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COVER STORY
TT Technologies: Entrenched in Trenchless

TT Technologies has literally grown up with the trenchless technology industry, coming into being before the term “trenchless” became synonymous with the rehabilitation of underground infrastructure that it is today.

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Headline submitted by Trevor Igo
Igo Boring, Weatherford, OK

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I expect that by now you have heard about the Keystone XL pipeline. This is a $5.3 billion, 1,179-mile pipeline from Alberta, Canada, to oil refineries in the United States. Of course, to be transported in the pipeline is the tar sands oil from north of Edmonton. TransCanada — developer and owner of the pipeline — has been going through a legal and environmental maze since 2008 to get this pipeline built. Much has been written on Keystone XL pipeline (most notably in our sister publication North American Oil and Gas Pipelines (NAOGP)) and I thought it would be interesting for us to look at this from a trenchless technology standpoint.

Keystone XL would transport about 830,000 barrels per day to the United States, greatly reducing our dependence on the Middle East and Venezuela. The U.S. State Department estimates the project will create 42,000 temporary jobs for the one- to two-year construction period of which 3,900 will be direct construction jobs. The pipeline has the support of all the major construction related unions. And from what I understand, the pipeline would be built without U.S. federal government financial support, which cannot be said for wind and solar energy.

As you may also know, the Obama Administration has repeatedly delayed approval of the pipeline. This is despite the fact that the pipeline was re-routed through Nebraska to avoid the Ogallala Aquifer. Now the big hold up are environmentalists’ reports that greenhouse gas emissions would not be greatly increased when using this highly bituminous oil. And as you would expect, there are other reports that say the opposite. There are also, of course, concerns for pipeline ruptures and/or leaks. The environmental issues created in the United States have applied great pressure on the Obama administration.

In the meantime, Canada has thrown its full support behind the Northern Gateway pipeline project, which would take the tar sands oil into Northern British Columbia. From there, the oil would be shipped to China, etc., where the energy demands are huge. It has really been something to see how the Canadian government is so supportive of pipeline construction vs. what we have coming out of Washington, D.C.

I am as environmentally concerned as almost anyone out there. I love trees, our national parks, clean water and so on. But I am also a realist and we need jobs. Furthermore, Canada is our most friendly and supportive ally and why keep standing in the way of having the Keystone XL built?

Trenchless technology would benefit principally because of HDD. As you can imagine, there will be many water ways and objects that would have to be drilled under vs. an open-cut pipeline. Corrosion protection, pipeline pigging and leak inspection are all related to trenchless technology and those areas would also benefit dramatically. The Keystone XL pipeline is one of those “no brainer” decisions that has been thoroughly confused by our politicians. We often hear the term “environmental friendly” but what about the term “business friendly”? And “job friendly”? It is absolutely true, our U.S. senators and representatives really listen to personal contact from voters. I urge you to support Keystone XL Pipeline.

Best regards

Bernard P Krzys
Publisher
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AMERICAN AUGERS Holds Customer Day

American Augers held its third annual Customer Day June 20, at its 340,000-plus-sq ft facility in West Salem, Ohio, drawing customers from around the globe.

The event drew approximately 125 visitors, with some coming from as far as Venezuela, Estonia, Columbia, United Kingdom, Bahrain, Brazil, China, Canada and Mexico. Charles Machine Works’ Ed Malzahn and CEO Tiffany Sewell-Howard, also attended the event. The Charles Machine Works Inc. acquired American Augers in 2012.

Activities for the day included a tour of the manufacturing operations. The day included live demos of the American Augers equipment. Demos included auger boring with its auger boring units being showcased at the facility’s auger boring pit. Other equipment on display included AA’s maxi and mid-size directional drills and mud systems, as well as its oil and gas drilling equipment. Also displayed was Ditch Witch’s TK Series HDD Guidance System.

The lunch was prepared by the local Amish community and gave attendees the opportunity to network. The day concluded with a dinner event at the Rock n’ Roll Hall of Fame in Cleveland.

MONTREAL Hosts Pipe Line Contractors Association of Canada’s Annual Convention

The Pipe Line Contractors Association of Canada held its 59th annual convention May 12-16 at the Fairmont Hotel in downtown Montreal. It was another well attended meeting in the history of PLCAC conventions with close to 300 conventioneers. The conventions are noted for its blend of business, informative guest speakers, fun activities, and a formal banquet.

