



NASTT's *Trenchless Today*

Educate - Train - Research - Publish



Winter 2014 | Volume 4 | Issue No. 1

NASTT'S 2014 BOARD OF DIRECTORS



GEARED UP FOR A NEW YEAR OF TRENCHLESS. ARE YOU READY?



State-of-the-Past



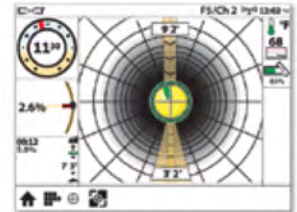
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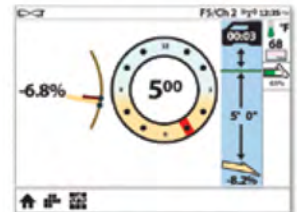
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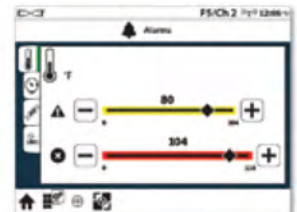
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WINTER 2014 EDITION

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**EXECUTIVE
DIRECTOR
MESSAGE**



Michael Willmets
NASTT Executive Director

**TRENCHLESS COMMUNICATION:
CAN YOU HEAR US NOW?**

In a constantly changing and increasingly connected world, new ways of communicating have outpaced everything once considered the industry standard. Our gadget populated homes and offices allow us to speak with anybody anywhere, to send or receive photos and videos and to e-mail, message or access social media from almost anywhere. Communication technology has impacted our personal and business lives like never before and if you don't book your seat on the information highway, you'll likely be left far, far behind.

I've always believed that the most important benefit of membership in a professional association is networking. Recognizing the value of that belief, NASTT has made major strides to enable the trenchless community to electronically network via information sharing and access to our technical resources. Networking in the 21st century should not only be about connectivity, but also easy access to quality education and trusted technical data.



For instance, the NASTT website, *nastt.org*, now hosts thousands of fully searchable peer-reviewed trenchless technical papers, all vetted by NASTT members over more than two decades of volunteerism. It is truly the world's largest online trenchless library and it is free to all NASTT members.

Enlisting the internet, the NASTT Webinar Series has reached thousands of attendees with trenchless seminars modeled to present professional instruction from leading North American trenchless experts. The success of this complimentary program has totally exceeded all expectations with a rapidly growing and worldwide audience. The live webinars are also archived for free access at any time.

Technology enhances NASTT communications from behind the scenes too. We now use *nastt.org* to: elect our Board of Directors; to submit papers for the NASTT No-Dig Show technical program; to nominate members for our industry awards; to access NASTT & Chapters periodicals; to market our Good Practices publications and training sessions; to apply for student scholarships; to coordinate student activities at the NASTT No-Dig Show; and more recently, to apply for the Municipal and Public Utility Scholarship Program.

As electronic networking continues on its rapid curve, NASTT will make sure that our membership services continue to evolve as communication technology continues to develop. Your input with this process and the growth of our society is always welcomed.

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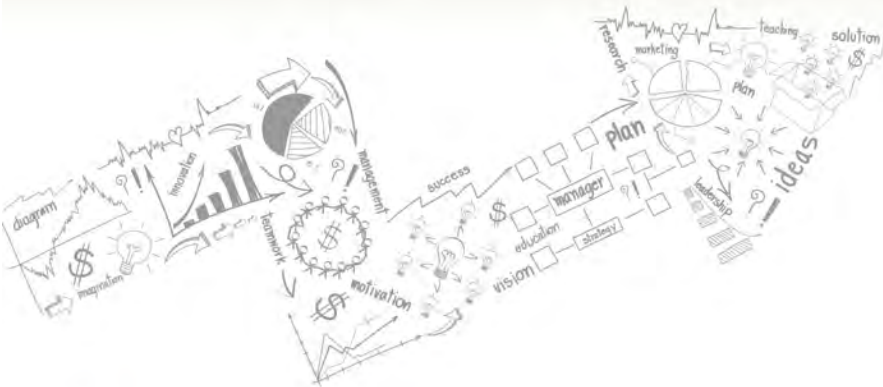
Derek Potvin
NASTT Chair

A NEW YEAR OF TRENCHLESS

NASTT had a great year in 2013, and I am excited to serve you again as the NASTT Chair in 2014. We are already working towards accomplishing our goals for the coming year and beyond.

First, I'd like to welcome two new members to the Board of Directors: Joe Lane and Dennis Walsh. I'd also like to formally welcome Jeff Maier who joined the board mid-term last year. I'm looking forward to their contributions of fresh ideas and perspectives as trenchless advocates. I would also like to welcome back and thank the 2014 Executive Officers: Kim Staheli, Vice Chair; Jennifer Glynn, NASTT Secretary; and Dave Krywiak, NASTT Treasurer.

I also want to thank the Board Members whose terms ended in December. Tom Hayes' service included the Education and Student Scholarship Award Committees. Isabel Tardif's service included the Carbon Calculator and the Education Committees. Thank you, Tom and Isabel, for your years of dedication to NASTT.



NASTT 2014 GOALS

We look forward to the unveiling and implementing the Strategic Plan in 2014. The committee has worked hard to come up with a variety of objectives that will ensure NASTT remains the premier resource for knowledge and education in the trenchless industry.

We are excited to announce that our Carbon Calculator will be launched in Orlando this April at NASTT's 2014 No-Dig Show. The Carbon Calculator is web-based, user-friendly and will be available to all of our members free of charge. Be sure to visit NASTT's booth (#433) to try a live demo.

NASTT'S 2013 ACCOMPLISHMENTS

1 STRATEGIC PLAN



In order to continue to grow and serve the trenchless industry, NASTT executed a member-wide survey. In October, the Strategic Plan Committee reviewed the findings and began to strategize for the coming years. We were very excited for this opportunity to hear from our members and grow our society and industry.

2 NASTT'S 2013 NO-DIG SHOW



I'd like to thank NASTT's 2013 No-Dig Show Program Chair, Kim Staheli and Program Vice Chair, Kevin Nagle for the great job they did producing the Show in Sacramento. NASTT's annual No-Dig Show visited the west coast for the first time in many years. Nearly 1,700 attendees enjoyed three days of technical paper presentations, 143 exhibitors showcasing their products and services and our very popular networking events.

3 NASTT'S NO-DIG SHOW MUNICIPAL & PUBLIC UTILITY SCHOLARSHIP PROGRAM



One of the biggest challenges NASTT faces is making sure people have access to the



education we provide. NASTT's No-Dig Show Municipal & Public Utility Scholarship Program was established to provide a source of funds for North American municipalities, government agencies and utility owners so they could attend NASTT's No-Dig Show. Selected applicants were awarded conference registrations and accommodations enabling them to take part in the largest trenchless education event of the year. Nearly 100 municipal and utility employees from 70 agencies across North America were awarded the scholarship. The award was such a success it will be offered again for NASTT's 2014 No-Dig Show and expanded to include even more recipients.

INDUSTRY OUTREACH

4



Last year, NASTT had valuable opportunities to participate in many industry-related events and partner with other engineering organizations. To better serve our gas industry clients, we hosted several trenchless training seminars including a presentation to the American Gas Association, a webinar featuring trenchless methods in the gas industry, a presentation at the National Gas Association's Fall Operators Conference and a presentation to the American Public Gas Association. We also reached out to Public Works officials at the APWA Congress in August and the construction industry at the ICUEE Expo in October. These are just a handful of the training partnership events NASTT's industry experts were involved in all over North America in 2013. You can read more about our educational initiatives in the Education Update on page 10.

Expanding our training and education will continue to be a goal in 2014, and our webinar series will be a huge part of this initiative. This year, we plan to offer complimentary webinars on CIPP, NASTT's Carbon Calculator and condition assessment. This trenchless webinar series will complement the many in-person training courses we are planning throughout the continent.

As mentioned above, we have been developing an outreach program to the energy sector, beginning with the gas industry. Our goal for 2014 is to continue reaching out to these industry professionals with various training events and education. NASTT's Past Chair, George Ragula, is heading up this endeavor, and we are thankful for his commitment to trenchless technology in the gas industry. We are also working on a plan to bring you energy sector tracks at NASTT's No-Dig Show in the future.

NASTT is also looking forward to expanding our trenchless bookstore to offer the industry more educational resources. We currently have two publications available, and we plan to release two additional books in 2014: CIPP Good Practices Guidelines and Laterals Good Practices Guidelines.

There's no doubt that all of these goals would not be possible without our dedicated volunteers. In 2014, we hope to broaden our volunteer base in order to support the many initiatives and member services we have planned. We are looking for dedicated trenchless advocates to staff our committees, and I hope you will consider joining us.

**NASTT'S 2014 NO-DIG SHOW:
THE MAGIC OF TRENCHLESS IN ORLANDO, FLORIDA**

I'm very excited to join you all in Orlando this April for NASTT's 2014 No-Dig Show. Kevin Nagle, Program Chair and Richard "Bo" Botteicher, Program Vice Chair, have been working hard to put together a great event. Our show would not be possible without the volunteer members of the Program Committee who have peer-reviewed and selected more than 160 papers for the technical presentations this year.

There are so many elements of NASTT's 2014 No-Dig Show that it's hard to highlight all of them in this message. Be sure to check out the Show Preview in this issue for more details. One thing I would like to make sure to note is our Annual General Meeting that will be held during the conference. If you'd like to hear more about what NASTT has planned for the coming year, or if you'd like to provide feedback, be sure to join us. The AGM will be held Sunday afternoon, April 13, at the Gaylorl Palms. I'm looking forward to seeing you there.



**EDUCATION
UPDATE**



Michelle Hill
NASTT Communications
& Training Manager

**OOPS!...
WE DID IT AGAIN**

Education and training is the core of NASTT's initiatives, and the achievements in 2013 were once again record-breaking.

We continued our complimentary webinar series by hosting three webinars throughout the year. Each one broke the previous record for attendance. We also hosted 23 live, in-person training courses all over the United States and Canada on a variety of trenchless topics. In total, NASTT's volunteer instructors trained over 3,100 people – a 20 percent increase from 2012.

I've said it before, and I'll say it again: Our successful training efforts would not be possible without industry experts who volunteer their time to spread trenchless knowledge. I was so fortunate to be able to work with these fine instructors in 2013.

Thank you to all the following instructors for your dedication to trenchless technology.

- Sam Ariaratnam, Ph.D., P.E., PEng., Arizona State University
- Kevin Bainbridge, PEng., Robinson Consultants, Inc.
- David Bennett, Ph.D., P.E., Bennett Trenchless Engineers
- Glenn Boyce, Ph. D., P.E., Jacobs Associates
- Craig Camp, Hatch Mott MacDonald
- Don Del Nero, P.E., CH2M HILL
- Dennis Doherty, P.E., HALEY & ALDRICH
- Ian Doherty, PEng., Trenchless Design Engineering Ltd.
- Jennifer Glynn, P.E., RMC Water and Environment
- Jason Lueke, Ph.D., PEng., Associated Engineering
- Chris Macey, P. Eng., AECOM
- Collins Orton, TT Technologies
- Derek Potvin, PEng., Robinson Consulting, Inc.
- George Ragula, PSE&G
- Kaleel Rahaim, Interplastic Corporation
- Kimberlie Staheli, Ph.D., P.E., Staheli Trenchless Consultants, Inc.
- Ray Sterling, Ph.D., P.E., Professor Emeritus at Louisiana Tech University
- Matthew Wallin, P.E., Bennett Trenchless Engineers

We already have a number of training events on the books for 2014. Once again we will host all of our training courses in conjunction with NASTT's No-Dig Show which will be in April in Orlando, Fla. For the most up to date information on our training courses across North America, visit nastt.org/calendar. I hope to see you at a training event soon.

