

Stopping the infiltration saved the city thousands of dollars in treatment costs. The problem has not recurred. **850/547-9999; www.poly-triplex.com.**

Tightening pump station run times

Problem

One-third of the 400 or more pump stations in the City of Virginia Beach, Va., combined wastewater/stormwater conveyance system had excessive run times from inflow and infiltration. After smoke testing, dye testing and flooding, camera inspection, and hydraulic analysis, the city estimated that 85 percent of the stormwater inflow came from faulty laterals.

Solution

Using pump station SCADA information, the city ranked them according to run times and number of service calls. Remediation included installing mainline and lateral cleanouts and **Rainstopper manhole inserts from WBE Dorcas Inc.** to reduce stormwater inflow through manhole covers.

Available in HDPE plastic or stainless steel, the pan-like devices fit on the lip of the manhole to catch runoff, while sewer gas vents through a nonmechanical device. The units are easy to install and have no moving parts.

RESULT

Rainstorms on June 17 and July 5, 2008, were similar to the 1.56-inch rainfall on April 22, 2008. The reduction in flow at two stations was 442,500 gallons. **719/686-5988; www.wbedorcas.com.** ♦



SEEING YOUR WAY CLEAR

Do you know how effective your cleaning efforts really are?

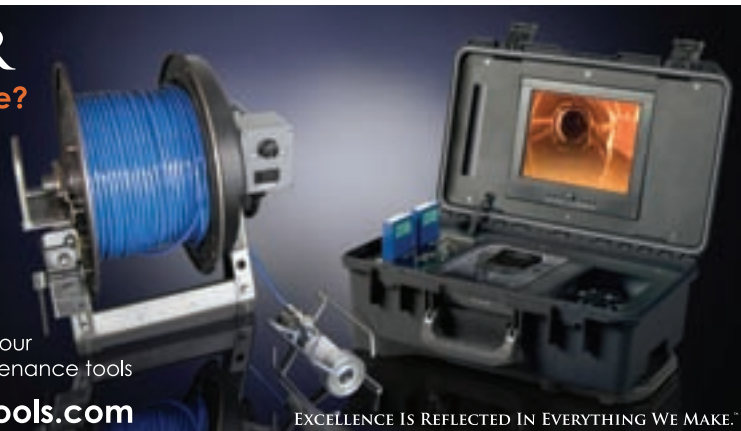
With a Shamrock JetCam on your jetting trailer or truck you do. Maintain and assess your lines in one step—no need for a separate inspection crew or equipment.

- Inspect 6" and larger lines
- Up to 600' of cable available
- Self-Leveling camera option
- 10" LCD monitor
- Battery powered
- Built-in DVD recorder

**SHAMROCK
PIPE TOOLS, INC.®**
a Flexible Pipe Tool, LLC company

Call today for more info about this product and our complete range of pipeline cleaning and maintenance tools

800.633.7696 • www.shamrocktools.com



EXCELLENCE IS REFLECTED IN EVERYTHING WE MAKE.™



Every day is Earth Day.™

"We must be one of the earliest plants to employ full-scale UV. We're proud of the fact that we are not adding chemicals to our discharge. We maximize the biological activity — let the microbes do their thing. Engineers design the best plant they know how to, and contractors build it as well as they can. In the end, though, it's the operators who make it work."

Joni Emrick
An Original Environmentalist

WATER RESOURCE MANAGER
Kalispell (Mont.) Wastewater
Treatment Plant

Get your **FREE subscription**
and read about original
environmentalists like
Joni each month in
Treatment Plant Operator.

