



# MID ATLANTIC JOURNAL OF TRENCHLESS TECHNOLOGY 2023

OFFICIAL PUBLICATION OF THE MID ATLANTIC SOCIETY FOR TRENCHLESS TECHNOLOGY

MASTT: A NON-PROFIT ORGANIZATION

*Embracing Trenchless Installation*

*Turnkey Alliance Integral*

*Safeguarding Fragile Ecosystems*

*Metal Pipe Riser Rehabilitation*

9<sup>TH</sup> ANNUAL EDITION





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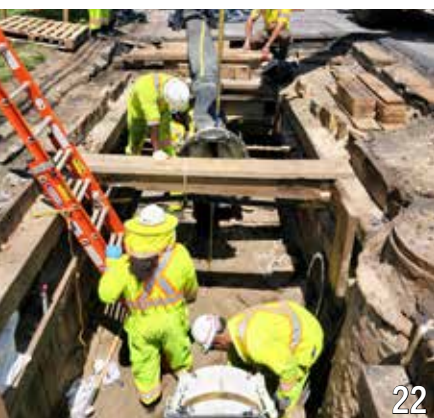


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# MESSAGE FROM THE MASTT CHAIR

Richard Thomasson, P.E., MASTT Chair

**W**e are very pleased to produce our ninth publication of the Mid Atlantic Society for Trenchless Technology (MASTT) Journal. The MASTT was founded in 2004 as a Chapter of the North American Society for Trenchless Technology (NASTT) and serves the geographical region of Virginia, West Virginia, District of Columbia, Maryland, Delaware, Pennsylvania, and New Jersey. The region has a huge population and many large municipalities and also, a large industrial base. The infrastructure is very large for water, sewer, stormwater, gas and electric, which in many cases is older and deteriorating. There is an overwhelming need for replacement and rehabilitation of the infrastructure which drives the interest in Trenchless Technology.

There are also a lot of major academic institutions in the Mid- Atlantic region which are heavily involved in research on Trenchless Technology. Being close to the nation’s Capital, creates a high visibility on infrastructure funding and interest in new technologies which can make tight budgets be used more effectively. There are also major industry leading technology and service companies within the MASTT region. Also, there are major trade associations such as NASSCO, ASCE, NSF, NIST, PPI, WEF, AWWA and others, who are essential in the infrastructure industry. Each has done a tremendous amount of work in asset management being used to manage the replacement and rehabilitation of all infrastructure in the region. Because of the above factors, MASTT is a valuable grassroots resource for education, training, specifications, governance, funding and promotion of the trenchless industry.

Both private and public infrastructure owners across the region have used the new service products and innovation for trenchless work. Educating and introducing new trenchless technologies and services, MASTT has conducted over 35 seminars throughout the Mid -Atlantic region. These seminars have been very informative and have introduced Trenchless Technology to many people who were not aware of the information over the last 16 years. We are trying to incorporate some of the NASTT short courses into our seminar schedule. This year we had to postpone one seminar due to the summer vacations and lack of a keynote speaker.

We have an overwhelming opportunity and responsibility to bring the deteriorating infrastructure to an acceptable level of service for the huge populace that we serve. The infrastructure assets we are focusing on are generally out of sight and out of mind until a catastrophic failure occurs. A focus on asset management has started to address these assets in a structured and effective way. The major factors in asset management, such as condition assessment, risk management, safety, economic planning, and social factors flow seamlessly into trenchless technology as a major tool for accomplishing the desired outcomes. Environmental, social and economic factors are all addressed and greatly enhanced through the application of trenchless technology. Focus on performance, sustainability, and resiliency of the infrastructure systems to provide a level of service necessary to maintain a healthy nation are primary drivers in our vision for MASTT.

## “WE NEED YOUR PARTICIPATION AND COLLABORATION”

MASTT can be an integral part of the education of providers and users of the infrastructure which is critical to continued viability in the region. We need your participation and collaboration to be able to provide the resources to accomplish this vision. Join in active membership in MASTT and be a part of this critical work to enhance the infrastructure in our region.

We have rebounded from Covid close to a new normal and the trenchless work has picked up. Stay strong, healthy and persevere for the future in our new normal operation. Keep trenchless technology as a focus and get involved in MASTT and the advancement of the education of the public and industry of the benefits of trenchless technology.

Richard Thomasson  
Chair, MASTT



MASTT SITE





## COORDINATE PA IS THE NEXT GENERATION OF UTILITY COORDINATION

**Coordinate PA is a web application developed by Pennsylvania One Call System to support public works, utility project planning and utility coordination within the Commonwealth of Pennsylvania. Users utilize a spatial, map-based system to view underground utility and public works projects, identifying opportunities for coordination and collaboration when projects overlap in space and time.**

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- Request meetings and upload documents associated with a complex project







# GREETINGS FROM THE MASTT EXECUTIVE DIRECTOR

Leonard Ingram, Sr., PWAM, Executive Director, MASTT

I am the Executive Director for the Mid Atlantic (MASTT), Midwest (MSTT) and Southeast (SESTT) Society for Trenchless Technology. So far this year, trying to organize and conduct our “Trenchless Technology, SSES and Buried Asset Management” seminar series has been a real challenge for me. I have already had to postpone two seminars and have a date conflict with another. People are so busy or are understaffed. There is a lot going on! Municipal employees are so busy that they cannot return calls or reply to emails. Hotel staff are the same. It is very hard to get much accomplished. This year I have conducted one successful “Trenchless Technology, SSES and Buried

Asset Management” seminar in Baton Rouge LA that was a carryover from 2022.

For decades now, I have worried about NASTT and about our annual No-Dig Shows because they mean so much to the Trenchless Technology Industry. Having attended the 2023 No-Dig Show in Portland, I was pleasantly surprised again. The Show was a huge success! **Matthew and the NASTT Staff are to be praised for what they are accomplishing and the success of the 2023 No-Dig Show in Portland. Great Job Folks!**

Please review the **MASTT, MSTT AND SESTT 2023 PROPOSED**

**“THANKS FOR YOUR SUPPORT”**

**SEMINAR AND JOURNAL SCHEDULE BELOW** and plan to support and participate with the seminars and the journals as much as possible.

Leonard E. Ingram, Sr., PWAM  
Executive Director, MASTT, MSTT & SESTT

- MASTT - Mid Atlantic Society for Trenchless Technology**
- MSTT - Midwest Society for Trenchless Technology**
- SESTT - Southeast Society for Trenchless Technology**

## PLEASE REVIEW THE MASTT, MSTT AND SESTT 2023 PROPOSED SEMINAR AND JOURNAL PUBLICATION SCHEDULE:

SOCIETY	LOCATION/PUBLISH	PROPOSED DATE	STATUS
SESTT SEMINAR	BATON ROUGE LA	JAN 25, 2023 - WED	CONDUCTED
MSTT SEMINAR	LOUISVILLE KY	MAY 16, 2023 - WED	POSTPONED
MASTT JOURNAL	PUBLISH (DEADLINE JULY 28, 2023)	AUG 25, 2023 - FRI	PUBLISH DATE
MASTT SEMINAR	NEWARK NJ	AUG 2, 2023 - WED	POSTPONED
MSTT SEMINAR	DETROIT MI	SEP 20, 2023 - WED	PROPOSED
MSTT JOURNAL	PUBLISH (DEADLINE SEP 8, 2023)	SEP 29, 2023 - FRI	PUBLISH DATE
SESTT SEMINAR	RALEIGH NC	NOV 14, 2023 - TUES	PROPOSED
SESTT JOURNAL	PUBLISH (DEADLINE NOV 3, 2023)	NOV 24, 2023 - FRI	PUBLISH DATE
MASTT SEMINAR	RICHMOND VA	DEC 6, 2023 - WED	PROPOSED

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# MESSAGE FROM NASTT CHAIR

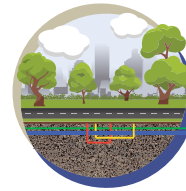
Matthew Wallin, PE, NASTT Chair

## The 2024 No-Dig Show is Heading to the East Coast!

**H**ello Mid Atlantic Chapter Members and Associates! The NASTT 2023 No-Dig Show held in Portland, Oregon, was a great success and a wonderful opportunity to see our industry friends and colleagues while we celebrated all things trenchless. We've already jumped into planning for the 2024 No-Dig Show and we are so excited to bring the conference to the East Coast and meet in Providence, Rhode Island next April. The Mid-Atlantic Chapter is a strong Regional Chapters and a big part of why the trenchless community in this area is thriving. Providence is a great location on the East Coast within the heavily populated northeast corridor, just a short drive from Boston, and within a reasonable drive from Philadelphia, New York City, Hartford, and many other cities in between. We are excited to meet here for our industry to come together to network and educate with our Show motto, *Green Above, Green Below*. It is important that our industry is a steward of our precious natural resources, so we welcome the opportunity to provide a forum for learning about the latest in innovative trenchless products and services that help us all accomplish that lofty goal. Learn more about all the No-Dig Show has to offer at [www.nodigshow.com](http://www.nodigshow.com).