This year’s meeting featured the induction of Ted Shipka, Wolverine Pipeline Transport Ltd, as an honorary member of PLCAC. Shipka was taken by total surprise at the annual banquet. Guest speakers included Robert Jones, TransCanada Pipelines, Vivian Krause, an advocate and writer, and Michael “Pinball” Clemons of the Canadian Football League Toronto Argonauts. David Kavanaugh, O.J. Pipelines Canada, outgoing President chaired the overall meeting and reported the Canadian pipeline market is very strong but facing labor shortages. He noted pipeline contractors are faced with an aging workforce and the mobile nature of pipeline work is unfavorably viewed by the younger generation. David Johnstone, TW Johnstone & Co., presented an excellent recap of new and continuous pipeline projects, as well as pipelines projected to 2020. His presentation included distribution and maintenance and service projects.

Two evenings the attendees were treated to unique experiences. Tuesday night the conventioneers were bused to a traditional Canadian maple grove setting featuring dinner and much entertainment. The evening was sponsored by John Deere and its Canadian dealers. Wednesday there was a Mardi Gras theme party at the hotel sponsored by Caterpillar and their Canadian dealers.

At the Gala affair, Kavanaugh appropriately turned the gavel over to Johnstone for the year 2013-2014. The 2014 convention will be held in Vancouver May 11-15.
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BLACK & VEATCH REPORT: Water Industry Looking to Do More with Less

Key findings from Black & Veatch’s second annual U.S. water industry report show an industry more focused on informed spending to stretch limited budgets and extend the life of current assets. More than 90 percent of utility leaders expect to have formal asset management programs in place or in progress by 2016.

“The top three industry issues are aging infrastructure, managing capital costs and managing operational costs,” said Cindy Wallis-Lage, president of Black & Veatch’s water business. “Asset management programs will help utilities address these challenges. However, this will not erase the large capital needs of our water infrastructure.”

The 2013 Strategic Directions in the U.S. Water Industry Report captures the industry’s viewpoint concerning ongoing issues. In addition, best practices and global case studies from the United Kingdom, Hong Kong and Singapore are highlighted within the report. Key findings include:

• Non-revenue water is a key challenge in the water industry. The national average for non-revenue water is 20 percent. Improving system metering, data integrity, leak monitoring and control will improve system performance and reduce costs. These efforts will also conserve precious water supplies. With respect to leaking pipes, the current rate of replacement or renewal of buried infrastructure is less than 1 percent for most utilities nationwide.

• Nearly 70 percent of respondents who provide water services are implementing drought contingency plans. These plans include water conservation, community outreach and use/sourcing of alternative supplies.

• The industry must educate city leaders and customers on the value of water. Nearly 60 percent of respondents stated their customers had little to no understanding regarding the gap between current rates and the cost of providing safe and reliable water and/or wastewater services.

• Industry leaders remain hesitant to look beyond traditional financing mechanisms to meet critical infrastructure needs. Less than 20 percent stated their organization is considering using a public-private partnership.

“Many in the financial community believe that the municipal bond market will not be able to support the massive needs of the industry,” said John Chevrette, president of Black & Veatch’s management consulting business. “This is particularly true given the market’s post-recession aversion to risk. We strongly encourage our clients to look at all financing options, both public and private, allowing them to negotiate from a position of strength.”

To read the report, visit www.bv.com/reports/2013-water-utility-report.
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ATTENDANCE UP at Annual Water Conference in 2013

The American Water Works Association (AWWA) held its Annual Conference and Exposition (ACE13) in Denver, June 9-13. More than 10,500 water professionals from across the country and the globe gathered at the Colorado Convention Center to see the latest products and services available and to discuss some of the major issues across the industry.

Attendees got down to business on Monday, June 9, as dozens of technical sessions began following the popular Opening General Session. The day’s professional program saw two pressing water utility issues attract especially rapt audiences: hydraulic fracturing and cyber security.

On Tuesday, public officials and water utility professionals spent the week in Denver getting a step up on the key policy and regulatory factors affecting community water service. Also Tuesday, more than 100 elected officials listened as AWWA president Charlie Anderson, Aurora (Colo.) Mayor Stephen Hogan and others spoke to the challenges of planning and paying for water supply and infrastructure projects in tough economic times.

Continuing the trend from recent years, the hot topic on the exhibition floor was efficiency, particularly on the side of energy efficiency, operations and maintenance, and billing and work order efficiency. Water meters and products and services related to water loss management were also a focus for exhibitors.

Companies and service providers stressed the importance of new technology and how utilities can utilize it to make the best decisions possible in terms of managing resources and spending for infrastructure projects in a climate where budgets are stretched thin. The technology in particular, is one facet of the water utility industry that has seen considerable growth in recent years. Companies developing software dashboards for utilities to manage data are continuing to look for new ways to implement different features of data management, such as GIS, AMI and SCADA into certain platforms to increase efficiency.