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**NORTH AMERICAN SOCIETY FOR
TRENCHLESS TECHNOLOGY**

The NASTT Strategic Plan is intended to be an effective tool that will provide guidance and measurable goals for the society in the coming years. While assessing the organization's strengths and limitations, the Committee and the contributors have made considerable efforts to identify potential opportunities and commendable challenges. The establishment of attainable initiatives should promote the growth of our not-for-profit society as well as positively impact our relevance to the North American trenchless technology industry.

For more information about NASTT's Strategic Plan visit nastt.org/strategicplan.



FUTURE STRATEGIC PLAN



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Q&A



Piero Salvo

PIERO SALVO, TRENCHLESS CONSULTANT AND PRESIDENT OF THE RECENTLY FORMED GAME TRENCHLESS CONSULTANTS, SITS DOWN WITH NASTT'S TRENCHLESS TODAY TO TALK ABOUT HIS CAREER AND NEW BUSINESS ENDEAVOR

NASTT's Trenchless Today (NTT): Could you tell our readers a little bit about yourself and how you first became interested in engineering?

Piero Salvo: I have been involved in the construction industry since a very young age because I was lucky my father owned a construction company. Therefore, becoming an engineer was the only career path I ever envisioned. I never wanted to be a fireman or policeman; I always

wanted to be an engineer. I am grateful to my dad for allowing me the opportunity of learning the ins and outs of running a business. I received a bachelor's in engineering in 1988 and a master's in engineering in 1992 from Concordia University in Montreal. I am currently teaching a master's of engineering course on Trenchless Technologies in the Construction Industry.

NTT: How did you first get involved in the trenchless industry?

Salvo: The first time I heard about trenchless technologies was back in the early 1990s when a Montreal-area contractor was applying cement mortar and then epoxy lining to existing water mains without having to dig up the entire street. Being curious by nature, I started researching about trenchless and saw that there was a conference in Fort Worth, Texas. That 1994 No-Dig was my first and I have only missed two No-Dig shows since. The network of trenchless experts has grown tremendously and many people I met in the mid- to late-90s have become more knowledgeable and some have become very close friends.

NTT: How do you view the current state of the trenchless industry?

Salvo: The industry is on the rise. All we have to do is look at the numbers each December when *Trenchless Technology* magazine shows the volume and percentage of trenchless projects done by the engineering firms. If we go strictly by numbers, the volume and percentage increases for trenchless projects. Trenchless Billings: \$436.5 million in 2005 to \$947.5 million in 2012; and Total Billings: 1.8 percent in 2005 to 1.97 percent in 2012. Based on these numbers, I would have to say that the current state of the industry is continuing its rise.

NTT: You recently formed your own firm, GAME Trenchless Consultants. When and how did the company form, and what kinds of expectations do you have?

Salvo: The company began operating on Sept. 30, 2013 out of Montreal following an agreement with GENIVAR Inc. (now WSP Group) for GAME Trenchless Consultants to purchase the Canadian rights to the JD7 Technology (Investigator+,

LDS1000 and PipeScan+) for pipeline condition assessment. We have done work in British Columbia, Saskatchewan, Quebec, Ontario and New Brunswick.

In order to service our clients in the United States, we now have a U.S. Company, GAME Consultants USA Inc., which will provide the JD7 Investigator+ and PipeScan+ services from coast to coast. To date, some of our Investigator+ work has brought us to California, Washington, D.C., and Texas. We are gearing up to do some work in early 2014 in Massachusetts, New York and Texas.

Our company goal is to provide trenchless engineering, condition assessment and leak detection using the JD7 Technologies across Canada and the United States. The firm is currently involved in live water main condition assessment inspections and trenchless engineering design and support for CIPP projects, both for water main and sewer systems.

NTT: How did you first get involved in NASTT?

Salvo: My first involvement was at the 1994 No-Dig Show, where I met some people in the industry who ultimately challenged me to become more active in NASTT. After the 1994 No-Dig Show I joined the Great Lakes St. Lawrence and Atlantic (GLSLA) chapter when Mr. Joe Loiacono suggested it would be quite interesting, and if I wanted to get into trenchless, that's where I should start. Little did I know this initial suggestion would allow me to attend some NASTT board meetings as a GLSLA representative. Finally at one of those meetings, Frank Canon volunteered me for one of the committees. Shortly after that I became an NASTT Program Committee Member, Board Member, Short Course Instructor and Program Chair.

NTT: During your time with NASTT, describe the growth you've seen in the organization.

Salvo: My time at NASTT continues by being part of the Program Committee and attending each No-Dig Show. As far as the growth of NASTT, it has been a steady climb and it is a lot more structured than I believe it ever was. I have to take the time and opportunity to thank all the current and past Chairs, Board Members, Program Committee Members, staff and participants for making NASTT what it is today.

The biggest growth in my eyes are the NASTT training courses which have evolved from the Trenchless 101 courses on Rehabilitation and New Installations to now include the HDD course, the lateral course, the CIPP course and the pipe bursting course. On top of that, we now offer webinars.

I am of the opinion that our No-Dig Shows are the envy of other trenchless shows because of the number and quality of peer reviewed papers that are presented each year and also the participation of all the exhibitors. One area I am very happy to see is the increased involvement of university students at our shows. It is comforting to know that young people are now looking at trenchless and are saying, "This is an interesting industry and I want to know more about it."



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In the Trenches

By Andrew Farr

As we begin a new year of exploring developments across the trenchless technology industry and the people who drive the constant innovation, it's important to remember that the industry is still young. Many of the underground construction methodologies we call trenchless have only been developed in the last 50 years, and there are countless individuals who have seen this evolution throughout their careers. For this month's "In the Trenches," *NASTT's Trenchless Today* takes a look at two individuals whose careers each span five decades in the trenchless industry.



Tom Hayes
Murphy Pipeline Contractors
Haywood Associates

During his 30-plus year career in the trenchless field, Tom Hayes has amassed a multitude of accomplishments and contributions to the companies he's worked for and to industry associations.

Hayes first got his start in the industry in 1976. His early jobs included work with McCullough Environmental, a firm specializing in sewer system evaluation surveys (SSES) for municipal and federal utility systems. After that, Hayes was a partner at Utility Surveys, Inc., a utility construction firm. In the early years of his career, he was involved primarily in sewer line chemical grouting work, but by the early 1980s, had become intrigued with the process of cured-in-place pipe (CIPP).

Hayes eventually went to work for Insituform Southeast in 1984 and from that point, began working his way up and later became vice president of the North American Rehabilitation Division for Insituform Technologies, where he worked until 2009. During his time with the company, Hayes saw CIPP grow from a little-known methodology to a billion-plus dollar industry as Insituform grew into a global powerhouse in the pipe relining market.

"What I saw was tremendous leaps in the technology that allowed the materials to be streamlined to the cured-in-place process," Hayes said. "The installation equipment and the installation know-how really allowed us to keep moving forward."

After 25 years with Insituform, Hayes began pursuing other ventures and started Haywood Associates, LLC, offering management and sales consulting services to engineering and construction companies. However these days, Hayes spends much of his time in his current role as vice president and general manager of Murphy Pipeline Contractors, Inc., based in Jacksonville, Fla., and specializing in water line pipe bursting and swagelining. When he joined forces with Murphy president Andy Mayer, Hayes said he was excited about working with the cutting edge pipe bursting and sliplining equipment that now exists in the area of pressure pipe rehab and repair, his current area of focus.

Tom Hayes left the NASTT Board of Directors last year after serving six years. At the time of joining the board, he had received several requests from his industry peers to join and said the timing was finally right to devote his attention to the association. Now that his term has come to an end, Hayes says he is proud of the association's accomplishments in recent years.

"NASTT is an organization that I had followed for years and years," he said. "I've seen that organization grow from early in my tenure as board member as we made tremendous progress in the board and the organization. The board has truly been a very cross sectional, multi-talented board of directors."

"I believe [NASTT] is a much stronger organization today and a lot of it has to do with the fact that we do have a very diverse group of board members that are truly focused on basically growing the trenchless industry through education and training," continued Hayes, who was instrumental in establishing NASTT's Education and Student Scholarship Committees.

In reflecting on his career, Hayes said he is proud to have been so closely involved with industry progress, particularly in the area of the CIPP market, and the people who have been so closely associated with that growth.

"I think the biggest thing that I'm proud of is that there's so many people that either I've managed or that I brought into that industry that are still there and still very active and who are becoming tremendous leaders in the trenchless field," he said. "That's what I'm proud of the most."

A Jacksonville, Fla. resident, Tom Hayes holds a bachelor's in psychology from the University of South Carolina and a MBA from Jacksonville University. He is also a member of the American Public Works Association and the American Water Works Association.



Lynn Osborn
Insituform

For more than 30 years now, Insituform Technologies has enjoyed the benefit and longevity of Lynn Osborn's expertise. Perhaps one of the most respected professionals in the trenchless technology industry, Osborn has remained an exemplary advocate of the pipe relining industry throughout his career.

Osborn's career in the trenchless industry began in the mid-1970s. After spending time serving in the Army, he decided to go back to graduate school where he obtained his engineering degree and began working for a consulting engineering company involved in water and wastewater treatment and pipelines. During nine years on the consulting side, Osborn said the company began moving slightly into areas of pipe rehabilitation, most notably sliplining.

Osborn was first introduced to the cure-in-place pipe (CIPP) process after visiting a project in St. Louis. At that time, the process was still being introduced in the United States shortly after Insituform founder and CIPP inventor Eric Wood brought the process over from the United Kingdom. Upon seeing that first CIPP project, Osborn became interested in its potential and would eventually join Insituform, having immediate involvement in the growth of the company.

Eric Wood, at the time, was heavily involved in sharing new ideas and providing hands-on support, so engineering and R&D initiatives were largely handled by Osborn and former long-time Insituform employee Tom Driver. It was 1984 when Osborn joined Insituform and he has remained with the company ever since, now working as senior applications manager.

Osborn says the productivity growth of CIPP contractors has really increased over the years and is one of the best examples of growth in the CIPP market. "When I started, people were proud to do one shot a day and maybe four shots a week of 8-in. pipe," he said. "That would be about 1,500 ft a week, and that was a good week. Now we have crews getting 5,000 – 7,000 ft a week."

In reference to progression of the CIPP market and with Insituform specifically, Osborn says to look no further than the sheer size of the company compared to when he started.

"Financially, we've grown from a company doing \$5 million worth of business a year, to now being part of corporation with over \$1 billion in revenue," he said. "To put our growth into perspective, my original employee number at Insituform of North America (INA) was 25. We now have thousands of employees all over the world."

Much of Osborn's involvement in NASTT over the years has been in giving presentations and reviewing technical documents and papers. Osborn says NASTT has grown significantly as an organization and that is evident in the significant improvement of the quality of papers and the quality and growth of the No-Dig Show from the early years of the association.

"No-Dig has definitely become a landmark show," said Osborn, who is scheduled to appear as a panelist in the CIPP Forum at this year's No-Dig Show in Orlando. Last year, the "Legends of HDD" panel drew significant interest from attendees, and this year's show organizers are looking to repeat that success with a similar focus on the CIPP market.

"I like the No-Dig show for networking and for the papers that are presented," he said. "Probably my best moment at NASTT was in Sacramento (2013) when I got to accept the Hall of Fame award for Eric Wood. That just pleased me to no end because I thought so much of Eric. That was probably my highlight."

Andrew Farr is the associate editor of NASTT's Trenchless Today.



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THE MAGIC TOUCH

NASTT IS BRINGING THE TRENCHLESS COMMUNITY TO ORLANDO FOR WHAT FIGURES TO BE ANOTHER MEMORABLE NO-DIG SHOW

By Mike Kezdi

The NASTT No-Dig Show is heading south in 2014, setting up its annual trenchless pilgrimage in Orlando, Fla.

For the first time since 2005, NASTT's No-Dig Show is coming to the Sunshine State: April 13-17 at the Gaylord Palms Hotel & Convention Center, bringing together public works officials, engineers, contractors, academicians and manufacturers from around the globe. The theme for this year's event is "The Magic of Trenchless."