In the coming months we have many additional events planned to bring the underground infrastructure community together. Our ever-popular NASTT Good Practices Courses are being held both

**"WE ARE SO  
EXCITED TO MEET  
IN PROVIDENCE,  
RHODE ISLAND!"**



**GREEN ABOVE.  
GREEN BELOW.**

virtually and in-person throughout the year. Visit [www.nastt.org/training/events](http://www.nastt.org/training/events) to find a course that fits your schedule.

This fall we are excited to head to Edmonton, Alberta for the 2023 No-Dig North conference, October 23-25. No-Dig North is hosted by the Canadian Chapters of NASTT and offers three full days of training, education, and networking. This is a must-attend event for trenchless training and networking in Canada and nearby portions of the US. Please visit [www.nodignorth.ca](http://www.nodignorth.ca) for details!

If you have attended an NASTT event (national or regional) you probably left feeling excited and eager to get more involved. I ask that you consider getting engaged in one of the many NASTT committees that focus on a wide variety of topics. Some of our committees that are always looking for fresh ideas and new members are the Training and Publications Committee, the individual topic Good Practices Course Sub-Committees, the Educational Fund Auction Committee, the No-Dig Show Planning Committee and the No-Dig

Show Technical Program Committee. There are many opportunities for you to consider where your professional expertise can be put to use through networking with other motivated volunteers. With education as our goal and a strong drive to provide valuable, accessible learning tools to our community, we are proud of our continued growth as both an organization and as an industry. Our volunteers and committee members are what keep us moving in the right direction.

For more information on our organization, committees, and member benefits, visit our website at [nastt.org](http://nastt.org) and please feel free to contact us at [info@nastt.org](mailto:info@nastt.org).

We look forward to seeing you at a regional or national conference or training event soon! And we hope you are planning to join us in Providence for the 2024 No-Dig Show April 14-18.

*Matthew Wallin*

Matthew Wallin, PE  
NASTT Chair

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# 2023-2024 MASTT BOARD OF DIRECTORS



## **Richard Thomasson – Chair**

Richard O. Thomasson has over 54 years of experience working in the water and wastewater field. He has been closely involved with Trenchless Technology for nearly his entire career. While at the Washington Suburban Sanitary Commission he directed many uses of new trenchless technologies, retiring after 31 years as the

Director of Construction. He has worked with Parsons Brinckerhoff for 8 years, and Arcadis for the 12 years, and part time with EBA Engineering for the past 3 years continuing his involvement in numerous trenchless projects.

Richard has a B.Sc. in Civil Engineering from Virginia Tech, a M.Sc. in Civil Engineering and a MPP in Public Affairs from the University of Maryland. He is a licensed P.E. in Virginia, Georgia and Maryland. As a Founding Director and the very first Chair of the North American Society for Trenchless Technology (NASTT), Richard believes fully operational water, wastewater systems, gas service, electric service and storm water systems are crucial assets for a healthy growing nation. In 2016 Richard was inducted into the NASTT Hall of Fame.



## **Dennis Walsh – Vice Chair**

Dennis M. Walsh, P.E. is a Senior Project Manager – Horizontal Directional Drilling for Public Service Electric & Gas in New Jersey and a Senior Engineer for Kilduff Underground Engineering in Red Bank, New Jersey. Dennis is a 1972 graduate of the University of Dayton, Ohio with a B.S. in

Civil Engineering and a 2002 graduate of the Polytechnic University of New York with a M.S. in Technology. He retired from KeySpan Energy Company in 2005 after a 28 year career in the gas utility field with a background in engineering, operations, construction, Quality Assurance and HVAC. He led KeySpan's efforts to expand the use of trenchless technology in the early 1990s to decrease its main and service installation costs. Past experience includes consulting engineering in the natural gas industry.

Dennis is a past Board member for NASTT, as well as a Board member for the NASTT Mid-Atlantic Chapter and on the Annual No-Dig Committee. He has designed numerous HDD installations for various utilities; including a 1,800-foot HDD for a 30-inch gas main under a tidal basin in Brooklyn, NY; a 2,000-foot 12-inch HDD under an environmental sound in south NJ; a 400-foot long Jack & Bore installation in Newark, NJ; and a 1900-foot HDD of a 30-inch steel pipeline for a 69kV electric system. Dennis is a licensed Professional Engineer in New Jersey and Massachusetts. When he is not involved in trenchless projects, he enjoys traveling, and trying to play golf.



## **John Seibert – Secretary**

John Seibert is the Director of Trenchless at Haugland Group LLC. John holds a B.S. in Petroleum and Natural Gas Engineering from Penn State. He was hired directly out of school by Aaron Enterprises, Inc. as an entry level engineer and spent 8 years with the company. Over his time at Aaron, he has gained experiences in jack and bore, pipe

ramming, guided auger boring, microtunneling, TBM, pipe jacking and tunneling, pit excavations, shaft excavations, slip lining, pipe rehabilitation, grouting, dewatering and large HDD work which is his primary focus. He was recently hired by Haugland to expand the companies' trenchless capabilities. He has been involved in over 100 large HDD installs to date along with all other forms of trenchless installation. In addition, he is well versed in design work having worked on 35 designs, many of which his team has installed. He has also authored and co-authored two papers on trenchless techniques for ACSE. His main goal is to continue to grow the company and provide world class trenchless services. He enjoys golf, working out and hanging out with friends outside of work.



## **Mike Hoffmaster – Treasurer**

Mike Hoffmaster is employed by OBIC as Director of National Business Development. OBIC is a manufacturer of protective coatings and grouts for wastewater, potable water and industrial environments. His responsibilities include educating municipalities and engineering firms on the benefits of OBIC products their products, as well as increasing

OBIC's market share across North America. Another key role is supporting their network of installers and recruiting new companies to install the OBIC products.

He earned a Bachelor of Science degree from Shepherd University and has over 36 years of experience in the construction industry. For the past 13 years his focus has been in trenchless construction and the previous years was spent working in a variety of roles, for precast concrete company.

Mike has played a vital role in obtaining product approvals and specification writing for products he has been associated with. In addition to serving as Treasurer for the MASTT, he is an active member of Chesapeake Water Environmental Association (CWEA), Virginia Water Environmental Association (VWEA), Maryland Rural Water Association (MRWA), Virginia Rural Water Association (VRWA), Pennsylvania Rural Water Association (PRWA) and Water Environment Federation (WEF) and a member of NASSCO. He is a recipient of the CWEA Golden Manhole Award for his contributions to the organization. In his spare time Mike enjoys cooking, photography, traveling, volunteering with the Special Olympics and is active in his community.



# MID ATLANTIC SOCIETY FOR TRENCHLESS TECHNOLOGY – BOARD OF DIRECTORS 2023-2024

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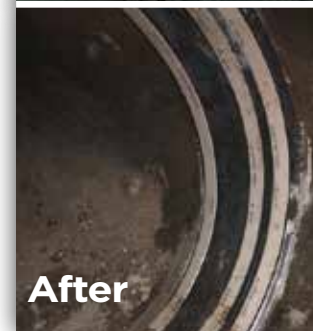
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# 2023 SEMINAR & JOURNAL SCHEDULE

**MASTT - MID ATLANTIC SOCIETY FOR TRENCHLESS TECHNOLOGY**  
**MSTT - MIDWEST SOCIETY FOR TRENCHLESS TECHNOLOGY**  
**SESTT - SOUTHEAST SOCIETY FOR TRENCHLESS TECHNOLOGY**

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MASTT SEMINAR	RICHMOND VA	DEC 6, 2023 - WED	PROPOSED

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Or call (204) 275-6946 to advertise in the journal or discuss an article for the journal.

Our 128 "Trenchless Technology, SSES and Buried Asset Management" seminars since 2001 have offered a lot of information, a lot of networking and a lot of learning. The journal and webinar are a great source for advertising, learning and teaching.