On Wednesday, Jim Chaffee, senior consultant with Jacobs Engineering Group Inc., officially took over as president of the AWWA, promising to serve “with the same dedication and passion that water people demonstrate every day in providing a better world through better water.” The Gavel Passing Ceremony in the Hyatt Regency at the Colorado Convention Center was among the concluding events of the conference.

The Oklahoma City Water Utilities Trust captured the 2013 “Best of the Best” Taste Test title, which features regional winners from throughout North America competing for the best-tasting water. This year’s contest had 23 entrants; 21 section winners and two Colorado host utilities.

After a successful 2013 show, water professionals are looking ahead to next year’s ACE14 which will be held in Boston, June 8-12.

PETTICOAT-SCHMITT Civil Contractors’ Schmitt Named Ditchdigger of the Year

Ryan M. Schmitt, president and owner of Petticoat-Schmitt Civil Contractors Inc., has been awarded the Ditchdigger of the Year Award from the National Utility Contractors Association (NUCA) for the second time in his career.

NUCA is the largest national industry association representing utility and excavation contractors throughout the country. The award is presented annually at NUCA’s Convention to a contractor member who has made a significant contribution to NUCA and the underground utility construction and excavation industry.

“To be included among the many great past recipients, and to have won it twice now is such an honor for me,” says Schmitt. “I value the standards set by the utility and excavation contracting industry at the local, state and national level and make sure Petticoat-Schmitt conforms to those ideals.”

Petticoat-Schmitt Civil Contractors, Inc. is one of northeast Florida’s premier construction companies specializing in the civil contracting industry. The company performs underground utility, grading and roadway construction for public and private entities in Northeast Florida and Southeast Georgia. Clients include the City of Jacksonville, JEA, Florida Department of Transportation, the City of St. Marys, Ga., Clay County Utility Authority and numerous general contractors. The Company was listed among INC Magazine’s 500 fastest-growing companies.

Petticoat-Schmitt’s management team includes two past presidents of the NUCA of North Florida (NUCA NF) and two recipients of the Underground Utility Contractors of Florida (UUCF) Mitch Ellington Award for Contractor of the Year.
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ELECTRO SCAN AND CD LABS Announce Global Partnership

Electro Scan Inc., a global innovator of leak detection instrumentation, and Swiss-based CD Labs AG, the world’s leading provider of sewer pipeline assessment software, with its leading flagship product, WinCan, has announced a global partnership to offer an integrated solution.

The cooperative agreement, executed by Electro Scan chairman and CEO Chuck Hansen and CD Lab AG general manager Martin Hien, includes development of a custom Electro Scan module, to be added to the suite of WinCan products, able to import, store and display Electro Scan’s patent-pending data downloaded from its Critical Sewers Cloud app. Product features and capabilities are expected to be similar to other WinCan modules, such as its WinCan Laser module. The new Electro Scan Module is expected for release in the first quarter of 2014.

“We are excited to work with such a universally-accepted product, like WinCan,” said Hansen. “I’ve been watching WinCan, with admiration, for many years and am delighted to see their product evolve into such a feature-rich solution to manage wastewater assets.”

“We are delighted to be expanding our product library to include Electro Scan,” said Hien. “Chuck [Hansen] and his team have done a great job adding a new level of data to our industry. Combined with CCTV and laser profiling data, our customers will have an unprecedented decision tool at their fingertips to manage their aging infrastructure.”

“The addition of Electro Scan further solidifies WinCan’s leadership as a key decision support system to help manage wastewater assets,” said Pipeline Analytics Inc. business manager Mike Russin. As CD Lab’s exclusive distributor for WinCan products in North and South America, Pipeline Analytics will be supporting the new partnership with implementation services and training.

CD Lab AG, headquartered in Murten, Switzerland, designs, develops, and markets the world’s leading pipeline inspection software, WinCan. Founded in 1990, the company specializes in the inspection and administration of wastewater infrastructure having more than 6,400 licensed installations, translated into 46 different languages, supporting 50 different CCTV inspection standards, and sold through more than 80 resellers worldwide.

Electro Scan products are designed and developed in accordance with ASTM Standard 2550-06 to accurately identify, locate and measure an estimated peak rate of infiltration from defects in sewer and stormwater pipes. In addition to assessing existing non-conductive pipe materials (e.g. asbestos cement, brick, clay, plastic, resin lining, reinforced concrete, etc.), Electro Scan is able to certify point repairs or lining projects as “leak-free.”

ENTERPRISE GROUP INC. Finalizes Purchase of Calgary Tunnelling & Horizontal Augerung

Enterprise Group Inc. (TSX:E) has announced that it has completed its acquisition of a specialized underground infrastructure construction company, Calgary Tunnelling & Horizontal Augering Ltd., for $12 million plus working capital, subject to post-closing adjustment. The acquisition is effective May 1, 2013.