Owned by the North American Society for Trenchless Technology (NASTT), this annual event draws trenchless professionals from around the world to the largest and only conference and

tradeshow in North America dedicated solely to the promotion of trenchless technology. Through exhibits, educational seminars and fun networking events, the No-Dig Show is a must-attend event for the trenchless professional.

In April, more than 150 exhibitors will fill the 60,000-sq-ft exhibit hall at the Gaylord Palms Convention Center, displaying the latest in trenchless equipment and technology and be on hand to answer attendees' questions. As the trenchless industry continues to grow and reach more attendees each year, this year's conference organizers hope to capitalize on that momentum with a strong 2014 No-Dig Show.

Educational Seminars

Pre- and post-conference seminars are also on the schedule for attendees at an additional cost. On Sunday, April 13, NASTT's Trenchless Technology Short Course on New Construction and Rehabilitation will be held. The course is ideally suited for both newcomers to the industry and for anyone who is interested in seeking a refresher course on trenchless technology methods. The course covers new installation and rehabilitation methods.

Slated for April 16-17 are several informative courses presented by NASTT: Cured-in-Place Pipe Good Practices Course; Laterals Rehabilitation & Replacement Good Practices Course; Horizontal Directional Drilling Good Practices Guidelines Course; Pipe Bursting Good Practices Course; and New Installation Methods Good Practices.

Following on the success of last year's "Legends of HDD" track, one of the much anticipated technical tracks at this year's No-Dig Show will be the CIPP Forum. The CIPP Forum will bring several industry experts together in a panel format to talk about the history of cured-in-place pipe and share their experiences working in the CIPP market over the years. The panel will be moderated by Larry Kiest, Jr., president of LMK Technologies. The CIPP panelists will include: Ian Doherty, president of Trenchless Design Engineering Ltd.; Ed Kampbell, president of Rehabilitation Resource Solutions; Gerry Muenchmeyer, principal, Muenchmeyer Associates LLC; Lynn Osborn, vice president of engineering technology, Insituform; Kaleel Rahaim, business manager, Interplastic Corp.; John Schroeder, conveyance market leader, CDM Smith; and Jim Shelton, program director, Malcolm Pirnie/Arcadis.





Technical Paper Program

Along with the jam-packed exhibit hall, NASTT's No-Dig technical paper program is also an important part of the show's success and stature — the true heart and soul of the conference. This year will bring 159 peer-reviewed technical papers to be presented, focusing on a diverse range of trenchless topics, including horizontal directional drilling, cured-in-place pipe (CIPP), microtunneling, inspection, case histories, asset management, pipe jacking and ramming, water and sewer rehabilitation, project planning, inspection and trenchless research.

Attendees can choose among what peer-reviewed paper presentations they want to see. The papers are evaluated based on relevance, usefulness and non-commercialism. The No-Dig papers are presented in a six-track schedule and are grouped mostly by subject matter so attendees can choose to attend six paper presentations at any given time.



Exhibit Hall Hours:

- ▶ Monday, April 14: 11:45 a.m. to 3:45 p.m.
- ▶ Tuesday, April 15: Noon to 3:30 p.m.
- ▶ Wednesday, April 16: 10 a.m. to 12:30 p.m.

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Popular Networking Events

Although NASTT's No-Dig show is the conduit to promote and advance the trenchless marketplace through education and exhibits, there's also the social aspect of the conference that fosters networking opportunities for attendees, as well as just some fun and good times.

The conference gets underway with its annual kick-off breakfast from 7:30-9:15 a.m. on Monday, April 14. During this event, the formal presentation of the 2014 *Trenchless Technology* Person of the Year will be made. Also at this event, the winners, runners up and honorable mentions for the 2013 *Trenchless Technology* Projects of the Year for Rehabilitation and New Installation will be formally recognized, as well as NASTT's 2013 Outstanding Papers in Rehabilitation and New Installation Awards. After the awards, attendees can revel in the comedic talents of Bob Arno the "Pickpocket King."

Shiver me timbers! You're gonna want to grab yer best matey April 14 and follow yer treasure map to "Avast Ye Auction," NASTT's 13th annual Educational Fund Auction & Reception. The fundraiser is the perfect opportunity for attendees to mingle, relax and enjoy appetizers, as well as bid on items for an excellent cause — the Educational Fund, which supports student chapters, target research, training modules and other student activities. Since 2001, this auction has raised more than \$600,000. So don your best long clothes for the costume contest and get ready to spend some of yer booty for a good cause.

On Tuesday, April 15, NASTT will host its annual Gala Awards Dinner — arguably the most popular event at No-Dig when the trenchless community gathers for a night of fun, food and dancing. As always, the Gala Dinner will be highlighted by an awards presentation culminating in the induction of NASTT's third Hall of Fame class:

- Bob Affholder, founder of Affholder Inc., which eventually became the first mid-America licensee of the Insituform process.
- Joseph Loiacono, a professional engineer involved in the trenchless industry since 1989 a former director of CERIU and former director of business development for Aqua-Pipe.
- Raymond Sterling, professional engineer and professor emeritus at Louisiana Tech University, former director of its Trenchless Technology Center and past chair of ISTT and NASTT.

In keeping with the show's magical theme, attendees can expect to close the night with illusions of grandeur, wonder and amazement.

To close out the 2014 No-Dig Show is the annual closing luncheon on Wednesday, April 16. Here, attendees can enjoy lunch, entertainment and say goodbye to their fellow trenchless professionals before heading home. The closing luncheon will also feature a preview of NASTT's 2015 No-Dig Show in Denver, Colo. Leaving attendees with a laugh is Grand Ole Opry performer, comedian and humorist, T. Bubba Bechtol.

For more information about NASTT's 2014 No-Dig Show, visit www.nodigshow.com or contact Benjamin Media, which handles the show's management, at 330-467-7588.

Mike Kezdi is assistant editor of *NASTT's Trenchless Today*.

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NASTT's 2015 No-Dig Show

Call for Abstracts

Submission Deadline: June 30, 2014

The North American Society for Trenchless Technology (NASTT) is now accepting abstracts for its 2015 No-Dig Show in Denver, Colorado. The conference will take place at the Denver Convention Center on March 15-19, 2015.

Prospective authors are invited to submit a 250-word abstract outlining the scope of their paper and the principal points of benefit to the trenchless industry. The abstracts must be submitted electronically at NASTT's website by June 30, 2014: nastt.org/abstractsubmission.

For more information visit www.nodigshow.com



Questions? Please contact:

Michelle Hill
NASTT Communications & Training Manager
E: mhill@nastt.org
P: 440-638-4676

The 2015 No-Dig Show is owned by the North American Society for Trenchless Technology (NASTT), a not-for-profit educational and technical society established in 1990 to promote trenchless technology for the public benefit. For more information about NASTT, visit our website at www.nastt.org





Meet
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THE NASTT BOARD OF DIRECTORS COORDINATES THE ACTIVITIES AND EVENTS OF THE ASSOCIATION ON BEHALF OF THE MEMBERSHIP. THE BOARD IS MADE UP OF 20 DIRECTORS FROM ACROSS THE UNITED STATES AND CANADA WHO ARE ELECTED BY THE SOCIETY'S MEMBERS. THE ELECTION OF THIS YEAR'S BOARD OF DIRECTORS WAS HELD LAST FALL, AS THREE NEW BOARD MEMBERS WERE ADDED. THE FOLLOWING INTRODUCTIONS OFFER A GLIMPSE AT NASTT'S LEADERSHIP TEAM HEADING INTO 2014.





2014 NASTT OFFICERS



DEREK POTVIN, P.ENG.
CHAIR & INTERNATIONAL REPRESENTATIVE

Derek Potvin, P.Eng., is the president of the multidisciplinary engineering firm, Robinson Consultants Inc. He obtained his Bachelor of Applied Sciences with a minor in business administration from the University of Ottawa. Derek has been providing trenchless rehabilitation solutions to his clients for more than 20 years, including a trenchless technology project that won a Canadian Consulting Engineering Award.

Derek is actively involved with NASTT's No-Dig Show where he has authored many papers including one that won an award for Outstanding Paper, and for several years, he has been an instructor of NASTT's Introduction to Trenchless Technology Short Course (sewer and water main trenchless rehabilitation). Derek has also been involved as an organizer and instructor of NASTT's Good Practices Courses and regional trenchless conferences, such as the Trenchless Technology Road Shows. Derek is the Treasurer for the Great Lakes St. Lawrence and Atlantic Chapter (GLSLA).



KIMBERLIE STAHELI, PH.D., P.E.
VICE CHAIR

Kimberlie Staheli is the president and founder of Staheli Trenchless Consultants in Seattle, Wash., a trenchless engineering consulting firm specializing in the design and construction management of all types of high risk trenchless projects for more than 20 years.

Kim has a B.S. in Mechanical Engineering from Rensselaer Polytechnic Institute, a M.S. in Civil Engineering from

Mississippi State University and a Ph.D. in Geotechnical Engineering from Georgia Institute of Technology. She is a registered professional engineer in Washington, Oregon, California, Colorado, Ohio and Florida.

Kim has specialized in trenchless design and construction, working for contractors, performing trenchless research and working as a consultant. She is particularly interested in minimizing the risks of installation techniques including microtunneling, directional drilling, pipe ramming, auger boring and large diameter tunneling. Kim has focused on risk reduction through the development of geotechnical baseline reports as well as pro-active construction risk management. She has vast experience in trenchless forensics and post construction claims analysis and provides expert testimony.

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JENNIFER GLYNN, P.E. SECRETARY

Jennifer Glynn, P.E. is a senior project manager for RMC Water and Environment in its Walnut Creek, Calif. office. She earned her B.S. in Civil Engineering from the University of New Hampshire and then headed west to California. Jennifer has 18 years of experience in municipal infrastructure planning, permitting, design and construction management with an emphasis on pipeline design and the use of trenchless technology. She has published and presented papers on projects she designed using trenchless technology at conferences across the country.

Jennifer has been a member of the No-Dig Show Program Committee for the past seven years and is one of the founding members of the Western Chapter (WESTT). She currently serves as past chair of WESTT and is a volunteer NASTT

Pipe Bursting Good Practices Course and Introduction to Trenchless Technology instructor. Jennifer is also a member of the American Water Works Association's Water Pipeline Rehabilitation Committee and a past vice president of the Northern California Pipe User's Group (PUG).



DAVE KRYWIAK, P.ENG. TREASURER

Dave Krywiak is a principal and project manager with Stantec Consulting Ltd. in its Edmonton, Alberta office. He obtained a B.S. in Civil Engineering from the University of Alberta in 1977 and has been employed in the consulting industry since that time. Many of the projects Dave has been involved with have included significant trenchless technology components, such as conventional and microtunneling, HDD and CIPP relining. He is one of the founding members of the Northwest Chapter (NASTT-NW) and has served on the Chapter Board for a number of terms, including a term as the Chapter Chair.



GEORGE RAGULA IMMEDIATE PAST CHAIR

George Ragula is responsible for evaluating cutting edge technologies that increase efficiency and effectiveness of operations. As the distribution technology manager for Public Service Electric & Gas (PSE&G), his responsibilities include planning, coordinating, managing and implementing procedural and equipment technology transfer with particular emphasis on increased use of various trenchless technologies. He has spent the last 25 years committed to the ever-growing technologies in trenchless construction.

George has a very diverse background in gas distribution engineering and operations during his 35-year career in the gas industry. Prior to joining PSE&G in 1988, he held various positions at Brooklyn Union Gas in engineering, operations and management.

He is a member of the American Gas Association, American

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Society of Mechanical Engineers, Society of Gas Operators where he serves as Vice President, and the New Jersey Society of Asphalt Technologists. He serves as Treasurer of the Northeast Gas Distribution Council and previously served as Chairman of the NYSEARCH – Northeast Gas Association R&D Committee from 2004 to 2006. He is currently a technical project advisor for this group. George also previously served as a distribution project advisor for the Gas Research Institute for 20 years.