For registration and updated information on the 2023 "Trenchless Technology, SSES and Buried Asset Management" Seminars and Trenchless Journals, please visit:

Mid Atlantic: [www.mastt.org](http://www.mastt.org) | Midwest: [www.mstt.org](http://www.mstt.org) | Southeast: [www.sestt.org](http://www.sestt.org)



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# NASTT 2024 No Dig Show Preview

## Welcoming North America's Underground Infrastructure Community to the Populous Northeast!



***“BE A PART OF THE EXCITEMENT AS A PRESENTER, SPONSOR AND EXHIBITOR!”***

The North American Society for Trenchless Technology Chapter looks forward to hosting the 2024 No-Dig Show in Providence, Rhode Island April 14-18. Hosting North America's premier trenchless educational and networking event in the Northeast for the first time, presents a golden opportunity for the Northeast Trenchless community to showcase the progress it has made in utilizing trenchless applications as the preferred method for underground infrastructure construction in the Northeast.



*Within an easy day's drive from most cities in the populous northeast – Providence is just a few hours' drive from Portland ME, Philadelphia, PA, NY, NJ, VT and CT – the 2024 NASTT No-Dig Show promises to draw significant attention from top infrastructure decision-makers across the Northeast including municipal authorities, utilities, engineers, contractors, suppliers and policy-makers. The 2024 NASTT No Dig Show motto “Green Above, Green Below” exemplifies the trenchless industry's position as an important steward of our environment and natural resources, utilizing approaches that have significant environmental and social benefits. Trenchless Technology is at the forefront of ongoing efforts to reduce GHG emissions. As our planning kicks into high gear, check the website [www.nodigshow.com](http://www.nodigshow.com) for updates and further information. Additional details are provided in future editions of Trenchless North America as we get closer to the event.*

*Join us for the 2024 No-Dig Conference in Providence, RI is April 14 - 18. The excitement and anticipation is building – be a part of the excitement as a presenter, sponsor and exhibitor!*

**Babs Marquis** CCM

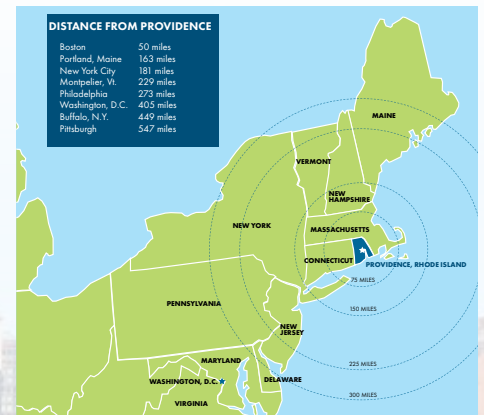
Delve Underground  
2024 No-Dig Show Planning Committee Chair  
Secretary, NASTT Board of Directors  
Past Chair, NASTT-NE Chapter



The NASTT No-Dig Show is being hosted in the Northeast for the first time



Rhode Island Convention Center



Providence is an easy day's drive from most cities in the Northeast





APRIL 14-18 | PROVIDENCE, RI

**NO-DIG SHOW**

**2024**

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**PROVIDENCE**



**2024**



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ABOUT PROVIDENCE!

# TIDEWATER UTILITIES EMBRACES TRENCHLESS WATER PIPE INSTALLATION

## Delaware Utility uses Trenchless Technology to Get Water Mains to New Communities and Customers

By: Ed LoBello, Underground Solutions, Inc.

Founded in 1964, Tidewater Utilities, Inc. (TUI) was the first private water utility provider in Southern Delaware. TUI was acquired in 1992 by Middlesex Water Company (NASDAQ: MSEX). Together, they have established a standard of service to water customers in Delaware and New Jersey that is unsurpassed. Currently serving approximately over 56,000 homes and businesses as well as Dover Air Force Base, TUI has established themselves as a premier water utility in the mid-Atlantic.

Delaware, known as “The First State”, is well regarded for beautiful beaches, clean rivers, Dover Speedway, and the famed Firefly Music Festival, among many other attractions. The state has led the northeast in growth over the past decades and much of that growth has come within the water systems of TUI. Beachgoers, retirees, and families have flocked to the area to enjoy the pristine beaches, world class seafood, and peasant lifestyle of the area.

As ROWs increasingly become more crowded, trenchless technologies provide an opportunity for vertical separation in addition to horizontal. Horizontal Directional Drilling (HDD) allows transmission pipes to go under many types of obstacles. Also given the shallower water tables in Delaware, this technology is the best option to get water main to new communities and customers. Trenchless gives designers the ability to eliminate the cost of dewatering, piling, and the risk associated with laborers in soft soil trenches.

### *“INSTALLING WATER AND SEWER LINES IN SUMMER IS EXTREMELY SENSITIVE WHEN CROSSING MAJOR THOROUGHFARES”*

Thanks to the world class beaches of the Delaware coast, installing water and sewer lines in the summer months is extremely sensitive when crossing major thoroughfares. In an effort to avoid disrupting beach going travelers, Delaware Department of Transportation (DELDOT) will not allow open cut across roads in many instances. Therefore, trenchless solutions, frequently horizontal directional drilling (HDD), is necessary when new water and wastewater lines are needed. DELDOT has successfully partnered with Tidewater on multiple road crossings throughout the state. In most cases, DELDOT has allowed road and highway crossings with the implementation of Fusible PVC or steel casings. One advantage has been the ability to perform the pullback of FPVC carrier and casing in one step. Because Fused PVC has a low profile, it can be preloaded into the casing after the fusion phase is completed. Then a specialized pull head is attached and used to pull both pipes in simultaneously.

Further, the DELMARVA Peninsula is blessed with an almost countless number of pristine wetlands and creeks. For most installation methods, this blessing is a curse for water and wastewater

system owners. Preserving pristine wetlands and navigable waterways means innovative installation of necessary water infrastructure. Again, TUI calls on trenchless technologies to mitigate effects on the environment. TUI prefers the use of Fusible C900™ PVC for its cost, durability, and ease of installation and maintenance due in part to its compatibility with TUI’s PVC standard for open trench installations. When Fusible PVC from Underground Solutions became a viable option for HDD, pipe bursting, and other trenchless options, it was an obvious fit for road, creek, and wetlands crossings.

To date, TUI has performed over 40 trenchless installations. This has included diameters as large as 24 inches and as small as 4 inches. Trenchless pipe installations have lowered costs for customers, reduced downtime for vital roads, reduced overall construction time, reduced traffic disruption, and made maintenance easier and less frequent. According to Greg Coury “We have had success using Fusible PVC in our system for horizontal drill projects. Both the up-front cost and maintenance have been favorable.”





Figure 1. Pipe Burst in Process

## PIPE BURSTING 12-INCH MAIN

In 2021, TUI needed to update approximately 2,200 LF of 12-inch ACP water main. There was no room to install new main beside the existing pipe as the majority of the Right of Way, or ROW, consisted of a wide swale that is in perpetual use. This left few economical options using traditional replacement methods and any open trench options would have extensive environmental permitting. Tidewater engineers reviewed possibilities for trenchless rehabilitation or replacement. For most pipe rehabilitation technologies, the internal diameter is reduced during the process. While that may work for some designs, in this case, Tidewater needed the capacity of a 12-inch pipe. After internal engineering discussions, Tidewater settled on pipe bursting with 12-inch

Fusible C900 PVC. Pipe bursting is a method of pipe rehabilitation in which a cutting head is pulled through the existing pipe trailed by an expansion head which displaces the host pipe into the surrounding soil and finally an attached new FPVC pipe trails behind that and is pulled into place in the same alignment as the host. Tidewater had used the FPVC in the past and was familiar with its performance in robust installations such as HDD. Additionally, their maintenance personnel have a long history working with it successfully. Melcar Underground, a highly regarded trenchless contractor with a local focus and a worldwide footprint, was chosen through the bid process to execute the difficult installation. Use of HDD equipment was implemented to avoid large scale dewatering needed to accommodate typical pipe bursting pits/equipment. In the end, the project was successfully completed on time and within budget and is in service today.