Founded in 1984, Calgary Tunnelling & Horizontal Augering Ltd. (CTHA) is a North American leader in the highly specialized tunneling field. CTHA uses a number of tunneling disciplines, including laser guided boring and augering, pipe ramming, pipe jacking/tunnel boring (TBM), among others. The previous owner/manager has agreed to a long-term employment agreement and by retaining him and his expert team it will assist Enterprise to effectively integrate and invest into strategic growth initiatives. Enterprise president and CEO Leonard Jaroszuk said, “CTHA has the potential for substantial growth over the next few years we are extremely excited to work with this tremendously skilled group.”

CTHA performs its services from the West Coast through to central Canada across the energy, utility and infrastructure segments. Its clients range from Canada’s largest rail companies and premier utility providers to leading infrastructure contractors and some of North America’s largest pipeline companies. CTHA’s revenue stream is well diversified between all of these segments.

Current infrastructure projects include a series of technically difficult tunnels being constructed at the massive $600 million Calgary International Airport expansion, while other crews are completing several large diameter utility crossings under the TransCanada highway near Banff National Park. In Saskatchewan, crews are currently working to bring in underground water lines to one of Canada’s largest Potash producers.

The three- to five-year outlook for pipeline construction is especially intriguing. CTHA is a leader in underground tunneling for large diameter pipelines. Among several ongoing projects CTHA is engaged in a three-year, long distance pipeline project which is in its first year of construction. CTHA provides underground tunneling at several crossings which cannot be open-cut, such as road, highway and rail crossings. In 2008, the Kinder Morgan Anchor Loop was put into service. CTHA was selected to perform the tunneling through the extremely difficult terrain of Jasper National Park in the Canadian Rockies. Pipeline projects like these all require the specialized services that CTHA provides. The current roster of proposed long distance pipelines is at a historic high and Enterprise believes that the Company is extremely well positioned to benefit from this boom in pipeline construction.
We’ve been working with Source: HDD for over 5 years. They are extremely knowledgeable & accessible. Whether it’s 8pm or 8am there is someone there to talk to. They work hard to get the right equipment and work even harder to have that equipment right for us to put to work on delivery.

Dustin Walker
W&W Utility Construction
PRIORITIES

In January, I spoke about infrastructure being a common priority for both Democrats and Republicans alike. I am pleased to report that, after two weeks of Senate floor time, the Senate has passed the Water Resources Development Act (WRDA) of 2013 by a vote of 83-14. The Bill includes a Water Infrastructure Finance and Innovation Authority (WIFIA) pilot program modeled after the successful transportation version (TIFIA). The five-year, $250 million program would access funds from the U.S. Treasury at long-term Treasury rates, which would then be used to provide low-interest loans, loan guarantees and other support for infrastructure projects, while loan repayment would go back into the Treasury. The savings to municipalities will support necessary investments in our infrastructure that would cost much more later. WIFIA would focus on very large projects (more than $20 million), so it would truly supplement, but not replace, State Revolving Funds (SRF).

While Senate approval is an excellent first step in creating new funding mechanisms for water and wastewater projects, it still needs to be passed by the House of Representatives. Whether you favor red or blue, I encourage everyone in our industry to tell your representatives that you want their support in providing innovative funding mechanisms such as WIFIA, SRF, and lowering restrictions on tax exempt bonds. If this country ever needed a bipartisan issue that both parties can stand behind, infrastructure funding fits the bill.

SHARING BEST PRACTICES WITH THE WORLD

NASSCO’s mission is to set industry standards for the assessment and rehabilitation of underground infrastructure and to assure the continued acceptance and growth of trenchless technologies. One of the many ways we do this is through Webcasts designed to educate trenchless professionals about various trenchless methods and best practices. On May 22, NASSCO partnered with the Water Environment Federation (WEF), with support from LMK Technologies, to sponsor a live Webinar on the topic of Construction Inspection for Trenchless Rehabilitation. More than 500 trenchless professionals attended the Webcast, including 42 registrants from 11 international locations including Canada, China, Ecuador, Egypt, Hong Kong, Ireland, India, Jamaica, Qatar, Sweden, and Turkey. To view a recorded version of the Webcast, visit www.nassco.org and follow the link to the “Webinar on Construction Inspection for Trenchless Technologies” above the NASSCO logos. We also look forward to a webcast about chemical grouting in the near future.

Ted DeBoda is Executive Director of NASSCO. He can be reached at director@nassco.org. NASSCO is located at 2470 Longstone Lane, Suite M, Marriottsville, MD 21104.
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“She’s like family. When you’ve got her on the truck and you’re headed to the job, you know you’ll get it done.” And after eight years Mario and Leo have begun a new era of reliability with a new D24x40 Series II.