George is the recipient of several American Gas Association (AGA) awards including the 2000 Milton W. Heath Sr. Memorial Award for his contributions in the field of leak detection, the 2004 Distribution Achievement Award to recognize his outstanding contributions to the science and art of gas distribution, the 2006 Acker Medal and Award for his outstanding paper and presentation, "Robotics Technology Goes "Live" for Repairing Gas Mains," and the 2009 John B. McGowan Sr. Research Award for his R&D contributions to the industry. He received his BS Mechanical Engineering from Polytechnic Institute of Brooklyn in New York.

over \$12 million, and supervised 50 graduate students in this field. Many of these students are practicing professionals or educators in the fields of municipal engineering or construction management. He is the inventor (or co-inventor) of 14 patents in the area of trenchless technologies and the author (and co-author) of more than 200 publications in the fields of buried infrastructure management and trenchless techniques, including 60 peer-reviewed journal papers. He is also the co-founder of two start-up companies based in Ruston, La. Allouche teaches undergraduate and graduate courses in the areas of infrastructure management, construction management, construction equipment and methods and trenchless technology. He is an associate editor of the recently launched ASCE Journal of Pipeline Systems.



EREZ ALLOUCHE, PH.D., P.ENG.

Dr. Erez Allouche is an associate professor of Civil Engineering at Louisiana Tech University, the Director of the Trenchless Technology Center and the holder of the T.L. James Eminent Scholar Chair in Civil Engineering. He is a licensed professional engineer registered at the Province of Alberta, Canada. His work focuses on the development of new technologies as well as design and analysis models for various underground construction methods and condition assessment techniques. He is the recipient of the Ontario Premier Research Excellence Award (2001), University Research Award (2005, 2008), the Engineering and Science Foundation's Award (2006), Louisiana Engineering Foundation Professional Award (2010), Best Technical Paper – NASTT No-Dig Show (2011) and the Governor of Louisiana Technology Product of the Year Award (2012).

Over the past 12 years, Allouche served as the PI and Co-PI of research projects in the area of buried infrastructure totaling

DON DEL NERO, P.E., C.D.T

Don Del Nero has more than 23 years of experience including planning, studies, design and construction management in the areas of tunnel and trenchless engineering and is now a vice president and assistant tunnel practice lead with CH2M HILL.

Don obtained his M.S. in Geotechnical Engineering from Syracuse University and his B.S. in Civil Engineering from Clarkson University. His project experience covers more than 50 projects and 40 miles of tunnel and trenchless installations, worth more than \$1.3 billion in construction value. He has been involved in a variety of trenchless technologies for sanitary sewer, storm sewer, raw water, finished and recycled water, SSO and CSO wastewater tunnels, highway tunnels, pedestrian tunnels, caverns, raw water intake tunnels and large diameter piping in sensitive areas. His tunneling experience is in a wide-array of geotechnical conditions across the U.S., Canada and abroad. He is heavily involved in client and project risk mitigation, has engaged in several differing site condition claims, and has developed expertise in mining in cobbles and boulders. His project experience has included tunneling from 8-in. pilot-tube microtunneling to 36-in. directional drills to 30-ft diameter hard rock tunnel boring machines.

Don is a member of and involved in the Dispute Review Board Foundation, Underground Construction Association of the Society for Mining, Metallurgy and Exploration, Tunneling Association of Canada, and the British Tunneling Society. He has been very active on the NASTT No-Dig Conference Program Committee for several years and has contributed several articles for *Trenchless Technology* magazine.



FRANK FIRSCHING

As the executive vice president for UGSI, Frank Firsching oversees the UGSI regional sales managers and coordinates all domestic and international sales activities. He has extensive engineering, sales and management experience. He received a MBA at the Wharton School Business and a B.S. in Mechanical Engineering from the University of Virginia. Before joining UGSI, Frank worked for USFilter as president of the Water and Wastewater Systems Group with responsibility for USFilter's global process equipment and technology divisions. Frank also held the positions of executive vice president of the Process Water Group, West Regional and general manager in USFilter. In addition, he has worked for Deloitte & Touche Management Consulting and GE.



JAMIE HANNAM, MBA, P.ENG.

Jamie Hannam is the director of engineering and information services for Halifax Water, a position he obtained in 2007. Prior to this, he was the Chief Engineer with the Halifax Regional Water Commission from 1994 to 2007. A graduate of Acadia University (B.S. 1983), Technical University of Nova Scotia (B.Eng. 1985) and Dalhousie (MBA 1990), he spent the earlier years of his career in municipal government in both Halifax and Dartmouth working on a variety of engineering tasks. In his role as manager of engineering and information services, he is responsible for water and wastewater infrastructure master planning, asset management and capital project delivery with an annual capital budget of \$50 million.

Halifax Water, the first regulated water, wastewater and stormwater utility in Canada and the largest utility in Atlantic Canada, serving 350,000, with pipes as old as 1856, has utilized trenchless technologies and NASTT resources as key components of their system rehabilitation program for the past 16 years.



TONY HRANICKA, P.E.

Tony is currently responsible for evaluating and implementing new technologies that increase the efficiency and effectiveness of gas operations within the Con Edison service territory within and around New York City. His activities include planning, coordinating, managing and putting into place new technologies, both procedural and equipment-focused, with particular emphasis on increased use of various trenchless technologies. He has spent the last 13 years committed to gas main and service rehabilitation, and in certain cases water main rehabilitation, all by trenchless construction.

Tony started his now 31-year career as a management intern on the engineering track, and his assignments have since grown with enhanced responsibilities in gas engineering, gas distribution services, contract administration and inspection, purchasing of mechanical supplies, and recently, gas operations research and development.

He has been a member of the American Society of Mechanical Engineers since college, and has been a licensed P.E. in New York since 1989. He received his bachelor's in mechanical engineering from Manhattan College in 1980, and a master's in engineering from the same school in 1985. He also has a master's from the New York Institute of Technology, which he completed in 1997.



LARRY KEIST, JR.

Larry is a third-generation master plumber who has used his skills to promote trenchless technologies for 24 years. His experience includes auger boring as well as installing and repairing potable water mains, service leads, sewer mains, sewer service laterals and manholes. In 1993, he founded LMK Technologies based in Ottawa, Ill. LMK drives innovation in the trenchless industry by playing a major role in education, setting standards and continually taking measures to protect our environment, one lateral at a time. Moreover, Larry has developed multiple trenchless systems resulting in more than



80 patents issued throughout North America, Europe and Australia. Additionally, he is responsible for the issuance of two ASTM standards.

Larry is a long-term member of the NASTT No-Dig Show Program Committee and an Advisory Board member for the Trenchless Technology Center at Louisiana Tech University. Larry's industry involvement includes vice president of the Midwest Society of Trenchless Technology (2008-2011), National Association of Sewer Service Companies (NASSCO) Board member (2008-2011), Chairman of NASSCO Lateral Committee (2008-2011), plus, a contributing member of the American Society of Civil Engineers (ASCE), American Society of Testing Materials (ASTM) and the Water Environment Federation (WEF).

Larry has published numerous technical papers in ASCE Pipelines Journal, *NASTT's Trenchless Today* and in NASTT, ISTT and UCT conference proceedings.



BRENDA KINGSMILL

Brenda is a graduate of Sault College and the British Columbia Institute of Technology. Initially working in the private sector for eight years, Brenda joined Halton Region 1986 where she became a design supervisor. Now a project manager, Brenda is responsible for environmental assessment plus design and construction administration of numerous linear and facility projects. Aside from traditional open-cut methods for both potable water and wastewater systems, Brenda is currently managing projects utilizing pipe ramming, tunneling, HDD and structural lining of wastewater systems using a UV curing system. Always a willing volunteer, Brenda is a long-term member of the NASTT No-Dig Show Program Committee and has served as a session leader and moderator for the last five No-Dig shows.



JOE LANE

Joe Lane is the program manager for the Energy Services Division of SAK Construction, LLC, a global tunneling and pipeline rehabilitation contractor headquartered in O'Fallon, Mo.

Currently based in Colorado, Joe holds a bachelor's degree in biology from the University of Northern Colorado and is a graduate of the University of Michigan School of Business Management and the Leadership Program of the Rockies.

Prior to joining SAK in 2011, he spent nearly 20 years with Insituform Technologies, Inc., in progressively increasing roles of responsibility in business development, training, operations and executive management. Joe was responsible for developing and implementing formal education programs where he trained hundreds of employees, participated in the development and advancement of numerous innovative trenchless technologies, successfully grew and led multiple \$100-plus million business units and managed some of the largest municipal infrastructure upgrade programs in North America. In 2008, Joe was recognized by Insituform as General Manager of the Year.

Joe is a regular speaker and instructor at numerous industry and educational associations such as the Water Environment Federation, American Public Works Association and the North American Society for Trenchless Technology to advance the knowledge and use of trenchless technologies. He is a Board Member for the Rocky Mountain Chapter of NASTT, sits on the NASTT Program Committee and is also a Session Leader.



JASON LUEKE, PH.D., P.ENG.

Jason has 16 years of experience in consulting, construction, education and research focusing specifically on trenchless engineering and construction. Prior to rejoining Associated Engineering in 2012, he served three and a half years as an assistant professor and senior sustainability scientist in the Del E. Webb School of Construction at Arizona State University, teaching soil mechanics and researching trenchless methods, infrastructure utility design and buried infrastructure management. During his first tenure with Associated Engineering, he was an infrastructure engineer and trenchless discipline lead in the company's Edmonton office. Jason has participated as an engineer or contractor on a variety of trenchless projects involving pipe bursting, HDD, CIPP relining, auger boring, pipe ramming and tunneling.

Jason serves on the Board of Directors for NASTT and is an instructor for its Lateral Sewer Rehabilitation, Horizontal Directional Drilling, and Pipe Bursting Best Practices Courses. He has published more than 50 papers for journals and conferences to trenchless design, construction and research;

and has presented across North America and internationally at many conferences. Jason also co-authored the NASTT Good Practices Manual for trenchless rehabilitation of lateral sewers. He has extensive, unique knowledge rated to HDD and pipe bursting through his research activities and professional experience as a construction manager and engineer. His impact in the trenchless industry in North America was recognized in 2010 when he was selected by NASTT as the inaugural recipient of the Trent Ralston Award for Early Career Achievement in the field of trenchless technology.



JEFF MAIER, P.E.

Jeff Maier, P.E. is the co-owner and principal of Summit Water Consulting LLC, located in Evergreen, Colo. After more than 10 years with the Metro Wastewater Reclamation District (MWRD) in Denver, Jeff decided to return to engineering consulting and co-founded Summit Water Consulting LLC, a firm that specializes in water and wastewater system infrastructure condition assessment, asset management program development and trenchless rehabilitation design solutions.

He is a Colorado registered professional engineer and a graduate of the University of Michigan – College of Civil and Environmental Engineering with more than 14 years of project management and engineering design experience, primarily in the water and wastewater industry. He is recognized as an expert in the fields of condition assessment and trenchless rehabilitation of pipelines, manholes and wastewater facility structures. He developed and successfully managed wastewater pipeline and manhole condition assessment rehabilitation programs for the MWRD and was the co-founder of the MWRD Concrete Rehabilitation Product Evaluation Program. His efforts saved MWRD millions of dollars in capital expenditure costs and helped streamline the district's asset management program by bringing rehabilitation product evaluation, condition assessment, engineering design, and construction management of trenchless rehab projects in-house. Maier also has the unique experience of developing and managing a pilot program to compare and evaluate newly emerging advanced pipeline condition assessment technologies – robotic multi-sensor systems that provide quantifiable condition assessment information using laser profiling, SONAR and pipe penetrating radar technologies to compliment traditional CCTV pipe inspection methods.

Maier is actively involved in the Rocky Mountain NASTT regional chapter and has been elected as the 2013 Rocky Mountain Chapter Regional Conference Chairman. He is NASSCO PACP/MACP/LACP certified, a NACE-certified coatings/linings inspector and is a certified NASSCO cured-in-place pipeline rehabilitation inspector.