tpo

COLE PUBLISHING INC.
tpomag.com
800-257-7222

**Proudly Serving the
Environmental Service Industry
Since 1979**

MUNICIPAL
SEWER
&
WATER
**Marketplace
Advertising**

1-800-538-8464

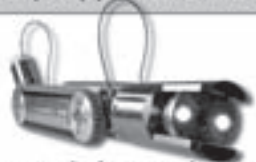
**Nozzles, Hoses
& Parts for ALL
Jetting Units.**

www.usjetting.com



Advanced Pipe Inspection Systems

- Full Pan&Tilt systems starting at \$40,000
- The only completely DC powered system
- Inspect pipes from 8" and up



more information at:
tvferret.com

518.399.2211

Superior® SMOKE
for Sewer Testing

Fast • Inexpensive • Easy



Superior® Smoke Testing
the most cost effective method
to find sources of inflow

Choose Candles or Fluid

800-945-TEST
www.SuperiorSignal.com



Tools That Work

www.AdvancedWorld.com

Enter Promo Code MS411 for \$5 DISCOUNT on next order

**"The Products
You Use
at the
Best Prices,
24/7"**



Thanks for visiting us



DYE TRACERS

**Solutions
for:**

- Infiltration
- Septic Systems
- Cross Connection
- Leaks and more...

**BRIGHT
DYES**

Division of Kingscote Chemicals

www.brightdyes.com **FREE SAMPLE 1-800-394-0678**

**"Your One-Stop
Stopper Shop!"**

FOR 31 YEARS - HOME OF THE ORIGINAL
**PIPE PLUG & NB BAG/
PILLOW DESIGN STOPPER**

[SINGLE SIZE OR MULTI SIZE PIPE STOPPERS 4" & UP]

- » SINGLE & MULTI SIZE PASS THRU PLUGS
- » MULTI SIZE PLUGS & MULTI SIZE LEAK LOCATORS
- » SINGLE & MULTI SIZE TEST PLUGS
- » COMPLETE LINE OF SEWER & DRAINAGE TOOLS AVAILABLE

disc plugs | high pressure plugs | large inflatable pipe plugs | pipeline testing & acceptance plugs | pneumatic by-pass plugs

**SEWER EQUIPMENT CO.
OF FLORIDA, INC.**

NEW SMYRNA BEACH, FL
IN FL 800.225.2952 | OUT OF FL 800.635.2323
IN CANADA 800.328.3318

www.SewerEquipmentCo.com

**Flexible Fiberglass
Pipeline Markers**



www.QuantumMarkers.com
714-563-9749 • 866-778-6017



\$2,999

Confined Space Entry System

- 7' Tripod
- 3-Way Fall Winch
- Work Winch
- Full Body Harness
- MSA Altair 4 Gas Monitor

Call for Catalog & Prices
Cloverleaf TOOL CO. 800.365.6583

www.cloverleaftool.com

SEAL IT!

Save money and gain effective capacity quickly and affordably

SEALING SYSTEMS, INC.

9350 County Road 19, Loretto, MN 55357

Toll Free: (800) 478-2054

VISIT OUR NEW WEBSITE:

www.ssisealingsystems.com



Thanks for
visiting us



Infi-Shield External Seal

**THE ULTIMATE TRACTOR
TRACTION PAD**

- Silicone carbide composite construction for long life
- Custom dependable double hole fabrication for any CUES, Aries or other style of tractor
- Chain assemblies
- Chemical/heat process to resist separation
- Competitive pricing
- Money back guarantee
- We are a 6/12 company
- For prices, questions or a sample please contact us

PIPE TOOL SPECIALTIES

PHONE# 1-(503)-390-6794 OR FAX# 1-503-390-6670
Email at pts4422@yahoo.com



- SEWER
- STORM
- UTILITY
- GREASE
- HOMELAND SECURITY

Installs below & independent of frame in new & existing manholes, & prior to street overlay for safety, to catch debris, deter dumping & theft.

SEE "HOW TO GET STARTED" www.sewerlock.com

**WARNING
Don't
Miss
Out!**

Get
your

**FREE
Issue of
Municipal
Sewer &
Water.**

COLE Publishing
www.mswmag.com



mswmag.com

- > Classifieds
- > Used Equipment
- > E-zines
- > Product Categories

MUNICIPAL SEWER & WATER™

Municipal Sewer & Water Marketplace gives you nationwide exposure to thousands of industry professionals.