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Figure 2. Melcar Preparing to Pull over 2,300 feet of 20-inch FPVC



Figure 3. Rehoboth Beach Waterline

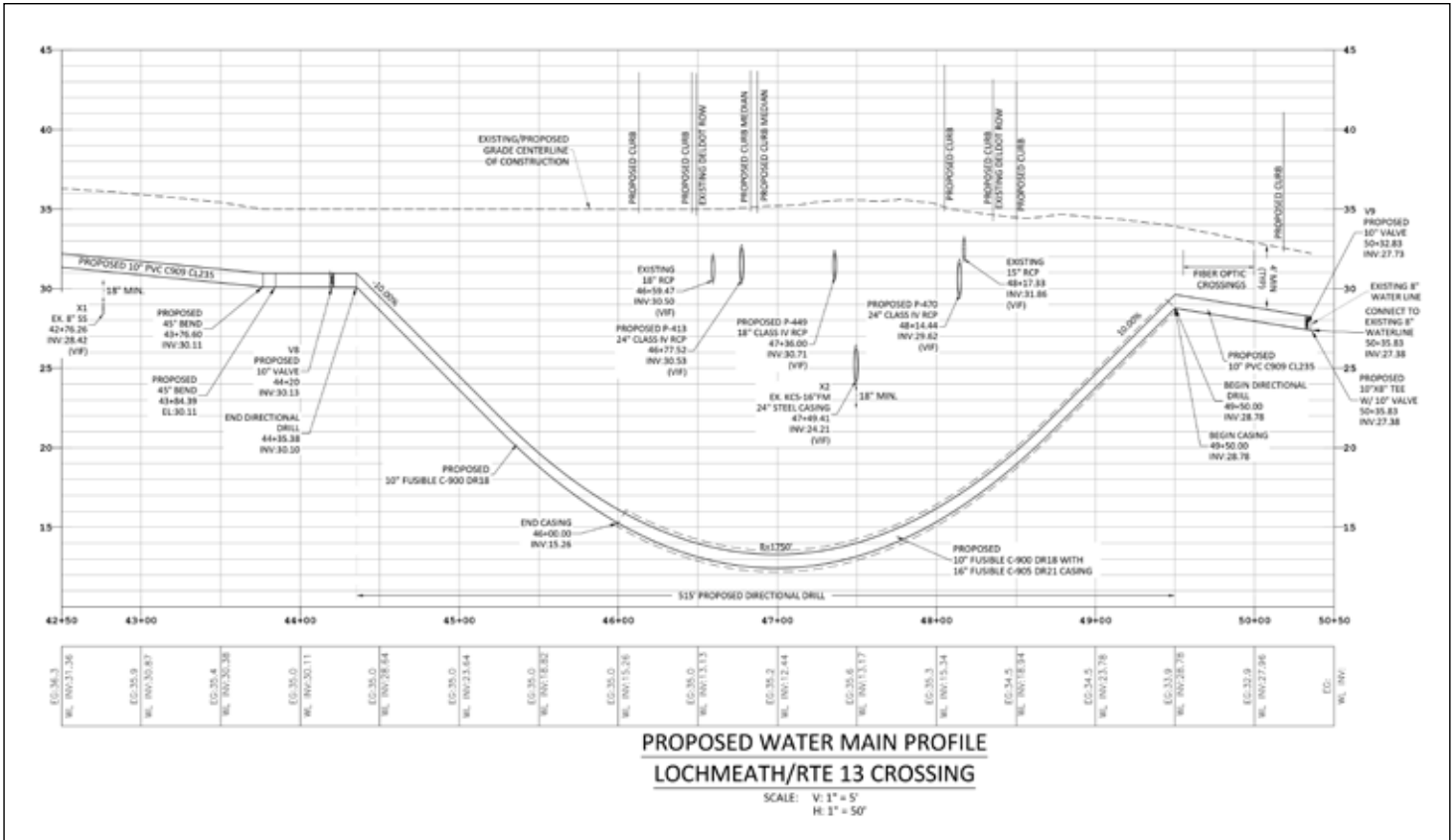


Figure 4. Rte 13 Lochmeath Crossing Design with Casing



## ANGOLA AND MEADOWS HDD

In recent years, TUI has been expanding in the Angola and Meadows areas, interconnecting 3 independent service areas into 1 large distribution system serving over 25,000 customers, connecting supply and storage assets to provide redundancy/resiliency and meet the meteoric growth of this resort area near Lewes and Rehoboth Beach, DE. With sensitive natural bodies of water to cross, TUI designed several FPVC drills awarded over multiple years and contracts culminating in the most recent of 2300 LF of 20-inch diameter PFVC. This HDD was completed once again by Melcar Underground. This challenging drill also required Melcar to drill at depths which allowed for the attachment of fire hydrants and in-line valves. The pipe has performed well, and HDD helped limit construction costs and the inconvenience of open cut roads for local businesses and residents as well as avoided the clearance of several precious acres of mature trees.



Figure 5. Spring Crew shown loading the 10-inch into 16-inch casing for pullback

## LOCHMEATH NEIGHBORHOOD HDD

In 2020, TUI needed to bring the residents of the Lochmeath Neighborhood in Camden, DE a new, clean potable water line. In order to do so, the 10-inch line would have to cross one of the busiest North to South corridors on the Delmarva Peninsula. Route 13 allows easy travel from Philadelphia all the way to Norfolk, VA for millions of vehicles annually.

This includes business, government, military, vacationers, college students and many others who rely on this vital thoroughfare. Shutting down even briefly for construction was simply not an option. Once again, a trenchless solution was needed.

After many meetings with Delaware Department of Transportation (DELDOT) TUI determined HDD would work under certain conditions. The HDD had to include casing as well as carrier pipe.

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Figure 6. 10-inch Force Main ready to go at White's Landing

Once again, TUI relied on FPVC for both. Using FPVC turned out to be cost saving measure in other ways as well. Spring Associates, a premier driller in the Mid-Atlantic region had worked with the pipe before and knew well of the capabilities. They determined that the 16-inch Casing and 10-inch carrier pipe could be pulled in simultaneously. Obviously, this saved some construction time in the end. TUI had their crossing, DELDOT had their casing, and the folks in the Lochmeath neighborhood will have clean water for decades to come.

Tidewater Utilities looks forward to another half century of successful water management for their customers. Underground Solutions hopes to continue as partner in those endeavors. †

#### ABOUT THE AUTHOR:



*Ed LoBello is responsible for Sales in VA, DC, MD, DE, NJ and Eastern PA. He has over 25 years of experience in consultative sales, business development,*

*and product development in the civil engineering community. Previously Ed served as Business Development Manager for Water Reclamation Solutions. Additionally, he served as Sales Engineer and Plant Manager for Lane Enterprises, Inc. in the Mid Atlantic area. Ed earned a Bachelor of Science Degree from Virginia Tech.*

TABLE 1: Partial List of Trenchless Projects

	Diameter	Length
Bay Colony Fire Protection	6"	3,015
East Ridge Lake Shore Interconnect	12"	495'
Jim Town Road Water Main	8"	495'
Sweetbriar Water Main	6"	495'
Rehobeth Beach	10"	920'
Sussex East	6"	12,200'
Angola Neck WL	10"	945'
Angola Meadows PH2 WL	20"	765'
Angola to Meadows PH2B	20"	2,340'
Angola to Meadows PH2A	20"	900'
Fenwick Isle WL	6"	3,510
Lewes WM	10"	1,035'
Lochmeath Rte 13 Crossing	16"/10"	450'/540'
Holiday Pines WL	12"	1,800'
Southern Shores ACP Pipe Burst	12"	3,015'
White's Creek Landing	10"	315'
Love Creek Crossing	20"	855'
Robinsville Road Core Infrastructure WL	16"	225'



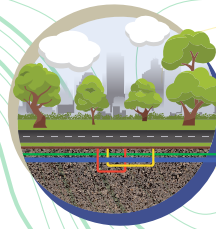




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# TURNKEY ALLIANCE MANAGES LEAK-PRONE INFRASTRUCTURE



## Complex Lining Meets (almost every) Challenge in Queens NY

By: Mario Carbone, Progressive Pipeline Management

### Specs:

**Project:** 24-inch Cast Iron Main Rehabilitation with Starline® 2000 Cured-in-Place-Lining

**Location:** New York City, Queens, 134th Street

**Length of Project:** 6,960 feet, 1.3 miles

**Client:** National Grid NY (NGNY)

**Contractors:** Progressive Pipeline Management (PPM) and Hallen Construction

After a big lining project, I often go back to the site and think about what went well and any lessons learned that we could apply to future projects. I was standing on the corner of 134th Street and 97th Ave. in Queens, New York City. Cars were parked on both sides of the one-way street. There was a constant hum from cars and vroom from the trucks two blocks north along the Van Wyck Expressway. Overhead was the intermittent high-pitched whir of plane engines as they fly in and out of JFK airport 2 miles to the South. PPM was tasked with remediating an underground gas main that traversed over 1 mile in this densely populated, heavily trafficked urban area.

The 24-inch cast iron National Grid gas main pipeline underneath 134th Street was lined using the Starline® Cured-in-Place-Lining (CIPL) technology. The 1.3-mile project extended along 134th Street from 97th Ave. and the Van Wyck Expressway all the way to 116th Avenue. PPM's advanced leak repair technology is a trusted strategy enabling gas utilities to comply with the PHMSA PIPES ACT regulations for reducing methane

***“OUR ALLIANCE WITH HALLEN CONSTRUCTION  
AND THE TURN-KEY CIPL PROGRAM FOR  
NATIONAL GRID IS AN INDUSTRY FIRST”***

***- DAVID WICKERSHAM, CEO, PPM***

emissions. CIPL technology is integral to National Grid's long-term strategy to manage leaking infrastructure.