KEVIN NAGLE

Kevin Nagle is a civil engineering graduate from the University of Illinois, earning his bachelor's in civil engineering in 1997. He worked for six years as a design engineer for a structural engineer firm before moving on to work for TT Technologies, Aurora, Ill., a manufacturer of a wide range of trenchless tools and equipment. As part of the TT team, Kevin works in and out of the office in an effort to grow the trenchless market through education, training and marketing. He has worked at an industry level to help move the trenchless industry forward through organizations such as NASTT (member of the Program Committee), Midwest Society of Trenchless Technology (board member), International Pipe Bursting Association (member of Marketing Committee) and UCA (member of the Construction Materials Methods and Specifications Committee). Kevin has gained firsthand trenchless field experience in the pipe bursting, pipe ramming, horizontal directional drilling and horizontal boring processes.



CINDY PREUSS, P.E.

Cindy Preuss is a senior project manager with HydroScience Engineers, Inc. She graduated with a bachelor's in civil and environmental engineering from the University of California at Berkeley and is a licensed professional civil engineer in the State of California. Cindy has 16 years of experience in the industry with a focus on infrastructure design including collection system, water and recycled water pipeline rehabilitation and new installations.

Cindy is currently serving a second two-year term as chairman for the Board of Directors for the Northern California



Pipe User's Group (PUG), an association of public agencies, private consultants, contractors, vendors and suppliers that study current, conventional and trenchless pipe technologies. PUG sponsors attendance to and scholarships for NASTT's No-Dig Show and regional WESTT No-Dig conferences and offers NASTT good practices courses to PUG members on various trenchless technologies. Cindy also serves as vice chairman for the WESTT Chapter Board of Directors and as a volunteer on the No-Dig Show Program Committee for her eighth year running.



JIM RANKIN

Jim Rankin has been with the Vermeer Corp. for more than 35 years and has amassed a vast array of knowledge of industrial equipment and trenchless technology applications. For the past 24 years, Jim's focus has been on Vermeer's horizontal directional drills. He was the project leader for the team that developed the first drill commercially marketed by the Vermeer Corp. Prior to working with HDD equipment, he was involved in the development of Vermeer's Utility Products (formerly Rubber Tire) and track equipment.

Jim has demonstrated his innovation abilities and technical skills by earning 15 industrial patents. He delivers the Vermeer vision of "Taking Care of Customers Worldwide with Better Solutions" through extensive domestic and international travel and by meeting the business needs of the Vermeer customers and dealers.

Jim is a long-term member of NASTT's No-Dig Show Program Committee and serves as the Chair of NASTT's Educational Fund Auction Committee. Jim and his wife Jeanette have three daughters, one son and five grandchildren. Jim spends his free time boating and woodworking.



DENNIS M. WALSH, P.E.

Dennis Walsh is senior project manager and associate with Woodard & Curran and leads the Natural Gas Service Line, based in East Windsor, N.J. Dennis is a 1972 graduate of the

University of Dayton in 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 1990's to decrease its main and service installation costs.

Dennis is a member of the American Gas Association, the Society of Gas Operators, and the North American Society for Trenchless Technology. He is a Board member for the NASTT Mid-Atlantic Chapter and a member of the No-Dig Show Program Committee. He has designed numerous HDD installations for various utilities; including a 1,800-ft, 30-in. steel HDD under a tidal basin in Brooklyn, N.Y.; a 2,000-ft, 12-in. HDD under an environmental sound in south N.J.; and a 400-ft long jack and bore installation in Newark, N.J. When he is not involved in trenchless projects, he consults on gas engineering and other utility projects. His spare time is spent traveling and playing golf.



DAN WILLEMS, P.ENG.

Dan Willems is currently preservation manager with the City of Saskatoon Infrastructure Services department's strategic services branch. Dan holds a bachelor's in civil engineering from the University of Saskatchewan in Saskatoon. Since 2001, Dan has worked for various municipal government and private consulting organizations across the Canadian Prairie Provinces.

During his career, Dan has been involved in several trenchless construction projects, including CIPP lining, microtunneling, case boring, tunneling, directional drilling and pilot tube microtunneling. Dan has been heavily involved in the Northwest Chapter of NASTT since 2005 and has also been a regular contributor at the annual No-Dig Show conferences. Dan is actively working with the Northwest Chapter and local industry in Saskatchewan and Manitoba to expand NASTT's presence across the Prairie Provinces.





NASTT TO INDUCT

2014

Hall of Fame Class

AT NO-DIG SHOW

The North American Society for Trenchless Technology (NASTT) has announced the new inductees of the association's 2014 Hall of Fames class: Robert Affholder, founder of Affholder, Inc., and current vice chairman of SAK Construction; trenchless advocate Joseph Loiacono of Sanexen Aqua-Pipe; and Professor Emeritus, Dr. Raymond Sterling.

NASTT's 2014 Hall of Fame class will be formally inducted at the Gala Awards Dinner on April 15 at NASTT's 2014 No-Dig Show in Orlando, Fla. The new Hall of Fame class will join an already elite group of industry pioneers who helped pave the way for the current generation of trenchless professionals.

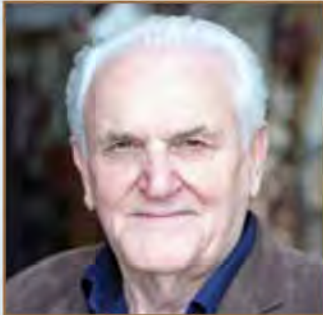
"The lifelong dedication of these individuals has made innovative engineering practices acceptable and sustainable, not only for today's infrastructure solutions but for those of the future," said NASTT Executive Director Mike Willmets. "Their commitment to trenchless technology has been pivotal to the growth of the entire industry and has influenced the wellbeing of countless communities throughout North America."

NASTT's Hall of Fame was created in 2010 by the NASTT Board of Directors to celebrate the society's most outstanding and accomplished members who have made a lasting impact on the trenchless industry. NASTT is a preeminent affiliate of the International Society for Trenchless Technology (ISTT), and many of its members are pioneers of trenchless technology. The Hall of Fame forever honors the leaders and trailblazers of trenchless technology.

The NASTT Board of Directors met in July and voted these trenchless icons as members of the 2014 class. Congratulations to our new inductees!

Bob Affholder

Bob Affholder is a trenchless pioneer who, today, as vice chairman of SAK Construction, continues to play a leading role in the industry 50-plus years after getting his start. In 1958, Affholder started in the underground industry at Armco Steel Company, quickly working his way up from the field into senior management. Then, in 1968, he founded the national tunneling and boring company, Affholder, Inc., which eventually became the first mid-America licensee of the Insituform process. In 1987, the company went public as Insituform Mid-America and later merged to form Insituform Technologies (now Aegion Corp.), where Affholder served for 10 years as vice chairman and as a member of the Board of Directors. In 2007, Affholder joined SAK Construction, helping to lead one of the fastest growing pipeline rehabilitation companies in the industry.



ABOVE Bob Affholder (middle) with SAK principals Jerry Shaw (left) and Tom Kalishman (right) on the November 2013 cover of *Trenchless Technology*.

LEFT Affholder (left) again with Shaw and Kalishman in 2008.

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Joe Loiacono

Joe Loiacono has been involved with trenchless technologies since 1989 when he attended his first No-Dig conference in London. Throughout the early 1990s, acting as the director for the Center for Expertise and Research for Infrastructure in Urban Areas (CERIU), Loiacono aggressively promoted trenchless technologies in North America – particularly in Canada – and spearheaded a group of organizations and individuals who persistently lobbied governments at all levels to invest in the renewal of our deteriorating infrastructures. Now as a leader and chair of several standard committees at regional and national levels, he continues to promote trenchless technologies in the industry and to students at various universities. After more than eight years as director of business development for Aqua-Pipe, Loiacono retired at the end of 2013.



ABOVE, RIGHT Joe Loiacono with his wife, Emilia, in Sicily in 2009.

RIGHT Checking out an award winning manhole rehab pilot project in Montreal in 1996.



LEFT Ray Sterling in the classroom at the Trenchless Technology Center at Louisiana Tech University, where he served as director from 1995 to 2009.

RIGHT Ray with his wife, Janet.



Dr. Ray Sterling is Professor Emeritus at Louisiana Tech University, where from 1995 to 2009 he served as the director of its Trenchless Technology Center. He is a past chairman of both the ISTT and NASTT, and has been the recipient of the Bechtel Pipeline Award from ASCE and the ISTT's Gold Medal. He has a broad research background in trenchless technology, geomechanics and underground space use and is a senior editor of *Tunnelling and Underground Space Technology* journal.

Dr. Ray Sterling

This is NASTT's third Hall of Fame class to be inducted. Last year, the late Eric Wood, along with Ed Malzahn and Dr. David Bennett joined the inaugural class of Bernie Krzys, Frank Canon and the late Gary Vermeer. The 2014 No-Dig Show will be held April 13-17 at the Gaylord Palms Hotel & Convention Center in Orlando, Fla. For more information, visit www.nodigshow.com.



NOMINATIONS BEING ACCEPTED FOR NASTT'S HALL of FAME CLASS OF 2015

In 2010, the NASTT Board of Directors voted to create a Hall of Fame in order to ensure that the Society's most outstanding and praiseworthy members received due recognition. The intent of NASTT's Hall of Fame is to preserve the outstanding accomplishments of these exceptional individuals and to honor their contributions to the advancement of both the trenchless industry and the Society. Members may be elected from all NASTT membership categories: Manufacturers and Suppliers; Engineers and Consultants; Municipal and Utility Employees; Contractors; and Academia.

Nominee _____

Birth Date _____ Year NASTT Membership Started _____

Nominee or Next-of-Kin Contact Information

Name _____

Business Name (if applicable) _____ Business Phone _____

Business Address _____

Home Address _____

Home Phone _____ Email Address _____

Summary of Outstanding Achievements

Please state in 3-4 sentences the contribution(s) made by this nominee that justifies his/her induction. You may also attach a document to this application if you need more space.

Contact Information for the Principal Nominator

Name _____

Business Phone _____ Email Address _____

Completed applications along with (3) letters of recommendation from NASTT members and biographical information on the nominee should be directed electronically to Michael Willmets, NASTT Executive Director at mwillmets@nastt.org and must be received by no later than July 1, 2014.



NASTT'S EYE ON THE INDUSTRY...

AOC Resins

Collierville, Tennessee – CIPP

Global resin supplier AOC, LLC collaborated with Clean Water Works Inc. (CWW), an Ottawa-based leader in pipeline rehabilitation, to restore the sewage pipes serving an automobile factory in Windsor, Ontario. Using polyester felt tubing saturated with AOC's Vipel L010-PPA-33 vinyl ester resin, CWW installed 2,100 ft of cured-in-place-pipe (CIPP), drastically improving the corrosion resistance and durability of the factory's sewage infrastructure.

The automotive plant was closed for two weeks in July 2013 to undertake several projects, including the rehabilitation of old, damaged sewer pipes made from reinforced concrete. AOC delivered more than 175,000 lbs of resin from its Ontario plant for three installations between July 9 and July 15. The first installation was 90 ft long with a 54-in. diameter and required 12,000 lbs of resin. The second was 570 ft long with a 42-in. diameter and used 26,200 lbs of resin. The third was 1,440 ft long with a 54/60-in. transitional tube and used 138,000 lbs of resin.



Associated Engineering, Michels Corp.

Fort McMurray, Alberta, Canada – HDD

The Regional Municipality of Wood Buffalo's Saline Creek Plateau Offsite Water & Sewer Servicing contract 3 is nearing completion. The project included the installation of a 750-mm steel water supply, and 300- and 700-mm steel wastewater siphons – each one 1,300 m in length – down the Clearwater River Valley slope. Associated Engineering is the consultant, Michels Canada is the drilling sub-contractor, and Sprague-Rosser is the general contractor for this project.