Layout and design is included **FREE**, and we can fax or e-mail you a proof for final approval!

**Now Available In
4-Color
or
Spot Colors**

Choose a size that works best for you!

**Call
1.800.
994.7990**

*Black and white prices, call for 4-color pricing.

Send ad materials and payment to:
**COLE PUBLISHING INC.
P.O. BOX 220
THREE LAKES, WI
54562**



**Size A:
\$319^{00*}**

1.875" W x 4.875" H

This size is great for two photos!



**Size B:
\$219^{00*}**

1.875" W x 3.2" H

Perfect size for one photo!



**Size C:
\$119^{00*}**

1.875" W x 1.5" H

A great value!

Tools Ready for Work!

Footage TOOLS INC.

Underground Piercing Tools
Service Line Replacement Tools
Pipe Fusion Tools
Tapping Tools

Great SAVINGS On Now!

Call us toll free:
1-888-737-3668
View our online product line at:
www.footagetools.com

IndustrialOdorControl.com

**FREE
T-Lift Manhole
Cover Remover
With Every
Manhole
Odor Insert***

*No limit on number of units! Offer Expires April 30, 2011

Ask About Our
Government Discount

866-NO-STINK (667-8465)
973-846-7817 in NJ
IndustrialOdorControl.com

Simple Solutions
ENVIRONMENTAL LLC
Makers of the Wolverine Brand
of Odor Control Solutions

CONFINED SPACE ENTRY PACKAGE ONLY \$2,995

The best package on the market includes:

- 4-Gas Air Monitor
- 7' Tripod
- 3-Way Fall Protection
- Work Winch
- Full Body Harness

Add a **Blower** with 15' of duct for only **\$350!**
Add a 5 Minute **Escape Respirator** for only **\$500!**

MTECH 800.362.0240
www.mtechcompany.com

BUST BLOCKAGES!

**safe-tee[®]
STC 300
heavy duty
degreaser**

■ 1 GALLON
■ 5 GALLON
■ 55 GALLON

- Used in high pressure jet cleaners to bust the toughest grease blockages.
- Safe for the environment and your crew.
- Eliminates H2S odors.
- Great for grease and oil spill cleanup.

866-366-0587

**safe-tee[™]
chemical**

www.safeteechemical.com

THE "ORIGINAL" LIQUID SMOKE

Turbo Fog M45:

- Versatile
- Light Weight
- Compact
- Creates Dense Smoke


TURBO-FOG[™]
Since 1977


www.turbo-fog.com • 1-800-394-0678

PEOPLE


The National Utility Contractors Association announced new officers for 2011: Ryan Schmitt of Florida, board chairman; Jim Barron of Maryland, chairman-elect; Florentino Gregorio of Washington, D.C., vice chairman; Ronald Nunes of Rhode Island, treasurer; Bruce Wendorf of Florida, secretary; and board members Kari Biernacki of New Mexico, Mike Donatelli of Rhode Island, Glenn Ely of Pennsylvania, Mark Fuglevand of Washington, Kara Habrock of Nebraska, Bill Martinak of Oregon, Lewis Long of North Carolina, and Thomas O'Rourke of Nevada.

MSW welcomes your contribution to this listing. Please send notices of new hires, promotions, service milestones, certifications or achievements to editor@mswmag.com.







2006 Vector 2115, 18" blower, 80 GPM water pump, large truck engine horsepower, many extras




2006 SECA model 747 jetter, 40GPM @ 2,000PSI, remote pendent, unit is rebuilt and ready to work.



1994 Vector 2110, single stage fan, 1,000 gallon water cap, multi-flow, hydro-ex kit, 19,000 miles/3,400 hours, ex-municipal unit.



2005 Vector model 2112, 2 stage fan, 1,500 gallon water cap, multi-flow, hydro-ex kit, 17,000 miles/3,300 hours, ex-municipal unit.