### TACKLING LEAK PRONE PIPE WITH A TURNKEY SOLUTION

This section of cast iron gas main in Queens is part of National Grid's strategic mandate to rehabilitate over 100 miles of leak prone pipe throughout New York and New England. Taking advantage of the 100+ years of additional life that the Starline CIPL restores back into their aging infrastructure, National Grid's Leak Prone Pipe is being lined and rehabilitated. PPM and Hallen Construction, National Grid's primary contractor, deliver a

turnkey solution that has been a cost-effective and critical alliance for National Grid's Leak Reduction Program.

The dense, urban neighborhood in Queens has modest single-family homes, apartments, and tree-lined sidewalks. Along the sixteen-block stretch is a Sikh temple, a used car lot, a 24-hour grocery store and a few local bars and restaurants.

This was a complex project. 1.3 miles is quite long for a CIPL project. The 24-inch main under 134th Street changes direction multiple times with zigs and zags. Every joint where a length of the cast iron pipe connected to the next length of pipe was leaking. PPM needed ten pits for the lining and two additional pits for the gas shut off, an essential step in the CIPL process.





PPM crew prepare the transfer hose for lining the 24" cast iron natural gas pipeline

When we talk about lining projects, engineers often ask, ‘how long did it take?’ On paper, the planning, excavation, cleaning, pipe preparation, lining and completion took approximately four months. But that is not completely accurate. It really took five decades, which is as long I have been in the gas pipeline business. The relationships with Hallen, National Grid and PPM were built on trust and competence across several decades. We execute complex lining projects successfully, safely, and cost-effectively, because we have an alliance that is focused on a single goal, successfully eliminating leaks from existing gas mains.

## AN EXTRAORDINARY ALLIANCE

I have had the privilege to know and work with Hallen and National Grid almost the entire 52 years I’ve been in the gas industry. The combined expertise encompasses the best of rehabilitation technology, pipeline construction, gas engineering and distribution practices. Our training took place on these streets of New York, and the northeast.

Hallen has been in business for ninety-five years. Hallen and National Grid, formerly Brooklyn Union Gas, have been working together since the early 1970s. I’ve known Hallen since I started out at

## “WE SPEAK THE SAME LANGUAGE.”

- SHEP POOLE, PRESIDENT,  
HALLEN CONSTRUCTION

Brooklyn Union Gas. As PPM’s construction management arm of the turnkey operation, Hallen handles the excavation, the pipe work, paving and putting it all back together. The crews support PPM with manpower, traffic control and offer invaluable input at every stage.

*“We speak the same language.” explained Shep Poole, President of Hallen Construction. “Whatever PPM or National Grid needs for the project, it will get done. Our partnership operates from a deep level of trust while at the same time being open to new ideas and solutions.”*

Most of PPM’s engineering team was at one time part of the National Grid ecosystem. We learned the gas industry the old-fashioned way, starting at the “Brooklyn Union Gas School of Hard Knocks.” They gave us shovels and put us to work in a ditch. I loved every minute of it. Brooklyn Union Gas (BUG) ultimately became National Grid. I worked my way through National Grid and “retired” after 35 years. I “unretired” twenty years ago to join David Wickersham at PPM.

David Wickersham, PPM’s CEO said about the alliance, *“Our alliance with Hallen Construction and the Turn-Key CIPL program for National Grid is an industry first. It demonstrates proven value and showcases our companies’ mutual commitment to excellence. We offer CENTURIES of experience in gas system engineering, gas construction, excavation, safety and pipeline rehabilitation in a single offering.”* He continued, *“This experience and partnership enables PPM, with Hallen, to synchronize all aspects of pipeline rehabilitation seamlessly from initial project design to final restoration.”*

## STEP ONE – PLANNING

Once National Grid had identified that this pipe would need to be rehabilitated, their engineers provided drawings and specified the sections that we were to line. We studied



Concrete Median in Williamsburg, Brooklyn and site of the Chair Challenge

## “CIPL REHABILITATES LARGE DIAMETER LEAK-PRONE PIPES PERMANENTLY”

- SAADAT KHAN, DIRECTOR GAS DISTRIBUTION ASSET & ENGR., NYS AT NATIONAL GRID

one of the pits would have on traffic at a key intersection. Hallen recommended we move that specific pit about 25 feet to minimize the traffic impact.

## LINING COMPARED TO TRADITIONAL TRENCH AND REPLACE

National Grid could have opted not to install a CIPL in this 1.3-mile-long section of gas main. Upon closer analysis, however, this would have been a more daunting challenge. To ‘trench and replace’ would have meant excavating over every connecting joint within the scope of the project. That would have required 580 individual pit openings. Each pit requires a road permit. The pits are large and sheeted because the pipe is large in diameter. There would have been a pit every twelve feet along the 1.3-mile section of pipe. Not only would the hard costs have been astronomical, the carbon footprint and environmental impact of pulling all that soil out of the ground and then having to replace it all again is unthinkable. Furthermore, the entire project would have taken about two years to complete. Rehabilitating the pipeline with 12 pits total was the most sensible option.

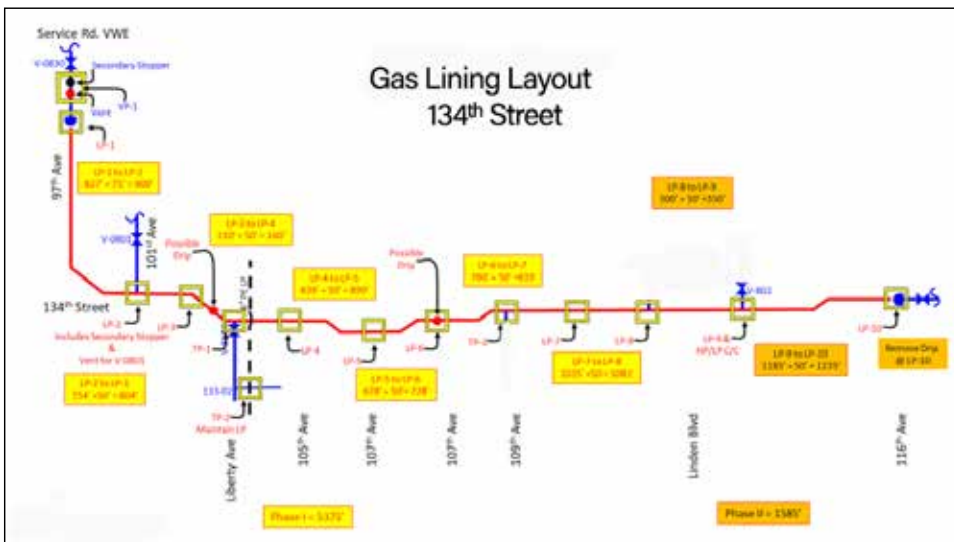
“PPM and Hallen are crucial to National Grid’s Leak Reduction Program.” Saadat Khan, Director Gas Distribution Asset & Engr. NYS at National Grid explained. “CIPL rehabilitates large diameter leak-prone pipes permanently. The technology eliminates leaks, reduces

every detail, collaborated with our internal teams, and designed the Gas Lining Layout (GLL). The GLL maps the entire project laid out from the gas perspective and the lining perspective. The location and details of the lining pits and gas shutdown pits were identified along 134th Street and 97th Street. Our operations team led by Tom Nestoras weighed in on the execution and safety protocols.

When we presented the Gas Lining Layout to National Grid, we talked through the geographic location of the ten pits

that were required to support the lining. National Grid has a gas feed system that regulates gas services in the neighborhood. By redirecting the service to an alternate main, they ensured that service to their customers was never interrupted during the project. Gas shutdown procedures and pits were also reviewed.

The GLL worked perfectly... on paper. However, when we walked the site with National Grid and Hallen to see the exact sites for excavation, we realized that we had not fully considered the impact that



The Gas Lining Layout (GLL) maps the lining project with locations and details of the pits for lining and gas shutdown





PPM crew with ARIES LETS CCTV camera used to inspect the pipeline prior to lining



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*emissions and extends the life of the pipelines by another 100 years. They support the Company's net zero vision and NY CLCPA mandate."*

## PREPARATION & LINING

After the gas was shut down, the pipeline was excavated, purged and cut up

for PPM's crews to lead the lining portion of the scope. Using a CCTV Aries LETS camera, PPM examined the pipe internally looking for anomalies before cleaning, while also confirming that the pipeline was dry. After the first camera inspection, the pipe was sandblasted and cleaned. The next CCTV inspection showed that it was clean without any obstructions.