Michels Corp., TT Technologies, Herrenknecht

Corning, New York – HDD

Michels Corp. was the HDD contractor on the Empire Connector Extension Project in Corning, N.Y. The project has been named *Trenchless Technology's* 2013 Project of the Year for New Installation. This difficult and unique HDD project included several cutting-edge trenchless technologies combined with older proven technology in order to successfully complete a short but complex installation.

Methods used included: pilot hole intersect, the first-ever North American use of directional microtunneling for installation of large-diameter containment casing for HDD, pneumatic pipe ramming/auger boring, testing of

a new tool developed by Michels for seating large-diameter casing into rock, and rock drilling. Equipment from TT Technologies and Herrenknecht was also used on the project.



Quest Inspar

Tacoma, Washington – Pipe Relining

Quest Inspar completed the world's first in-place robotic lining of a large diameter drinking water pipeline for Tacoma Water in Tacoma, Wash., creating new options for utilities to repair in-place aging pipe systems.

The 2,156-ft deteriorated section of Tacoma Water's 58-in. transmission pipeline (built in 1936) was given decades of useful life after being lined in a single pass with the company's PipeArmor ANSI/NSF 61 certified formulation at 0.375-in. thickness, exceeding AWWA M28 specifications. Minimal excavation resulted in little traffic disruption to local residents and commuters traversing the busy intersection. Pleased with the results, Tacoma Water has already identified the next section to be lined in November 2014.



TT Technologies, Underground Solutions, Inc.

Lakewood, Colorado – Pipe Bursting

Consolidated Mutual Water Company (CMWC) selected Underground Solution's Fusible PVC pipe as the pipe technology to be used for its Pipe Bursting Program. A TT Technologies 800G static pull pipe



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bursting system was used to perform the bursting runs. From the start of the project in 2010, CMWC has burst approximately 123,000 lf of pipe – about 23 miles total – progressing from 33,000 lf in 2011 to 43,000 lf in 2012. The company's pipe bursting program was the winner of *Trenchless Technology* magazine's 2013 Project of the Year Award for Rehabilitation.



Underground Solutions, Inc. Pleasanton, California – HDD, Sliplining

Last year, the City of Pleasanton completed two projects using Fusible PVC pipe from Underground Solutions, Inc. The first project saw three new pipelines installed under Foothill Boulevard and the Arroyo Del Laguna at Castlewood Country Club via horizontal directional drilling (HDD). The second project rehabilitated an existing water line using Fusible PVC pipe installed via slipline. The Castlewood project involved an emergency replacement of three lines that were compromised after a weir failed in the Arroyo.



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ANNUAL GENERAL MEETING NOTICE

The NASTT Annual General Meeting (AGM) will be held at the **Gaylord Palms Hotel & Convention Center** in Orlando, Florida on **Sunday, April 13, 2014** from 1:00 PM to 2:00 PM in Sanibel Room 1-2.

The AGM will be hosted by the Board of Directors, and will include presentations

from the NASTT Officers and staff regarding committee reports, financial overviews and outreach initiatives. Questions from the floor are permitted upon conclusion of the presentations.

This meeting is open to all individuals with current membership in the society.

**For additional information,
please contact us at info@nastt.org.**

nastt.org

North American Society for Trenchless Technology
7445 Morgan Rd. • Liverpool, NY 13090
Phone: 315-409-7552

NASTT CHAPTER NEWS

British Columbia



On Oct. 8, the British Columbia (BC) Chapter held its third all-day seminar in Victoria with 32 attendees. Five speakers discussed a relining project, the proposed carbon protocol for trenchless technology jobs, an update on chemical grouting, a recap of the rehab and rebuild of utilities in Christchurch, New Zealand and use of video to inspect a live water main. Previously in May and June, the same presentations drew an audience of 63 in total at Kelowna and Burnaby venues. Plans are underway to hold three sessions in 2014 around the province, focusing on the main aspects of S.U.E.

In 2014, the BC Chapter is presenting the NASTT Cured-In-Place-Pipe (CIPP) Good Practices Course on Feb. 19 in Surrey. Chris Macey, P.Eng., and Ian Doherty, P.Eng., will be the instructors. With CIPP being utilized more, the chapter anticipates a large registration.

New Board Members for the British Columbia Chapter in 2014

| | |
|------------------------|------------|
| David O'Sullivan | Chair |
| Kieran Field | Treasurer |
| Preston Creelman | Past Chair |
| Karl Mueller | Director |
| Gloria Gril | Director |
| Gregg Densmore | Director |
| David Neveu | Director |

Great Lakes, St. Lawrence & Atlantic



The Great Lakes, St. Lawrence & Atlantic Chapter promoted trenchless technology at the ACWWA on Sept. 29-Oct. 1, 2013 in Fredericton, New Brunswick. The conference provided an opportunity to learn about and discuss water and wastewater industry issues with peers in both a technical and social atmosphere.

For more information on GLSLA, upcoming events and training sessions, please visit the website at www.glsa.ca.

Mid Atlantic



The Mid Atlantic Chapter (MASTT) conducted the "Trenchless Technology, SSES and Buried Asset Management" seminar on Dec. 11-12, 2013 at the Wyndham Garden Newark Airport Hotel in Newark, N.J. The guest presenter was Eric C. Macfarlane, P.E., Deputy Commissioner and Mr. Yun Ng, P.E., Associate Commissioner, Infrastructure, New York City Department of Design and Construction. The presentation was titled "Trenchless in New York City." The seminar was very successful with an excellent attendance of local contractors, engineers and municipal employees who networked and learned about trenchless technology. The seminar offered 13 PDHs with a

certificate for attendance completion and was co-sponsored by ASCE North Jersey Branch.

MASTT has seminars tentatively planned in late-June 2014 for Bethesda, Md., and in mid-August 2014 for Pittsburgh, Pa. Seminar locations and dates will be updated as the seminar dates, venues and programs are finalized. To participate in any MASTT seminars, please go to www.mastt.org for chapter contact information and to view the proposed seminar schedule, please go to www.mastt.org/proposed_seminar.html.

MASTT will have its Annual Membership and Board of Directors meeting at the NASTT No-Dig Show in Orlando, Fla., on Sunday April 13, 2014 from 2:30 p.m. to 4 p.m. At this meeting, new board members will be installed and chapter officers will be elected. Please plan to attend as guests are welcome. The meeting room will be announced at a later date.

Midwest



In August, the Midwest Chapter (MSTT) produced and distributed the inaugural issue of the Midwest Journal of Trenchless Technology 2013. The Journal was a great success with numerous Midwest project articles, messages and advertisements. The Journal can be seen on line at www.mstt.org.

The MSTT seminar "Trenchless Technology, SSES and Buried Asset Management" is tentatively planned for late April 2014 in Minneapolis-St. Paul, Minn., and for mid-September 2014 in Louisville, Ky. Seminar locations and dates will be updated as the seminar dates, venues and programs are finalized. To participate in any MSTT seminars, please go to www.mstt.org for chapter contact information and to view the proposed seminar schedule, please go to www.mstt.org/proposed_seminar.html.

MSTT will have its Annual Membership and Board of Directors meeting at the NASTT No-Dig Show in Orlando, Fla., on Sunday April 13, 2014 from 4 p.m. to 5:30 p.m. At this meeting, new Board Members will be installed and chapter officers will be elected. Please plan to attend as guests are welcome. The meeting room will be announced at a later date.

Pacific Northwest



The Pacific Northwest Chapter continues to strive toward its goal of increased educational outreach throughout the region. The PNW Chapter is tapping into the wealth of knowledge held by our diverse membership in order to promote the use of trenchless technology. The recently formed PNW Chapter Membership Committee is diligently working to develop new single-day introductory and education seminars that will be conducted by local members from Alaska to Idaho. The goal is to publicize the breadth of capabilities and advantages made available through trenchless technology and to provide an introduction to our organization. For information on the chapter and upcoming events, please visit www.pnwnastt.org



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Northwest



The Northwest Chapter would like to thank everyone for their support and attendance at the Northwest Trenchless Conference in Calgary on Nov. 13-14, 2013. Nadeer

Lalji led the conference planning committee and, on behalf of the Board, I'd like to extend him and the committee our sincere thanks.

In September, the Northwest Chapter sponsored a six-paper trenchless track at the Western Canada Water conference in Edmonton. Thanks to our speakers Greg Tippet, Craig Vandaele, Ladd Gould, Chris Lewis, Chris Macey, Ray Davies and George

Bontus for their contribution to spreading the word about trenchless technology.

It's time to start planning your attendance to NASTT's 2014 No-Dig Show. The 2014 show's theme is The Magic of Trenchless, and is scheduled for April 13-17 at the Gaylord Palms Resort & Convention Center in Orlando, Fla. The show starts with introductory short courses available on Sunday April 13. The trade show and technical sessions start the following day and run until Wednesday, with all of NASTT's Good Practices short courses being offered on Wednesday and Thursday. If you haven't attended No-Dig before, I strongly encourage you to consider going. The show is an excellent learning and networking opportunity, not to mention a lot of fun.

The 2014 No-Dig Show program committee, headed by Kevin Nagle and Richard Botteicher, has been working diligently for the last year to put together another great show. Many may not realize the level of effort required to put these events together, but Kevin and Richard are supported by more than 60 additional volunteers from organizations across North America, many of which who have been repeat volunteers for NASTT on this committee. The dedication of these volunteers is simply incredible and deserving of recognition.

The Northwest Chapter Board continues to develop various initiatives throughout the Canadian Prairies. Hartley Katz and Jason Lueke are coordinating a NASTT Sewer Laterals Rehabilitation & Replacement Good Practices course to be held at the Holiday Inn Winnipeg South in Winnipeg, Manitoba on Feb. 7. For more information about the short course, please check our website at www.nastt-nw.com.

Finally, the 2014 Northwest Chapter's Board of Directors election is coming in early 2014. If you're an active member of the Chapter and would like to be considered for nomination, please contact Alan Miller at amiller@nastt-nw.com.

Rocky Mountain



The Rocky Mountain Chapter held its 4th annual No-Dig conference and NASTT Short Course during the week of

strength in numbers.

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Nov. 4, 2013 at the DoubleTree Hotel in Westminster, Colo. The conference provided a unique and important opportunity to share information, hear from respected trenchless practitioners, visit exhibitor booths and network with trenchless technology professionals actively engaged in trenchless pipeline projects in Colorado, Utah and Wyoming. For more information on chapter events, please visit www.mnastt.org.

Southeast



The Southeast Chapter (SESTT) is planning a

two-day seminar "Trenchless Technology, SSES and Buried Asset Management" for mid-March 2014 in Baton Rouge, La., and for late October 2014, in Jacksonville, Fla. Seminar locations and dates will be updated as the seminar dates, venues and programs

are finalized. To participate in any SESTT seminars, please go to www.sestt.org for chapter contact information and to view the proposed seminar schedule, please go to www.sestt.org/proposed_seminar.html.

SESTT is organizing the inaugural annual issue of the *Southeast Journal of Trenchless Technology 2014* that will feature numerous articles about what is happening with Trenchless Technology in the Southeast including projects, designs, case studies, techniques, equipment, theory and methods. To participate with the magazine, please go to www.sestt.org for chapter contact information.

SESTT will have its Annual Membership and Board of Directors meeting at the NASTT No-Dig Show in Orlando, Fla., on Sunday April 13, 2014 from 1 p.m. to 2:30 p.m. At this meeting, new Board members

will be installed and chapter officers will be elected. Please plan to attend as guests are welcome. The meeting room will be announced at a later date.

Western



The Western Chapter of NASTT held its 9th annual Western Regional No-Dig Conference and Exhibition on Oct. 28-29, 2013 at the Ala Moana Hotel in Honolulu, Hawaii. The technical conference was held on Oct. 28 and the education program on Oct. 29. The conference included a one-day technical program and product exhibit area devoted entirely to trenchless technology, including new installation, rehabilitation and condition assessment. More information on the chapter and upcoming events can be found on the website at www.westt.org.

AVANTI'S DAVID MAGILL PASSES AWAY



David Magill, Jr. — icon of the chemical grout industry and Avanti International — passed away peacefully in his home on Jan. 19, surrounded by his wife and children.