312-706-9678

www.StandardEquipment.com

CALENDAR

April 10-12

Water Environment Federation, Disinfection 2011, Hyatt Regency Cincinnati, Ohio. Call 703/684-2441 or visit www.wef.org

April 10-13

American Public Works Association, North American Snow Conference, Spokane (Wash.) Convention Center. Call 816/595-5240 or visit www.apwa.net.

April 18-20

American Water Resources Association Spring Specialty Conference, Sheraton Inner Harbor Hotel, Baltimore, Md. Visit www.awra.org.

May 22-26

World Environmental & Water Resources Congress, Palm Springs, Calif. Visit www.asce.org.

LEARNING OPPORTUNITIES

APWA

The American Public Works Association is offering these seminars:

- April 7 – Solar Strategies for Public Works, audio/Web broadcast
- April 28 – Out of the Box Funding Options for Public Fleets, audio/Web broadcast
- May 3-4 – Stormwater Management Workshop, San Diego
- May 12 – Sustainable Utility Construction: Methods and Techniques
- May 17-18 – Public Fleet Management Workshop, Lexington, Ky. Visit www.apwa.net.

AWWA

The American Water Works Association is offering a Financial Management: Cost of Service Rate-Making Seminar April 13-15 in Philadelphia. Visit www.awwa.org.

Wisconsin

The University of Wisconsin Department of Engineering-Professional Development is offering these courses:

- April 12-13 – Storm Sewer System Design, Madison
- April 14-15 – Designing Stormwater Detention Basin Facilities, Madison
- April 26-27 – Using WinSLAMM to Meet TMDL, LID and MS4 Stormwater Requirements, Madison
- May 9-11 – Mastering the Fundamentals of HEC-RAS L685, Madison

Visit www.epdweb.engr.wisc.edu.

The Wisconsin Department of Natural Resources is offering these courses:

- April 12-13 – Iron and Zeolite, Green Bay
 - April 27 – Confined Space Entry Hands-On Training, Plover
 - May 2-3 – Iron and Zeolite, Fond du Lac
 - May 5 – Working in the Streets "Traffic Control and Clothing," Janesville
 - May 10-11 – Utility Management 2, Madison
- Visit www.dnr.state.wi.us. ♦

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.

BLOWERS

New Roots 27" 1021 PD blower. In stock, ready to ship or install. **www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648).** (M04)

VFC200P-5T, FUJI Pumps, Regenerative Blowers, Ring Compressors. All models, accessories. Authorized distributor. Authorized parts and repair center. Call 888-227-9822. www.carymfg.com (MBM)

BUSINESSES

Well-Established and Profitable Texas Septic, Sewer & Installation Business For Sale. PRICE RECENTLY REDUCED. Grossing in excess of \$600,000 annually, customer list of nearly 2,000 accounts and 430 contracted customers. Includes nice late model equipment, most are 2007, 2008 model years. Owner retiring after nearly 40 years in business. Real estate available upon request. Reduced to \$450,000. E-mail jeffb@colepublishing.com or call 800-257-7222 and ask for Jeff Bruss for more details. **A B2 Business Brokerage Listing - www.BTwo.biz.** (MBM)

New Jersey/Pennsylvania drain cleaning and pipe service business has all the elements for an ample start to a new foundation or an addition to your existing business. Established in 1994, well-rounded client base, customer contracts, and owner is willing to train. Modern equipment and inventory. Real estate optional. Reasonably priced at \$425,000. E-mail jeffb@colepublishing.com or call 800-257-7222 and ask for Jeff Bruss for more details. **A B2 Business Brokerage Listing - www.BTwo.biz.** (MBM)

Amarillo, Texas sewer, drain & plumbing business established in 1976. Owner wants to retire, so take the keys to a 2004 Sprinter outfitted with all of the equipment you'll need to run this business. Price includes real estate with 80x100 shop/office on two city lots. Good gross, good profit, financials available with signed non-disclosure. Offered at \$495,000. E-mail jeffb@colepublishing.com or call 800-257-7222 and ask for Jeff Bruss for more details. **A B2 Business Brokerage Listing - www.BTwo.biz.** (MBM)