Lining was executed section by section, pit to pit. As soon as the first pit was ready and prepared, the crews lined, cured and moved to the next section. It was seamlessly orchestrated by the field and lining teams. After lining, the pipeline was inspected for the third time using CCTV. It looked exactly like it should.



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The pipeline was put back together with compression couplings. Pressure tests were executed per National Grid's test procedures and oversight. Once the team verified there were not any leaks, the pipe was blown down. Cathodic protection was applied to the couplings, then the pits were backfilled and paved. The main was put back online.

## THE CHAIR CHALLENGE

Challenges come from different directions, and this project was no exception. The large diameter services and major connection points at some intersections required special attention. National Grid has a pressure control device that allows the high-pressure gas to be regulated into the low-pressure system. A unique shut-down procedure added some complexity that required the lining project to be divided into two phases.

Sometimes the challenges come from the neighborhood, unrelated to the pipeline itself. The team executed a project for National Grid in Williamsburg, Brooklyn with an unforeseen challenge. The pipeline to be remediated was in the middle of the highway, under a concrete median. Across the street was a synagogue. The team was prepping for a few days on the street and in the median. When we showed up early Saturday morning to line the pipe, on the median were about 300 wooden folding chairs, stacked about 6 high. 'What in the heck are all these chairs doing here?' I cried. The name of the synagogue was stamped

on the chairs. I knocked on the door at the synagogue. No answer. A police car drove up. He said the chairs belong to the Rabbi. I walked back towards the synagogue. The policeman asked, "Where are you going?"

'I'm going to tell him to get the chairs out of here!' I exclaimed. The policeman laughed.

'Rabbi, are those your chairs?' I asked. "Yeah," he replied. He said he had seen our crews working on the pipeline.

I asked, 'Why are your chairs in the middle of the street? Our guys will put them back for you.' I offered.

"No. I have to put them somewhere." The Rabbi answered. "We have services on Saturday, and I need the space in our auditorium." He explained that he stacks his wooden chairs on the median in the middle of the street every Friday afternoon for the services Friday night and Saturday. "This is where I've been putting them for years. You can have the space back Monday." Then he closed the door.

Those chairs never moved until Monday morning. The team had to call National Grid and explain. We laugh about it now. We were able to adjust the project schedule without any adverse impact. I have 100 percent certainty that whatever complications or challenges come up, we can always find a workable solution.

The effectiveness of the PPM-Hallen Construction turnkey alliance boils down to three things. Our collective expertise across disciplines minimizes our blind spots; our decades of experience and connections in the

region allow us to lessen the impact that unforeseen obstacles throw at us; and the extraordinary trust we have in each other enables us to put the client's issues front and center. As lining becomes integral to operator's strategy for leak elimination, we encourage more operators to consider the turnkey model for infrastructure management.

**Progressive Pipeline Management (PPM)** is a NJ-based, full-service contractor that has been committed to improving the safety and longevity of pipeline infrastructure for more than 20 years. PPM offers the latest trenchless robotics and technologies to perform condition assessments and renew aging, damaged or leaking underground infrastructure, including pipelines of all types and sizes. The Starline® Cured-In-Place-Lining (CIPL) technology is the only approved liner for natural gas pipelines and adds 100 years of new service life to the existing pipe while eliminating methane leaks and emissions. This innovative and green solution has been installed in over 1 million feet of gas mains in 20 states. †

### ABOUT THE AUTHOR:



**Mario Carbone**, Chief Operating Officer leads PPM's key projects and spearheads the testing of new technologies and robotics. He spent thirty-two years in

design, maintenance and construction with Brooklyn Union Gas/KeySpan Energy and ten years as the senior manager for gas research and development with KeySpan Energy. Mario holds three gas pipeline industry patents for new technologies in gas pipeline purging, live gas polychlorinated biphenyls (PCBs) pipeline sampling, and live service pipeline transfer without interruption. In addition to his expertise in Starline® CIPL, engineering and managing field operations, Mario is versed in current regulations for corrosion and pipeline environmental procedures. His inventiveness to overcome challenges led PPM to win the Trenchless Technology Project of the Year multiple times.

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# SAFEGUARDING FRAGILE ECOSYSTEMS USING HDD IN ENVIRONMENTALLY SENSITIVE AREAS

By: Shrey Arora, P.E. & Dennis M. Walsh, P.E., Kilduff Underground Engineering

**H**orizontal Directional Drilling (HDD) has emerged as a viable solution for installing underground infrastructure projects in environmentally sensitive areas. With a growing focus on maintaining our infrastructure and preserving and protecting delicate ecosystems, traditional excavation methods can be impractical and pose significant environmental risks, including soil erosion, habitat destruction, and water contamination. In response to these concerns, HDD offers an innovative approach that minimizes the environmental footprint while effectively installing pipelines, cables, and other underground structures. This article explores the significance of HDD projects in environmentally sensitive areas, highlighting their benefits, potential environmental challenges, and the importance of adopting sustainable practices to ensure the preservation of these fragile ecosystems.

HDD is a trenchless technology that involves drilling a borehole from the surface horizontally underground, allowing for infrastructure installation without requiring extensive excavation. This method is particularly valuable in environmentally sensitive areas, such as wetlands, wildlife habitats, or protected landscapes, where the disturbance caused by traditional open-cut methods could have far-reaching ecological consequences. By utilizing HDD, construction activities can be conducted with minimal disruption to the surface environment, reducing the risk of soil erosion, loss of vegetation, and disturbance to wildlife populations.

One of the significant advantages of HDD in environmentally sensitive areas is its ability to minimize the impact on water bodies. Traditional methods often require crossing rivers, streams, or lakes, resulting in sedimentation, alteration of water flow patterns, and potential contamination. In contrast, HDD allows for the installation of pipelines or utility lines beneath water bodies, preserving the integrity of aquatic ecosystems and safeguarding water quality. This method significantly reduces the risk of disturbing sensitive aquatic habitats, protecting the diverse species that rely on these environments for survival.

However, despite the numerous benefits, HDD projects in environmentally sensitive areas also pose unique challenges that must be carefully addressed. One such concern is the potential for inadvertent fluid return (IFR). These fluids, usually consisting of bentonite and water, are used to lubricate and cool the drilling process and transport the drilled material to the mud pit at the



*HDD has emerged as a viable utility installation method in environmentally sensitive areas*

**“HDD SIGNIFICANTLY REDUCES THE RISK OF DISTURBING SENSITIVE AQUATIC HABITATS”**

drill location. They can also contain additives and chemicals that may be harmful to the environment if released. Therefore, stringent containment and management practices must be implemented during drilling operations to prevent any accidental spills or leaks. Additionally, drilling waste disposal, including cuttings and fluids, should adhere to strict guidelines to avoid the contamination of nearby ecosystems.

Adopting a comprehensive approach that encompasses effective environmental impact assessments, rigorous regulatory frameworks, and robust monitoring and mitigation measures is crucial to ensure the success and sustainability of HDD





Careful design and construction measures can help alleviate Inadvertent Fluid Return concerns

projects in environmentally sensitive areas. Engaging with environmental experts and stakeholders throughout the planning and implementation stages can help identify potential risks and develop appropriate strategies to minimize adverse effects. Furthermore, ongoing monitoring and regular inspections during and after project completion can provide valuable data on the effectiveness of mitigation measures and inform future practices.

During the design phase, multiple factors are considered to minimize the potential for IFR. First and foremost, a thorough site investigation is carried out to understand the subsurface geology, including the presence of aquifers, faults, and other sensitive formations. This information helps identify the “path of least resistance” or potential pathways for fluid migration and assess the risk of IFR. Based on the geotechnical information, designers perform an iterative hydrofracture analysis using the Delft Equations to arrive at an optimized HDD borepath with the least IFR risk.

Projects today require an “Inadvertent Fluid (Frac Out) Release Contingency Plan” as part of the contractual document. The plan is a comprehensive strategy designed to address and mitigate potential spills or leaks of drilling fluids or other hazardous substances during the drilling process. It outlines the necessary actions and procedures to promptly respond to and manage such incidents, minimizing their impact and ensuring a swift and effective response.

The plan is a collaborative effort between multiple design leads on a project and should encompass the following key objectives:

- The plan should provide a detailed overview of the HDD process, specifically focusing on drilling fluids’ composition, management, and utilization. By understanding the characteristics and properties of the fluids involved, appropriate measures can be implemented to prevent and control inadvertent releases. A Safety Data Sheet (SDS) information for all proposed drilling fluid should be provided.
- The plan must identify a range of controls to be implemented during construction to minimize the potential for IFR.

These controls may include the use of appropriate drilling techniques, regular equipment maintenance and inspections, proper training for personnel involved in the drilling process, and adherence to industry best practices and regulatory requirements.