He was born to Julia Scholl (Judy) Magill and Francis David (Frank) Magill in Montclair, N.J., on Oct. 7, 1943.

He received an engineering degree from Virginia Polytechnic Institute in 1965 and an MBA in 1975 from Louisiana State University. When Avanti International was formed in 1978 by four rehabilitation contracting companies, Magill was hired as its first employee and the company's first president. He led Avanti International until his son Daniel took over leadership in 2008.

"It is with sadness and reflection that NASTT has learned of the passing of David Magill, Jr.," said NASTT Executive Director Mike Willmets. "A pioneer in the chemical grout industry, David was the first president of Avanti International, a company that he championed for over thirty years. In 1990, David was one of the seven Charter Members of NASTT providing the initial funding to start our Society.

"David's passion and vision not only caused the infrastructure rehabilitation industry to flourish but helped commission NASTT as the premier source of trenchless engineering."

Magill loved cruising on his boat and on large cruise ships, around

continents or up and down rivers. He really liked to read (novels, history, spiritual) and to listen to music (smooth jazz, some country, some easy). He was a friend and mentor, and an inspiration to many. He will always be remembered for his generosity, optimism, non-judgmental acceptance of others, and for his overwhelming kindness to help anyone in need.

Magill was preceded in death by his eldest son, Charles David (Chuck) Magill by only 14 months. He is survived by his wife of 21 years, Angela Magill, and three surviving children: daughter Darby Magill Sager of Menlo Park, Calif., and her husband Brian Sager and their two sons, Aidan and Brennan; son Daniel Magill of Houston, and his wife Melissa Magill, and their daughter Delaney (and another daughter on the way); and daughter Debra Magill of Palm Harbor, Fla., and her boyfriend Rick Bales. David is also survived by grandsons Nikolas and Alex Magill of Houston, and their mother, Marina Miklaszewicz-Magill and Robert Miklaszewicz. He is also survived by his siblings: Judy Rehberg of Dalton, Ga., Martha Ann Cooper of Birmingham, Ala., and Will Magill of Greenville Tenn., and many in-laws, nieces, nephews, friends and family too numerous to list but not forgotten.

A memorial service was held Jan. 26 at Lakewood Yacht Club in Seabrook, Texas. In lieu of flowers, donations may be made to St. Jude Children's Research Hospital Online or Phone: 800.822.6344 Tribute Account #: 35199222.



NASTT has a network of nine regional chapters throughout the United States and Canada. With a single NASTT membership, you're automatically enrolled in the national organization, the international organization (ISTT) and also in your regional chapter. Regional chapters offer valuable educational and networking opportunities in your local area. Share your ideas, network with colleagues and find solutions to your everyday challenges.



Northwest

The Northwest Chapter was established in 1988 by members in the Canadian provinces of Alberta and British Columbia, Canada, and in Washington state. In 2009, the Chapter adjusted the geographic area to include the members in the provinces of Manitoba and Saskatchewan, Canada.

Chapter Contact
Dan Willems, Chair
E-mail: dwillems@nastt-nw.com
Website: www.nastt-nw.com

Elected Officers
Chair - Dan Willems
Vice Chair - vacant
Secretary - Mark Brand
Treasurer - Keith Moggach



British Columbia

The British Columbia (NASTT-BC) Chapter was established in 2005 by members in the province of British Columbia, Canada.

Chapter Contact
Preston Creelman, Chair
Phone: (604) 591-8274
E-mail: creelmanp@royalbuildingprojects.com
Website: www.nastt-bc.org

Elected Officers
Chair - Preston Creelman
Vice Chair - Gloria Grill
Secretary - vacant
Treasurer - Gurjit Sangha



Pacific Northwest

The Pacific Northwest Chapter was established in 2009 by members in the states of Alaska, Idaho, Oregon and Washington.

Chapter Contact
Erik Waligorski, Chair
Phone: (425) 289-7320
E-mail: ewaligorski@rothhill.com

Elected Officers
Chair - Erik Waligorski
Vice Chair - Chris Price
Secretary - Chris Sivesind
Treasurer - Matt Pease



Great Lakes, St. Lawrence & Atlantic

The Great Lakes, St. Lawrence & Atlantic (GLSLA) Chapter was established in 1995 and represents the Eastern Canadian perspective of the trenchless technology marketplace. GLSLA members are from Ontario, Quebec and the four Atlantic provinces.

Chapter Contact
Kevin Bainbridge, Chair
Phone: (905) 304-0080
E-mail: kbainbridge@rcii.com
Website: www.nasttglsl.ca

Elected Officers
Chair - Kevin Bainbridge
Vice Chair - Frank Badinski
Secretary - Gerald Bauer
Treasurer - Derek Potvin



Rocky Mountain

The Rocky Mountain Chapter was established in 2009 by members in the states of Colorado, Utah and Wyoming.

Chapter Contact
Al Paquet, Chair
E-mail: al.paquet@ch2m.com
Website: www.rmnastt.org

Elected Officers
Chair - Al Paquet
Vice Chair - Bo Botteicher
Secretary - Andrew Lockman
Treasurer - Ken Matthews



Mid Atlantic

The Mid Atlantic (MASTT) Chapter was established in 2004 by members from the states of Delaware, Maryland, New Jersey, Pennsylvania, Virginia, West Virginia and the District of Columbia.

Chapter Contact
Richard Thomasson, Chair
Phone: (703) 842-5621
E-mail: rthomasson@pirnie.com
Website: www.mastt.org

Elected Officers
Chair - Richard Thomasson
Vice Chair - Michael Delzingaro
Secretary - Dennis Walsh
Treasurer - Tom Wyatt



Southeast

The Southeast (SESTT) Chapter was established in 2001 to serve the members of NASTT from Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Puerto Rico.

Chapter Contact
Jerry Trevino, Chair
Phone: (877) 462-6465
E-mail: jerry@mechanicaljobbers.com
Website: www.sestt.org

Elected Officers
Chair - Jerry Trevino
Vice Chair - Ed Paradis
Secretary - J. Chris Ford
Treasurer - Kelly Derr



Midwest

The Midwest (MSTT) Chapter was established in 1998 to promote trenchless technology education and development for public benefit in Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, Ohio and Wisconsin.

Chapter Contact
Jeff Boschert, Chair
Phone: (314) 229-3789
E-mail: jeffboschert@yahoo.com
Website: www.mstt.org

Elected Officers
Chair - Jeff Boschert
Vice Chair - Larry Kiest, Jr.
Secretary - Randy Fries
Treasurer - Bill Shook



Western

The Western (WESTT) Chapter was established in 2003 by members from the states of Arizona, California, New Mexico, Nevada and Hawaii.

Chapter Contact
Craig Camp, Chair
Phone: (619) 858-1595
E-mail: craig.camp@hatchmott.com
Website: www.westt.org

Elected Officers
Chair - Craig Camp
Vice Chair - Cindy Preuss
Secretary - Cory Street
Treasurer - Matt Wallin

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Michael E. Queen
President, Consolidated Mutual Water Company
(Trenchless Technology 2013 Project of the Year)



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NASTT Student chapters are involved in a number of activities throughout the academic year including field trips, seminars and fundraisers. Members of student chapters also attend and participate in NASTT's No-Dig Show where they present trenchless research posters, participate in competitions and provide event support monitoring the technical paper sessions. There are many benefits for students who belong to a NASTT student chapter – scholarships, networking opportunities, education and career opportunities to name a few. To learn more about NASTT's student chapters, visit www.nastt.org/student_chapters.



Arizona State University

Tempe, Arizona

Advisor: Dr. Samuel T. Ariaratnam

E-mail: samuel.ariaratnam@asu.edu



Bowling Green State University

Bowling Green, Ohio

Advisor: Dr. Alan Atalah

E-mail: aatalah@bgnet.bgsu.edu



Clemson University

Clemson, South Carolina

Advisor: Dr. Kalyan Piratla

E-mail: kpiratl@clemson.edu



Concordia University

Montreal, Quebec

Advisor: Dr. Tarek Zayed

E-mail: zayed@bcee.concordia.ca



Indiana University - Purdue University Indianapolis

Indianapolis, Indiana

Advisor: Dr. Dae-Hyun (Dan) Koo, P.E.

E-mail: dankoo@iupui.edu



Laval University

Quebec City, Quebec

Advisor: Dr. Geneviève Pelletier, ing.

E-mail: Genevieve.Pelletier@gci.ulaval.ca



Trenchless Technology Center/ Louisiana Tech University

Ruston, Louisiana

Advisor: Dr. Erez Allouche

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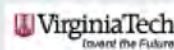


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NASTT OUTSTANDING TECHNICAL PAPERS

MORE REALLY OLD CIPP LINERS FROM WINNIPEG, MB, CANADA THAT HAVE STOOD THE TEST OF TIME

Christopher C. Macey

North American Practice Leader, AECOM, Winnipeg, MB, Canada

Kas Zurek

Design and Construction Engineer, Water and Waste Department, Winnipeg, MB, Canada

Nick Clinch

Project Coordinator, Water and Waste Department, Winnipeg, MB, Canada

Armand Delaurier

Project Manager, AECOM, Winnipeg, MB, Canada

Ron Sorokowski

Senior Engineer, Water and Waste Department, Winnipeg, MB, Canada

includes 3,454 km of sewer which is comprised of 1,057 km of combined sewer (CS), 1,286 km of separate wastewater sewers (WWS), 925 km of land drainage sewer (LDS) and 185 km of storm relief sewers (SRS).

As the city reached a population of more than 250,000 before 1920, much of the system is very old. The city is also topographically very flat and as a result has a larger percentage of deeper and larger diameter sewers than most municipalities. A standard WRc criticality model generated for the city indicates that approximately 55 percent of the sewer infrastructure is very critical (Category A Sewers) or critical (Category B Sewers), due to a combination of increased depth and sewer size as well as location factors as the older infrastructure is in the downtown core of the city.

Based on the age of the infrastructure, there has been a long history of infrastructure rehabilitation. As the older parts of the system have a large proportion of critical sewers, the rehabilitation programs have had a long focus on the use of minimum excavation and trenchless technologies to minimize the construction footprint of rehabilitation as well as to minimize the capital and life cycle cost of rehabilitation. Cured-in-place pipe (CIPP) has played a prominent role in the rehabilitation of sewer infrastructure in Winnipeg for many years having its first trial installation in 1978.

ABSTRACT

The City of Winnipeg, Manitoba, Canada has a sewer system that services approximately 700,000 people. As the city population was over 250,000 before 1920, much of its sewer inventory has been at an advanced state of deterioration for some time. As a result it commenced sewer rehabilitation with cured-in-place pipe (CIPP) in its first trial installations in 1978, some of the earliest installations of CIPP in North America. A trial rehabilitation method initially, the program increased in frequency from a project every couple of years in the 1980s to annual trials in the 1990's. By 1998, the annual Sewer Condition Upgrading Program was transformed and CIPP evolved from a trial rehabilitation technology to a competitively bid technology that has carried out approximately 75 percent of the annual rehabilitation program from 1998 to date.

Previous papers at No-Dig 2012 have presented the initial results of physical and visual inspections of the 1978 CIPP installations in Winnipeg. As the 1978 installations included a 5.40-m deep liner with DR of 127 (the current ASTM F1216 recommended maximum DR is 100), this paper presents the results of advanced studies that more closely examine the actual applied loads on the installation as well as additional investigations carried out in 2012 on CIPP installations from 1984. Together these installations represent some of the oldest CIPP liners in North America and are excellent examples of exemplary long term performance of CIPP liners under significant applied loads for long periods of time.

INTRODUCTION

The City of Winnipeg, Manitoba, Canada has a sewer system that services a population of approximately 700,000. The sewer system

HISTORY OF CIPP USE IN WINNIPEG

There is a long history of use of CIPP in the Winnipeg market, especially when one considers the history of CIPP in general. The first CIPP liner in the world was installed in a 1,170 mm by 600 mm brick egg shaped sewer under Riverside Close in the London borough of Hackney. CIPP first made its way to North America in 1977. Winnipeg's first CIPP installation took place in the winter of 1978.