See what it’s like to drill with Vermeer at NavigatorNation.com.
Dear Colleagues and Friends,

This issue of Currently at CUIRE will update you with some of our research, outreach, and educational activities.

After more than three years of planning, last June, CUIRE hosted the ASCE International Pipelines 2013 in Fort Worth with more than 700 attendees, 55 exhibitors and $160,000 sponsorships. Conference attendees had a chance to attend the pre-conference workshops, technical sessions, and visit with exhibitors from industry leaders. The conference began Saturday, June 22, with the Pipeline Research Needs Symposium (traditionally held every 6 years) and continued on Sunday, June 23, with two, full-day, pre-conference workshops covering Large-Diameter Water Transmission Pipelines, and Seismic Design of Buried Pipelines. Also on Sunday, Pipelines attendees had a chance to participate in the Sporting Clays Tournament before attending the Networking Reception with friends and colleagues at the Exhibit Hall. There were six technical paper tracks with more than 190 papers presented and published in the conference proceedings. For the first time, one track was focused on papers on oil and gas applications. The conference concluded on Wednesday noon with a closing keynote presentation. More than 150 attendees participated in the golf tournament as well as a special technical tour on Wednesday afternoon.

As always, please don’t hesitate to contact CUIRE at 817-272-9177 or cuire@uta.edu with any questions, suggestions, or comments you may have.

Warm Regards,

Mohammad Najafi | CUIRE Director | najafi@uta.edu
Abhay Jain | CUIRE Program Manager | jain@uta.edu

CUIRE Receives a Competitive Grant from Water Research Foundation

Evaluating Large Diameter HDPE Pipe for Water Applications

Last December, CUIRE received a competitive research grant from Water Research Foundation (WaterRF) for the U.S. Environmental Protection Agency’s program on “Innovation and Research for Water Infrastructure for the 21st Century.” Black & Veatch Corporation (Kansas City, Missouri) and Benton and Associates (Jacksonville, Illinois) provide technical assistance in this research. Additionally, many municipalities and water utilities provide guidance, case studies, and experiences with large diameter (16-in. and larger) HDPE pipe for water applications. Large diameter transmission mains are the most critical element of water infrastructure, since a failure can be catastrophic in addition to extended service interruptions for many customers in addition to water quality concerns. Recent advancements in polymer science have resulted in production of high-strength and durable high density polyethylene (HDPE) pipes. HDPE pipe has the potential to be a cost effective alternative and reliable option in terms of preserving water and water quality in transmission and distribution systems. However, most engineers and water utilities are reluctant to use HDPE due to lack of experience its maintenance, repairs, asset management, connections and tapping. Therefore, the objective of this study is to determine the durability and reliability of HDPE water mains as an economical alternative to other pipe materials. For more information on how to participate, contact Dr. Najafi at CUIRE, Phone 817-272-9177 or najafi@uta.edu.
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Comparison of current and new design principles, use of native backfills, CLSM, cost comparisons, and sustainability issues.

All attendees will receive complimentary registration to Underground Construction Technology Conference (UCT 2014). Special discount is available for government agencies, groups, and early registrations. For more information call CUIRE at 817-272-9177 or Email: cuire@uta.edu.

CUIRE AND BENTON ASSOCIATES RECEIVE WERF RESEARCH GRANT
Evaluating No-Dig Structural Rehabilitation of Sanitary Manholes

Last July, CUIRE and Benton Associates (Jacksonville, Illinois), received a research grant from the Water Environment Research Foundation (WERF) on “Evaluation of Manhole Rehabilitation Technologies.” While manholes are easily accessible, it is estimated that there are more than 21,000,000 sanitary manholes in the U.S. alone, and they offer a variety of challenges that are frequently misunderstood and overlooked. Similar to pipelines, manholes come in a variety of materials and sizes. They are commonly made of brick-mortar, precast concrete, concrete block and cast-in-place concrete. This research evaluates structural capabilities of common manhole rehabilitation materials by conducting physical testing, case studies, and literature search to develop a decision support system for manhole rehabilitation methods and materials. All utilities, municipalities and companies involved in manhole rehabilitation products and services are invited to participate in this unique project. The numbers of products that can be evaluated are limited, so early participation is encouraged. For more information, contact Dr. Firat Sever, Benton & Associates, Inc. Phone: 217-245-4146, Email: fsever@bentonassociates.com or Dr. Najafi, CUIRE, Phone: 817-272-9177 or Najafi@uta.edu.