- To facilitate early detection of inadvertent fluid releases, the plan should outline planned means of monitoring. This may involve the use of real-time monitoring systems, visual

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*HDD offers an innovative approach that minimizes the environmental footprint*

inspections, pressure monitoring, and other appropriate techniques to identify and respond to any potential releases promptly. Monitoring the mud flow/circulation and the drilling head pressure will also minimize the possibility of IFR.

- Contingency plans should address the step-by-step procedure in the event of an IFR. On past jobs with our staff, we had to establish communication protocols with several water companies downriver so that if we did have an IFR, they would immediately take steps to minimize the impact on its operations. This was an essential requirement of the permit issued by the Army Corp of Engineering and the state's Department of Environmental Protection.
- Bore abandonment may be considered necessary when exhaustive measures to control IR within the current directional bore have been unsuccessful. The plan will encompass specific criteria used to assess the requirement for drill hole abandonment, along with a comprehensive strategy for sealing the drill hole if the decision to abandon is made.
- The plan must identify ways to protect environmentally sensitive areas, such as rivers, wetlands, biological resources, and cultural sites. This may involve implementing buffer zones, utilizing containment measures, employing sediment control practices, and adhering to specific guidelines for working in proximity to these sensitive areas.
- Prior to, during, and following drilling and pipe installation activities, site-specific environmental protection measures are established to minimize and control erosion and sediment releases into adjoining wetlands or watercourses. This may include implementing soil erosion sediment control measures, sedimentation ponds, and the proper disposal of excavated material.

- At the start of construction, all field crews establish and understand site-specific preplanned general response programs. These programs ensure that personnel can take immediate action in the event of an inadvertent release of drilling fluid. Clear protocols and communication channels are established to enable an efficient and coordinated response. All required training by the government agencies and the client should be completed. Some companies will require daily checklists to be completed, ensuring all safety steps are taken, the equipment is maintained, and all staff on site are trained.
- As previously stated, establishing a Chain of Command for Reporting and Notifying is critical. Pre-job drills should be run to ensure all staff are prepared in the unlikely event of an incident affecting the environment. Daily safety tailgates should reinforce those safety and environmental protection requirements. In the event of an IFR, the plan must establish a transparent chain of command for reporting and notifying the construction management team, Certificate Holders, and relevant authorities promptly. This ensures that all necessary parties are promptly informed and that the preplanned actions can be implemented swiftly and effectively.

In closing, HDD projects offer a promising solution for developing infrastructure in environmentally sensitive areas. By minimizing surface disturbance, reducing the impact on water bodies, and employing responsible drilling practices, HDD can effectively protect delicate ecosystems while meeting our societal and infrastructure needs. However, it is essential to recognize and address the unique challenges associated with such projects, including the proper containment and disposal of drilling fluids and waste. Through careful planning, stringent regulations, and continuous monitoring, we can strike a balance between





HDD can effectively protect delicate ecosystems while meeting societal and infrastructure needs

development and environmental preservation, ensuring the sustainable coexistence of infrastructure and sensitive ecosystems. Finally, regardless of the design and other efforts, one can expect an HDD project in an environmentally sensitive area to take years of effort and will be met by environmental resistance. Enlisting the capabilities of a good design firm with a strong permitting staff and a professional trenchless contractor will provide the best opportunity to overcome the resistance and yield a successful outcome. †

## “HDD IS PARTICULARLY VALUABLE IN ENVIRONMENTALLY SENSITIVE AREAS”

### ABOUT THE AUTHORS:



**Shrey Arora, P.E.**, has been with Kilduff Underground Engineering since 2017, supporting their underground tunneling and trenchless projects with a multitude of design services. He received his undergraduate degree from India and a master’s in Underground Construction and Tunneling from Colorado School of Mines.



**Dennis M. Walsh, P.E.**, has been in the utility industry for over 40 years and involved in trenchless technology since 1990. Dennis is a 1972 graduate of the University of Dayton, Ohio with a B.S. in Civil Engineering and a 2002 graduate of the Polytechnic University of New York with a M.S. in Technology. He retired from KeySpan Energy Company in 2005 after a 28-year career in the gas utility field with a background in engineering, operations, construction, Quality Assurance, and HVAC.



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# PLEASANTS CONSTRUCTION PERFORMS SUCCESSFUL METAL PIPE RISER REHABILITATION IN MARYLAND

By: OBIC LLC

Pleasants Construction, Inc. is an OBIC-certified installer based in Clarksburg, Maryland, with a service area of Maryland, Virginia, Washington, DC and Delaware. The Rehabilitation Division of Pleasants was working on a project in northern Baltimore, Maryland for an MDE and local municipal storm water management division. The structure in need of rehabilitation, shown in Figure 1, was a bituminous-coated corrugated metal pipe riser (overflow) barrel. Inspections had reported that rust and corrosion were starting to peel and deteriorate the existing bituminous coating.

Brian Lippy, Director of Construction – Rehabilitation for Pleasants, said of the challenges inherent in this sort of project, “Typically when working a “riser barrel structure” that is located in a storm water management pond/facility, the hardest, most challenging aspect will be the terrain. Many obstacles can play a part in this with regards to distance from an access road or drive, the grade or slope (if the barrel is located at the dam of a pond) or water within the pond if it is a wet pond. Removing the overflow trash basket will usually involve a piece of equipment to lift the top allowing access into the riser pipe. Then setting up the proper safety protection for the working crew becomes critical.”

After assessing the work area and surroundings to ensure a safe work area and access into the riser pipe, the Pleasants installation

“TYPICALLY, THE HARDEST, MOST CHALLENGING ASPECT WILL BE THE TERRAIN...”

- BRIAN LIPPY, DIRECTOR OF CONSTRUCTION – REHABILITATION, PLEASANTS CONSTRUCTION INC.

team - Michael Brennan, Foreman and Juan Rayo, Tech 1 Sprayer – set up the trucks and equipment to most efficiently allow for performing the media blasting of the inside surface of the riser structure.

Then, a high-pressure air compressor using medium grit blasting material was used to clean the bituminous coating and other contaminants off the pipe surface. The corrugated metal pipe was then primed by the spray crew using OBIC 1503 S Steel Primer, which is a urethane primer for steel substrate surfaces. This primer creates lasting adhesion with the finish coating. After the primer had cured, the crew began spray applying OBIC Armor 1200C, a semi-structural polyurea hybrid coating that is formulated to rehab culverts and pipelines.

Weeks after the installation, the site was inspected by the client who reported that there were no longer any signs of infiltration present.



Figure 1. Existing bituminous coating deteriorating within riser structure



Figure 2. Riser pipe after it was media blasted and cleaned





Figure 3. Riser structure pipe after OBIC Armor 1200C coatings

“By using the OBIC Armor 1200C, with its strong bonding capabilities, we eliminated possibilities of future corrosion and infiltration, and it has excellent impact resistance and abrasion protection,” said Lippy. “OBIC products are designed to extend the life of culvert pipes, as well as riser structures, by approximately 50 years with no maintenance required. In addition to that extended life expectancy, OBIC products also ensure greater structural integrity with zero impact to the surrounding area and environment.”

With over 55 years of experience in the industry, Pleasants Construction, Inc. has built a proud tradition of excellence which

was achieved through an emphasis on effective communication and a proactive approach to meeting all the needs of their clients. †

#### ABOUT OBIC LLC:



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# HDPE ELECTROFUSION PIPE JOINTS

By: Camille George Rubeiz, P.E., F. ASCE, Plastics Pipe Institute, Inc. (PPI)

**H**igh-density polyethylene (HDPE) pipe has been used for municipal and industrial water applications for almost 50 years. HDPE's heat-fused joints create a leak-free, self-restrained, monolithic pipe structure. The fused joint will also eliminate infiltration into the pipe and exfiltration into the environment. HDPE pipe has other benefits including chemical, abrasion, fatigue, seismic and corrosion resistance, and is designed for water and wastewater applications meeting the latest AWWA C906 and ASTM F714 standards.

Heat fusion can be used to join sections of HDPE pipe, including high-performing PE 4710 pipe, while electrofusion is used to add couplings, tapping tees, branch saddles and other fittings. Proven to be an extremely reliable joining system, an electrofusion joint is heated internally, either by a conductor at the interface of the joint or by a conductive polymer. Heat is created as an electric current is applied to the conductive material in the fitting.

## TYPICAL ELECTROFUSION JOINT

All heat fusion joining methods require that there is no water flowing or standing in the pipe that can reach the fusion surfaces. Flowing water in contact with

**“PIPE PREPARATION IS AMONG THE MOST IMPORTANT ASPECTS OF MAKING A SOUND ELECTROFUSION JOINT”**

the fusion surfaces during the assembly or fusion cycle must be avoided as it can cause voids as the moisture turns into expanding steam during the fusion process. PE squeeze-off tools can be used to control the flow of water in cases where a valve is not present or will not shut off completely - refer to ASTM F1041.