If you have never visited Winnipeg in the winter months, appreciate that winter temperatures can approach the point where the degrees Fahrenheit equals degrees Celsius (-40 degrees). A contractor from Fresno, Calif., with support from a contractor from Vancouver, BC, Canada ventured into the cold Winnipeg winter in 1978 and were seriously humbled by working in an unusually brisk environment with a technology, they themselves were just learning.

They attempted to install 316 m (1038 ft) of liner, had 206 m (679 ft) go well, had 115 m (379 ft) go very badly, and simply walked away from the last 200 m (655 ft) of their contract. At the time the venture into new technology was not really viewed as a success and their contract was terminated without pursuing its completion.

Fortunately not all of those in the city viewed the venture as a failure. The city had a long history of pioneering new materials and technology. The beginning of all of these adventures was not always a bowl of cherries. F.G. Denson, at the time, near the end of a career that had

introduced both AC pipe and PVC pipe into the Winnipeg market (in the 1950s and 1960s), had assessed the project in an internal report in 1979 and concluded that the work that went well, was very promising and that the problems that were encountered were entirely fixable. While ABC Pipe Cleaning crews never returned to Winnipeg to finish the contract, the memo laid out a legitimate foundation to eventually experiment further with the technology.

The next venture into the world of CIPP was the rehabilitation of the Mission Secondary Interceptor Sewer in 1984. Constructed in 1935 of precast reinforced concrete pipe (RCP), the sewer had undergone serious deterioration due to H₂S corrosion. In March of 1984, the city entered into a contract to reline the sewer with CIPP. With an inversion that started at 2 a.m. on a Friday night and ran till noon the next day, followed by a 12-hour thermal cure and a five-hour cool down, the sewer was returned to service and has been in service ever since. This project obviously left a much more palatable face on the value of pure trenchless technology.



Figure 1: Location Plan of the Mission Secondary Sewer

While the city's first two projects used standard unfilled isophthalic polyester resins, the industry was evolving and experimenting with variations on this. The next two major trials in the 1980s included:

- 1986/1987 – Henderson Highway installations using epoxy resin.
- 1989 – Notre Dame Avenue installation using a vinyl ester resin.

By 1990, life had returned to a steady diet of isophthalic polyester resins and annual packages of installations were carried out on the premise of it still being a trial technology. This continued until 1996. Over the course of 1996 to 1997, much had transpired, both in the industry, and locally in the city:

- While still a specialized technology, there was more than one player in the North American market and the procurement of work could be fit into a more conventional tender package with more rigorous qualification requirements.
- The city's method of assessment and rationalization of treatment streams was overhauled and brought into the modern era.

The capital sewer rehabilitation overall program, as a result, was transformed into six distinct work streams:

- Stabilization of structures;
- Full trenchless relining;
- Trenchless point repairs;
- Relining in conjunction with external point repairs;
- Full manhole to manhole replacement with minimum excavation technology; and
- External point repairs.

Since 1997, approximately 75 percent of the capital program has been delivered with CIPP technologies. The program has included diameters ranging from 200 mm through 1350 mm and many non-circular cross sections such as egg-shaped sewers. Through 2012, approximately 145 km of CIPP has been completed (since 1997). The savings in direct capital cost versus the known market value of other technologies in this time has been \$130 million.

Cured-in-place pipe is envisaged to play a large role in the future of rehabilitation in Winnipeg as well as there is currently some 433 km of work in backlog that has been identified through the Sewer Condition Assessment Program. The project savings associated with that backlog, if it can be captured, is another \$390 million.

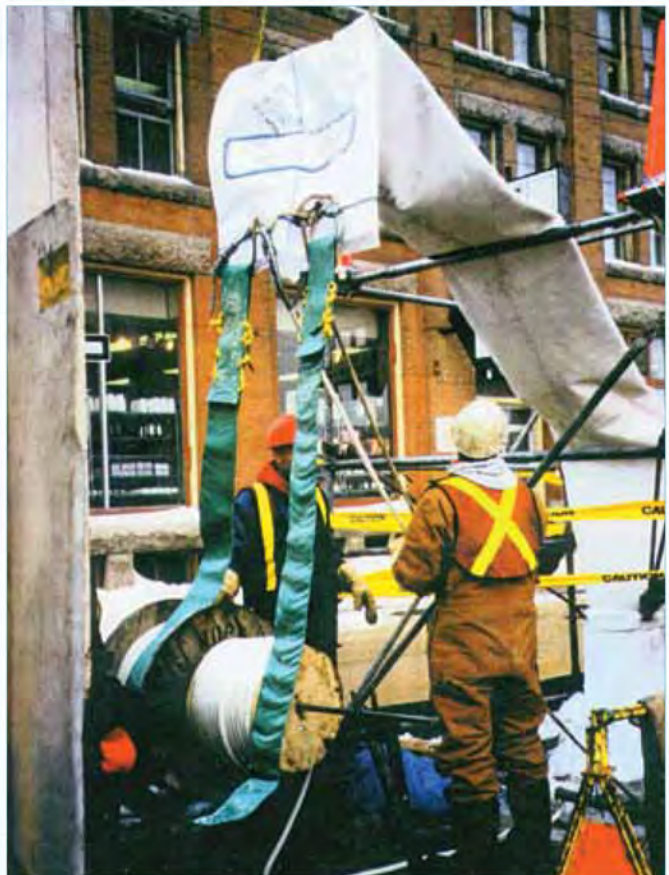


Figure 2: CIPP installation in the 1990-1996 trial era.

PERFORMANCE OF THE EARLY LINERS

The City of Winnipeg may have experienced problems in the installation phase with CIPP liners, but have never had a CIPP liner fail in service. Through the Sewer Condition Assessment Program, all of the early liners from the initial installations and the 1980s and 1990-1996 trial period have been inspected by CCTV technology and all are in excellent condition. For the 1978 installations, the familiar sight of a CIPP liner, close-fit and looking much like the day it went in from a structural perspective, is a common sight that has been confirmed for all installations from the 1980s and 1990s trial era.

In 2011-2012, the 1978 installations had physical specimens retrieved and were subject to ASTM D790 flexural modulus and flexural strength testing at the Alberta Innovates Technology Futures Laboratories (ATF). The results were presented at the 2012 No-Dig Show. The original properties of the liners were noted on a specification sheet that was secured from the original project file. This notes that the liner was a polyester resin intended to have initial properties of:

- Flexural modulus of 240,000 psi (1654 MPa)
- Flexural strength of 8,200 psi (~56.5 MPa)

While there is a wide variation of the results between the sites, the following can be noted:

- All CIPP samples exhibited good, non-brittle material characteristics, failing in a classic Type B or Type C, ASTM D790 stress versus strain curve classification;
- All of the flexural modulus testing was above the specified initial properties;
- All of the flexural strength tests, save one, exhibited values very near their initial specified values; and
- The only low flexural strength value was associated with a liner with visible installation-related issues.

At the time of the writing of this paper, further testing was scheduled to be carried on the 1984 CIPP installation in the Mission Secondary Interceptor. The observed performance of all liners and all physical testing on the earliest liners has been excellent. As the earliest of the liners were installed long before any recognized thickness design process, the question begs to be asked: How would they have been designed today, and how does their performance stack up based on their actual thickness versus the applied stresses we routinely submit liners to today?

APPLIED LOADS AND DESIGN REVIEW OF THE EARLY LINERS

The City of Winnipeg today, uses the most current version of ASTM F1216, Appendix X1 as a design basis for liner design. Like most municipalities their minimum design criteria looks something like this:

- Designs are permitted for both partial and fully deteriorated design based on observed host pipe condition;

- Water Table Below Surface – 1 m;
- Min Ovality – 3 percent;
- Soil Density – 18.85 kN/m³ (120 lbs/ft³);
- Soil Modulus – 6.892 MPa; and
- Live Load – HS20 live load minimum.

If the 1978 and 1984 CIPP liners had been designed today with the spec sheet presented in Figure 7, the resultant intended thicknesses would likely have been considerably thicker as design practice today would more commonly de-rate unproved field values from a Type Test spec sheet as opposed to literally designing on the basis of it. While the actual thickness of the Mission CIPP Liner will not be known until later this year, visuals of its installation (see Figure 11) suggest it will be found to be a lot thinner than if it were designed today.

Based on the information presently available, the liner used on Richard Street is the most remarkable. Even if it were deemed to be a partially deteriorated pipe, present day design standards would have delivered a liner to the site some 2.5 times thicker than the actual liner that has provided over 34 years of service and is still in excellent condition.



Figure 3: Installation of the Mission Secondary CIPP liner in April 1984.

Some of this is obviously attributable to factors such as:

- The actual groundwater load is likely less (although likely still significant based on local hydrogeology);
- The actual physicals installed were much greater than the type testing as opposed to less (while this is unusual by present day standards it is definitely true in this case); and
- The actual enhancement factor of a close fit liner can actually be much higher than 7 (this is known to be true in studies).

While all of these factors have not been investigated to date, we can look at the impact of the increased physicals delivered to the site in this case. While less conservative, the actual thickness of the Richard Street liner is still less than one-half of what one would calculate using the present day design approach. None of this is intended to suggest that the present day design approach articulated in ASTM F1216, Appendix X1 is wrong or even overly conservative. But it does illustrate that it is conservative and practitioners should not be wary of having to be more conservative than the design approach already is.


SUMMARY

The City of Winnipeg has some 35 years of direct experience with CIPP products and installations. The city has been well served by the technology, having saved literally hundreds of millions of dollars over the past 15 years alone.

Given the nature of their considerable emphasis of quality assurance to document the construction process, the city also has considerable certainty with respect to the longevity of CIPP in their system. The City of Winnipeg's CIPP program is anticipated to deliver effective design lives considerably in excess of the pipes they have rehabilitated. Given the immense financial saving associated with CIPP work both in terms of direct and indirect costs to the public, this certainty of performance will benefit the city for this and future generations to come.

This paper was edited for style and space for NASTT's *Trenchless Today*. To view the full version of Paper MM-T6-01, please visit nastt.org/technicalpapers.





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 City of Atlanta
 Atlanta, Georgia
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 Michelle Hill
 Email: mhill@nastt.org
 Web: www.nastt.org/calendar

11
NASTT's Horizontal Directional Drilling Good Practices Course
 1:00 PM - 4:30 PM
 In Conjunction with AWWOA
 Banff, Alberta
Contact Info:
 Michelle Hill
 Email: mhill@nastt.org
 Web: www.nastt.org/calendar

18
NASTT's Cured-in-Place-Pipe Good Practices Course
 8:00 AM - 5:00 PM
 Tri-State Utilities
 Chesapeake, Virginia
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 Michelle Hill
 Email: mhill@nastt.org
 Web: www.nastt.org/calendar

19
NASTT's Laterals Good Practices Course
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 City of Atlanta
 Atlanta, Georgia
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 Michelle Hill
 Email: mhill@nastt.org
 Web: www.nastt.org/calendar

April

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13
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16-17
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 Gaylord Palms Convention Center
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Wednesday, April 16th, 2:30 pm - 5:30 pm
 Thursday, April 17th, 8:30 am - 2:30pm

- **NASTT's Pipe Bursting Good Practices Course**

Wednesday, April 16th, 2:30 pm - 5:30 pm
 Thursday, April 17th, 8:30 am - 12:00pm

- **NASTT's Cured-in-Place-Pipe Good Practices Course**

Wednesday, April 16th, 2:30 pm - 5:30 pm
 Thursday, April 17th, 8:30 am - 1:00pm

- **NASTT's New Installation Methods Good Practices Course**

Wednesday, April 16th, 2:30 pm - 5:30 pm
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- **NASTT's Laterals Good Practices Course**

Wednesday, April 16th, 2:30 pm - 5:30 pm
 Thursday, April 17th, 8:30 am - 12:00pm

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