Successful business with a large amount of equipment and inventory. Profitable sewer and septic business in central Pennsylvania. Increasing revenue over the past 3 years and a large amount of equipment and inventory. Equipment is a mix of old and new, but all is working and making money. Selling price \$349,000. E-mail jeffb@colepublishing.com or call 800-257-7222 and ask for Jeff Bruss for more details. **A B2 Business Brokerage Listing - www.BTwo.biz.** (MBM)

BUSINESSES

Chicago-Area Biosolids, Land Application, Dredging and Industrial Services Business. Established in 1985, owner is retiring. Reputable business includes real estate servicing the entire Chicagoland area with sludge and biosolids disposal and treatment services. Real estate and shop included with sale valued at \$750,000, business grosses in excess of \$3 million annually, \$6.3 million in equipment and assets including several TerraGators, Vac Trailers, dump trailers, loaders and much more. Offered at \$4,900,000 - huge potential, good profit and priced right. Non-Disclosure Agreement required, all P&L statements, list of assets, and financials available to qualified buyers. E-mail jeffb@colepublishing.com or call 800-257-7222 and ask for Jeff Bruss for more details. **A B2 Business Brokerage Listing - www.BTwo.biz.** (MBM)

Dallas/Fort Worth, Texas Area Sewer/Rehab Business For Sale. Drain Cleaning, TV inspection, Pipeline & Manhole Rehab/Relining, Municipal Cleaning and Maintenance business for sale. Excellent opportunity to expand or start your own business. Good revenue history and priced to sell. Includes all equipment to get started. **Offered at \$195,000.** E-mail jeffb@colepublishing.com, visit www.Btwo.biz, or call 800-257-7222 and ask for Jeff Bruss for more details. **A B2 Business Brokerage Listing.** (MBM)

BUSINESSES WANTED

ERH Enterprises Inc. is a successfully established Midwestern-based Water and Wastewater Operation Company located in the eastern part of central Illinois and we are looking to buy used Water and Wastewater Plants as well as any used equipment pertaining to, or that can be used in, this field of work. Anyone having any offers please call 217-267-2331 and ask for John McBride, the Vice President/Director of Operations. (M05)

CATCH BASIN CLEANER

2008 American La France Condor with a new VacAll VS10DC, 10-yd. debris body, dual steer dual sweep street sweeper and catch basin cleaner. (Stock #13352V) **www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648).** (M04)

JET VACS

2008 Sterling LT7501 with a VacAll AJV1015, 10-yd. debris body, 1500 gal. water, combination vacuum/jetting unit. (Stock #13366) **www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648).** (M04)

JET VACS

1999 Sterling cab and chassis with a Vector 2100 combination vacuum loader and high pressure sewer cleaning system. (Stock #2129V) **www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648).** (C04)

JETTERS: TRUCKS

1990 Ford Diesel L8000: Miles 44,341. Enclosed front driven hydraulic system replaced, Sreco 2000 psi. Has traffic arrow safety lights, interior like new. Can email pictures. \$16,000 OBO. 650-333-3304 CA. (M04)

2006 GMC TC6500 cab and chassis with Pipe Hunter trunk mounted jetting unit, 3000 psi @ 50 gpm with a 1,000 US gal. water tank, rear mounted hose reel with JET EYE camera system. **6,800 original miles, like new. \$129,000 sale price. (Retail for \$210,000)** (Stock #13234V) **www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648).** (M04)

1992 Ford L8000 cab and chassis with an enclosed Sewer Equipment Co. jetting unit with a Myers D-65 hydraulically driven water-cooled pump. (Stock #1505C) **www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648).** (M04)

PUMPS

Buy & Sell all makes and models, **new & used** vacuum pumps & high pressure water pumps, and good used replacement parts. Call for an inventory sheet and save. **www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648).** (M04)