Electrofusion fittings can be installed in ambient temperatures as recommended by the manufacturer. A typical qualified temperature range for installation is 14°F minimum to 113°F maximum. Contact the fitting manufacturer to verify.

Improper pipe preparation is overwhelmingly the leading cause of unsuccessful electrofusion joint. The goal of pipe peeling is to remove a thin layer of

the outer pipe surface to expose clean virgin material beneath.

Pipe surfaces exhibit surface oxidation from the extrusion process, transportation, and outdoor exposure. This oxidation acts as a physical barrier and therefore those surfaces cannot be heat fused. Simply roughing the pipe surface is not sufficient. In order to achieve fusion, this layer must be removed. Even new pipe must be properly peeled before a fusion will be successful.

An adequate minimum amount of material that must be removed is just seven one-thousandths of an inch (.007”) – approximately the same thickness as two sheets of ordinary paper. Sandpaper, Emory cloth, or other abrasives should **never** be used to prepare a pipe surface for electrofusion. The only tools are those that are specifically designed for electrofusion peeling, which can peel the pipe surface to a controlled depth. Types of scrapers that are **not** recommended are “hand scrapers” such as wood rasps and metal files.



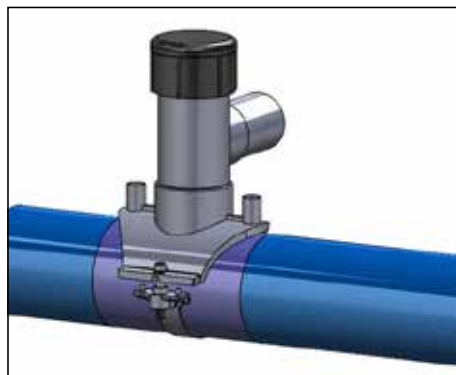
*Electrofusion in Pit*



“Witness” marks should be made on the pipe surface prior to peeling with a permanent marker, such as a Sharpie® marker, which dries fast and contains no oils.

Avoid all possible recontamination of the prepared surface. This includes handling or even touching the peeled pipe surface or the inside of the coupling as body oils and other contaminants can affect fusion joint performance. If the surfaces become contaminated, clean thoroughly with a clean, lint-free towel and a minimum 90 percent concentration of alcohol isopropyl and allow to dry before assembling. Do not use alcohol with any additives other than water.

Gouges deeper than 10 percent of the pipe wall thickness require that the pipe section be cut out and replaced to maintain the maximum pressure rating of the pipe.



Saddle Electrofusion

*The MAB Generic Electrofusion Procedure for Field Joining of 12 Inch and Smaller Polyethylene (PE) Pipe (MAB-01-2022) guide has been updated by the Municipal Advisory Board (MAB) and is available as a free download from the MAB website:*

[www.plasticpipe.org/MABPUBS](http://www.plasticpipe.org/MABPUBS) †

#### ABOUT PPI:



*The Plastics Pipe Institute, Inc. (PPI)*

*is the major North American trade association representing the plastic pipe industry and is dedicated to promoting plastic as the materials of choice for pipe and conduit applications. PPI is the premier technical, engineering and industry knowledge resource publishing data for use in the development and design of plastic pipe and conduit systems. Additionally, PPI collaborates with industry organizations that set standards for manufacturing practices and installation methods. standards for manufacturing practices and installation methods.*



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# PROMOTING TRENCHLESS TECHNOLOGY IN THE MID ATLANTIC REGION!

## MASTT Hosts Highly Successful Seminar in Atlantic City

The Trenchless Technology seminars hosted by MASTT in locations across the Mid Atlantic region have been a mainstay of trenchless technology outreach and education efforts in the area for nearly two decades.

MASTT hosted a very successful one-day seminar Wednesday September 14, 2022 at the Claridge Hotel in Atlantic City. It was the second well attended one-day trenchless technology seminar held in the region last year following closely after the highly successful July 20 seminar in Baltimore (see Mid Atlantic Journal of Trenchless Technology 2022 pp 36-37). Attendance at both 2022 seminars reaffirmed the fact that in-person learning and networking events were finally back in full swing after Covid.

Planned in conjunction with the Atlantic County Utilities Authority (ACUA), the MASTT Atlantic City Trenchless Technology seminar featured a joint presentation on “Trenchless Technology at the Atlantic County Utilities Authority” co-presented by Mr. Matthew DeNafo, P. E., Vice President, Centralized Maintenance and Asset Management and Mr. John

Conover, P. E., Deputy Chief Engineer, both with the ACUA. Atlantic City is another shining example in the region of a jurisdiction which places Trenchless Technology at the forefront in decision-making in its underground infrastructure rehab and renewal programs.

In addition to this keynote presentation there were also eight other presentations by expert industry professionals on a wide range of trenchless technology topics, along with exhibits from industry suppliers.

Since 2003, MASTT has been hosting **Trenchless Technology, SSES and Buried Asset Management Seminars** in various cities across the Chapter’s six state area + DC. These seminars have engaged over 2300 underground infrastructure professionals over this time, facilitating meaningful direct networking between industry and owner groups.

As part of the MASTT mandate to “promote Trenchless Technology through education for the public benefit”, the seminar programs are designed to inform public officials, engineers, utility company personnel, designers, and contractors involved with the construction, rehabilitation, and management of underground infrastructure assets, in the Mid Atlantic. They are great venues for educating decision-makers on the many social and economic



Mr. Matthew DeNafo, P. E., Vice President, Centralized Maintenance and Asset Management and Mr. John Conover, P. E., Deputy Chief Engineer, with ACUA co-present an excellent talk on the Trenchless Technology programs in Atlantic City



Seminar delegates enjoyed a stimulating day of presentations, networking and refreshments



# “MASTT SEMINARS FACILITATE MEANINGFUL DIRECT NETWORKING BETWEEN INDUSTRY AND OWNER GROUPS”



Mr. Steve Matheny, P.E., Logan Clay Products, delivers an informative presentation on “Stabilization of In-situ Soils for Pilot Tube Installation”

benefits of using trenchless technology in their infrastructure renewal and new construction programs.

With the success of these 2022 seminars, MASTT is looking forwards to another well-attended and informative event in Richmond, VA on Wednesday, December 6.

Visit [www.mastt.org](http://www.mastt.org) for further details as they become available.

Special thanks to our loyal MASTT seminar exhibitors, sponsors, presenters and attendees!

**THANKS FOR YOUR ONGOING SUPPORT!!!**



MASTT Trenchless Technology seminars are excellent networking and educational opportunities

For information dates and locations of future MASTT Trenchless Technology, SSES and Buried Asset Management seminars and virtual webinars planned for the Mid Atlantic, visit:

[www.mastt.org](http://www.mastt.org)

## ATLANTIC CITY SEMINAR SEPTEMBER 14, 2022: MASTT – ATLANTIC CITY UTILITIES AUTHORITY (ACUA)

### GUEST PRESENTATION

#### “Trenchless Technology at Atlantic City Utilities Authority”

Mr. Matthew DeNafo, P. E., Vice President, Centralized Maintenance and Asset Management, and  
Mr. John Conover, P. E., Deputy Chief Engineer, ACUA

### PRESENTATIONS

**Welcome to the Trenchless Technology Seminar,**  
Leonard Ingram, PWAM, MASTT Executive Director

**Buried Asset Management Institute –  
International (BAMI-I) & Certification of  
Training in Asset Management (CTAM) Program,**  
Leonard Ingram, PWAM, Treasurer and Administrator

**Pilot Tube Guided Boring Solutions,**  
Jon Valin, Akkerman

**Cured-In-Place Lining (CIPL) For Trenchless  
Renewal & Methane Emission Reduction in  
Natural Gas Pipelines,**  
David Wickersham, Progressive Pipeline Management

**Stabilization of In-situ Soils for  
Pilot Tube Installation,**  
Steve Matheny, P.E., Logan Clay Products

**Biogenic Corrosion and Cementitious Materials,**  
Cliff Woodward, IMERYS

**Internal Joint Seals - Where, When, and How,**  
Jeremy Kieninger, Miller Pipeline Corporation

**Bay Park Microtunnel Project -  
Alternative Technical Concept,**  
Carl Pitzer, P.E., Thompson Pipe Group

**Trenchless Design Support Using Advanced  
Geophysical Methods to Characterize  
Geotechnical and Geologic Hazards,**  
Bill Seaton, PhD., PG, ARM Group LLC

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