CUIRE DEVELOPS A NEW MASTER OF CONSTRUCTION MANAGEMENT WITH FOCUS ON INFRASTRUCTURE

On the education side, currently CUIRE with help of its Industry Board Members and Friends is offering courses on pipelines and trenchless technology, infrastructure sustainability and asset management, as well as public private partnerships (P3) for infrastructure projects. Plans are underway to teach courses on sustainability, and building information modeling (BIM) for infrastructure applications. The new Master of Construction Management (MCM) with focus on infrastructure projects will be offered both in class and online. Students can take 10 graduate courses and potentially graduate with a Master of Construction Management in one year. There are 5 core construction management courses in the curriculum, and students are allowed to take additional five electives on pipelines and infrastructure courses.

FOR MORE INFORMATION REGARDING CUIRE: WWW.CUIRE.ORG
Trenchless technology has literally grown up with the trenchless technology industry, coming into being before the term “trenchless” became synonymous with the rehabilitation of underground infrastructure that it is today.

This Aurora, Ill.-based business is one of a handful of companies that drew its first breaths at the onset of the trenchless technology revolution and remains a true pioneer to the industry, showcasing pipe bursting, pipe ramming, horizontal directional drilling (HDD) and piercing tools in its repertoire of trenchless products.

The company’s beginnings are rooted in a product division of a concrete company in 1975 and was spun off by employees as a standalone company in 1991, catering its product line exclusively to the trenchless world — at a time when the industry was virtually unknown to municipalities and engineers. But its owners believed in the potential of trenchless. As the trenchless market gained traction, so did TT Technologies and it became a global presence through its marketing alliances with Tracto-Technik and German HDD drill manufacturer Prime Drilling.

“We were trenchless before trenchless was an industry buzzword,” says TT Technologies CEO Chris Brahler, whose influence and vision is woven into all facets of the company he has led since its inception.

TT Technologies started out helping to introduce piercing tools to North America and has grown over the years to include multiple trenchless technology disciplines such as pipe ramming, pipe bursting and HDD, as well as bentonite pumps and lateral busting systems. But the piercing tools remain at the core and heart of the company’s success, even as new advancements in the technologies emerged.

“Globally, piercing tools are widely used,” Brahler says. “They work really well for the small, short bore and involve a low cost. These types of trenchless tools are the small diameter work horses of the trenchless tools, they are low cost for the contractor who wants to punch short bores.”

TT Technologies’ manufacturing plant and headquarters sit on approximately 15 acres in Aurora, Ill., about 50 miles west of Chicago, and includes a 45,000-sq ft plant and an outdoor area specifically for product demonstrations and testing. Several of the key people who made the move from Condux/Vibra King to TT Technologies with Brahler are still critical components of the company, such as Dave Holcomb, Mike Schwager, Mike Patton, Rick Bissonette and Eddie Ward.

“We started in 1991 with the initial team,” Brahler says. “Today, many individuals of that same group are still with TT Technologies. It is their creative innovation and hard work that has led to the growth and success of TT Technologies. This company is where it is today because of [the employees’] hard work and dedication.”

In recent years, as competitors merged and aligned with larger trenchless compa-
Company History

TT Technologies came into being in May 1991, launching from a products division of a larger company that wanted to focus on its core businesses involving concrete products. When Brahler was working at Condux International — a subsidiary of North Star Concrete Products — in 1974, he was assigned to its cable plow division, which at the time was an innovative way to bury phone and power cables. However, once a cable plow project reached a roadway, open-cut was the only alternative to cross it.

Brahler knew there had to be a construction method or tool to make those crossings without disturbing the roads or highways. His pursuit of this alternative method led him to the German company Tracto-Technik, which was looking for a North American distributor of its piercing tools. The partnership was a tough sell to his bosses at Condux International, who like a majority of people at the time, had never heard of trenchless technology. But Brahler won out and Condux entered into a partnership with Tracto-Technik in 1975 to represent its products; the expanded Condux product division was named Vibra King.

The Grundomat piercing tool was the first trenchless product brought to the North American market by Vibra King but it wasn’t without some challenges. After the initial success of selling the piercing tool in the United States, Vibra King discovered that tool needed to be designed to work in the diverse soils of North America. Together, Vibra King and Tracto-Technik initiated a R&D program to reconfigure the tool for use in North America and the tool was successfully re-launched in the early 1980s.

During this time, Brahler was appointed the general manager of Vibra King and served in that role until 1991 when North Star made the decision to focus on just its concrete products. The trenchless products division was sold back to Tracto-Technik, which wanted Brahler to lead the company. TT Technologies was officially on the map.

The company’s first five years were housed in a startup building in Aurora, but afterward a new facility was acquired at its current location; multiple additions have been made to it over the years, including a training and product testing/demo area. The company has grown in employees each year and currently employs more than 50 workers.

“We were trenchless before trenchless was an industry buzzword,” says TT Technologies CEO Chris Brahler, whose influence and vision is woven into all facets of the company he has led since its inception.