RENTAL EQUIPMENT

Liquid vacs, wet/dry industrial vacs, combination jetter/vacs, vacuum street sweeper & catch basin cleaner, truck & trailer mounted jetters. All available for daily, weekly, monthly, and yearly rentals. **VSI Rentals, LLC, (888) VAC-UNIT (822-8648) www.vsiRentalsllc.com.** (M04)

SEPTIC TRUCKS

One (1) 2006 3200 US gallon **stainless steel** vacuum tank. **www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648).** (M04)

1998 Mack RD6885 with a 3200 US gallon stainless steel vacuum tank unit. (Stock #6653V) **www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648).** (M04)

2010 Peterbilt 348 with new Presvac 3600 US gal. aluminum vacuum pressure tank with Masport HXL400WV vacuum pressure pump. (Stock #8808) **www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648).** (M04)

SERVICE/REPAIR

Dynamic Repairs - Inspection Camera Repairs: 48-hr. turn-around time. General Wire, Ratch, Ridgid, Pearpoint, 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. (MBM)

SHORING

Manufacturer Offering Modular Aluminum Shoring, Lightweight Steel or Aluminum Trench Boxes, Aluminum Slide Rail Systems, and OSHA Training. www.americanshoring.com. 1-800-407-4674. (M08)

TANKS

One (1) 2006 3200 US gallon **stainless steel** vacuum tank. **www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648).** (M04)

VACUUM LOADERS

1999 International with a Guzzler Ace 27" HG wet/dry industrial vacuum tank loader. **Demo/Rental unit.** (Stock #7390) **www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648).** (M04)

VACUUM TRAILER



2007 Ring-O-Matic 750 High CFM Vac Trailer: Cat 3024 @ 50 HP, 696 hours, liquid-cooled, 750 gallon cap... 850 CFM lobe style blower, 20,860# GVW \$29,500
715-546-2680 WI (MBM)

WANTED

WANTED TO BUY: Any make/model Gap/Vax equipment. 888-442-7829. (C04)

WATERBLASTING

40,000 PSI sapphire nozzles, UHP hoses & replacement parts. Excellent quality & prices. 772-286-1218; info@alljetting.com; www.alljetting.com. (CBM)

Gardner Denver T-450 VSDT 60.6GPM max 10K max. **Gardner Denver T-450 w/ Jetstream** fluid end transmission 10K @ 40GPM. **THE-500UH** 50K bareshaft pump. Boatman Ind. 713-641-6006. View @ www.boatmanind.com. (CPBM)



The Problem...



The Solution...



The Result.

Simple. Effective. Proven.



1-800-844-4974

www.rootx.com
www.rootxperts.com



Think. Big.



For more information on all of LMK's
next generation trenchless products and equipment or
to learn how you can become an installer contact
info@lmkenterprises.com or call 815.433.1275



The Next Generation of Cured in-Place Trenchless Products.

LMK is a manufacturer
and technology provider
of cutting-edge trenchless
products and equipment
with a portfolio of over 80
patents worldwide.

LMK's Next Generation

- Pressure Pipe
- Cured in-Place
Manhole liner
- Lined Main Tap™





The most intelligent operating system in the industry.

EXPERTISE

TECHNOLOGY

RESPONSIBILITY

Knowledge is power

What makes the Omnibus Control System the most intelligent operating system in the industry? Because one simple control operates ALL the vacuum and water system functions of the Vac-Con Combination Sewer Cleaner. This coordination of systems allows you to use only as much power as is needed, saving time and fuel expended on the job.

The Omnibus Control System is precise, economical, and expandable. Not to mention it's backed by a worldwide network of trained distributors.

Omnibus is what happens when you blend the power of experience with the power of technology. For more information visit www.vac-con.com/omnibus.html

A **HOLDEN INDUSTRIES** Company

969 Hall Park Drive • Green Cove Springs, FL 32043 • Tel: 904-284-4200 • Fax: 904-284-3305 • vns@vac-con.com

Vac-Con is a subsidiary of Holden Industries, Inc., a 100% employee-owned company.