Tracto-Technik also introduced TT Technologies to the market of pipe ramming tools. Again, minor equipment additions were required for the U.S. market. “The ramming machine was perfect but needed lubricant to go with it,” Brahler says. “Our guys built bentonite pumps and started using polymers and fluids to help the pipe ramming process. The problem was that we could push the pipe casing through the road but couldn’t get the spoils and dirt out of it. Using the lubricant and putting it into the bentonite pump, helped that process.”

Later, pipe bursting caught the attention of TT Technologies but the United Kingdom’s British Gas held the patents for North America and part of Europe; later, TT Technologies became one of its first North American licensees. Brahler sees the unlimited potential of the pipe bursting method, especially on the water side. “In the United States, pipe bursting really took off on the sewer side but today, the water side is the fastest growing market in trenchless,” he says.

TT Technologies entered the fledgling directional drilling market during the 1990s and currently has two models designed for smaller diameter work. While the HDD market has grown in acceptance and in diameter size and bore lengths exceeding 10,000 ft, Brahler is content with just a smaller piece of that pie. “We got into the HDD market because a lot of our customers had piercing tools but also wanted to drill,” he says. “We don’t try to dominate that market but to service our customers who have both products. We let the big guys fight it out with the midsize to larger drills.”

In the early years, Europe was much further ahead in terms of addressing its underground infrastructure than North America and in its use of trenchless methods. But the tide started turning during the 1990s with the United States pulling ahead in terms of technological innovation and creativity, Brahler says. “Because the infrastructure is so much older in Europe, the needs of underground infrastructure and for trenchless were much earlier than in North America. As a result, the ideas and initial technology came from there,” he says. “It wasn’t until the 1990s that North America began to surpass Europe in creativity in the areas of pipe ramming, horizontal directional and pipe bursting.”

Continued Success

One of the keys to the long-term success of TT Technologies is its commitment to the trenchless industry and only
the trenchless industry. The company doesn’t sell products that relate to any other market and Brahler says this makes them stand out from competitors. “Some of our competitors sell a myriad of products and their dealers have to sell their other line products as well,” Brahler says. “We just want to provide the best trenchless solutions with our products.”

TT Technologies prides itself on its “trenchless only” focus and Brahler credits its long-time success to the workforce and listening to their customers. “We attribute our success to the focus, hard work and service of our customers by our team,” he says. “We still believe that we have the best products. They may not be the cheapest, but we believe they are the most durable and long-lasting.”

Today, TT Technologies is also benefiting through its marketing alliances within the TT Group, shipping its products all over the world to Tracto-Technik dealers in Brazil and Asia, for example. The company also sells larger drills through its partnership with Prime Drilling in Germany.

Brahler also credits the company’s competition for making TT Technologies a better company. As the industry has grown, so has the number of competitors that Brahler deals with in the different area of trenchless. Brahler admittedly embraces and welcomes competition, saying that it only makes his company and the trenchless industry stronger in the end. “Our salespeople may not like [the competition] but I do,” Brahler says, chuckling. “We get up every day and have to solve the needs of that customer and the one who does it the best, generally gets that customer. That keeps you sharp and keeps you from getting complacent. You have to constantly push to make your products better and that is good for the industry.”

In the early days, much of TT Technologies’ time was spent developing the market and introducing customers to trenchless technology and how it works. It’s a much different world today, with competitors looming everywhere and good products all around. “Most of the time in the early days, we were working to create and develop the market… probably 70 percent of our time was spent on that,” Brahler says. “We did a lot of demos, showing engineers and municipalities our technology. They would look at us as if to say, ‘You are out of your mind; this will never work.’ Today, trenchless is so well accepted and it really competes with the other methods out there. The overall market has grown so nicely and the trenchless market is probably one of the better ones of construction equipment that has had steady growth over the last 20 years.”

But with all the trenchless products it sells, the piercing tool remains TT Technologies’ bread and butter market, selling thousands of the tool each year, according to Brahler. Except for incremental changes over the years, the piercing tool itself hasn’t changed much. “Most people think that underground piercing tools went the way of the cart and buggy,” Brahler says, laughing. “The piercing tool market has grown as the pipes have become more oriented toward trenchless, which was a big restrictor early on. Today, we sell as many piercing tools as we did 20 years ago. That market has maintained. One of the areas that piercing tools has grown in North America is for fiber-to-the-home and currently the gas industry is doing a lot of work with them.”

When envisioning the future for the company, Brahler likes what he sees. As the trenchless industry continues to broaden, he knows TT Technologies will always be a part of it. “We are in such a good industry. We are very fortunate to be in an innovative time where the pipe technologies are improving and the technology for design of equipment is improving rapidly. All of those things contribute to improving costs and making customers more competitive with open-cut and more competitive with lining. At TT Technologies, we are looking for long-term solutions for our customers, not quick-term solutions.”

Sharon M. Bueno is managing editor of Trenchless Technology.
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In 1901, a key irrigation tunnel was hand dug into the Western Colorado landscape to provide water from the Gunnison River to local farmers. One-hundred and ten years later, that tunnel suffered a collapse when layers of shale fell and blocked irrigation services to 94 percent of the North Delta Irrigation Co.'s (NDIC) headgates.

The tunnel, classified as an earthen ditch by the Colorado Water Conservation Board, travels through shale mountainsides and mesas as it winds through the Rocky Mountains east of Delta, Colorado. Today, 2,300 acres of land are irrigated by the tunnel’s water. A total of 174 shareholders depend on the water each year to grow crops that range from corn to beans to alfalfa.

Choosing and Executing a Method

Following the 2011 collapse in the irrigation tunnel under the Cory Bench, a solution was sought. At first, completely new alternatives were explored. The NDIC considered different delivery methods of their water rights, including pumping water out of the Gunnison River, boring a new tunnel, lining the tunnel with steel liner, using concrete box tunnel construction, and sliplining with high-density polyethylene (HDPE) pipe.

According to evaluation criteria documents available through the State of Colorado, “pumping and boring a new tunnel were eliminated as choices, as the cost of pumping would be prohibitive, and the cost of boring a new tunnel would be prohibitive.” The NDIC also lacked an easement for boring. The steel lining system was comparable in price to HDPE, but was eliminated because of the shorter service life. The concrete box tunnel was scrapped because of a concern in the stability. In the end, the NDIC turned to 1,500 ft of 54-in. SDR 17 HDPE pipe to reline the tunnel. By rehabilitating the tunnel, the NDIC could reopen the full 23 miles of irrigation line to shareholders. With funding from the Colorado Water Conservation Board and the Gunnison Basin Round Table, work began in April 2012.

Petty Construction Company LLC, was chosen for the project. Petty Construction has two locations, in nearby Grand Junction, Colo., and Dickinson, N.D. The firm was no stranger to working with HDPE pipe, with plenty of experience of fusing pipe from 1-in. in diameter and larger.

After sliplining was chosen as the method to pursue, contractors on site used a unique method of dispersing a concrete grout backfill.

The full range of the company’s ability was on hand as they fused the 1,500 ft of 54-in. pipe, as well as a bunch of 2-in. diameter pipe lengths that stretched to 200 to 300 ft long. The 2-in. pipe lengths were used to push the grout backfill into the hole as the pull occurred.

To create the unique concrete grouting method, Petty fused the lengths of 2-in. pipe near the construction of the large 54-in. pipe. Once a group of smaller diameter lengths was completed, workers strapped the pipe lengths to the top and sides of the larger pipe.

The pull of pipe was thought to be relatively simple, as the grade for the tunnel was relatively flat for the first half of
the tunnel with a slight downhill grade for the rest.

Tom Petty, managing member of Petty Construction, stated in bid document communications available through the State of Colorado that “we propose to utilize our directional bore machine to bore through the cave in. We will use a back reamer to wash and drag out the spoils from the tunnel on the Highway 65 side of the tunnel. We will use water from the open irrigation ditch to help carry the spoils out of the pipe to be inserted. The HDPE will be carried down the existing service road, and fused together in the open ditch and pulled into the tunnel using our directional drill.”

A Variety of Fusions

The grout pipelines were joined with a McElroy Pit Bull 14, which is capable of fusing butt fusing pipes from 1-in. IPS to 4-in. DIPS (32- to 110-mm). The machine’s compact size and light weight allowed workers to carry the Pit Bull along the 50-ft sticks of pipe that had been laid out along the ground.

Both the 54-in. main pipe and the smaller 2-in. pipelines were joined with butt fusion. The process has been a popular method for creating leak-free pipelines for more than 40 years. The process starts by “facing” or shaving the pipe ends simultaneously so that the ends can be joined together with heat to create a continuous, sealed pipeline. The welding of the pipes is accomplished by using a hot plate or heater that comes in contact with the faced pipe ends. This heats the pipe to a molten state. After the heater’s removal, the pipe ends are pressed together under a controlled force to form a weld that is as strong as or stronger than the pipe itself.

To join the large 54-in. SDR 17 pipe, Petty Construction contacted McElroy distributor High Country Fusion to rent a Certified McElroy Rental MegaMc 2065. The 2065 butt fuses pipe from 20 to 65-in. OD (500- to 1,600-mm). The machine accommodated the 54-in. pipe due to the installation of inserts in the jaws of the fusion machine. Inserts reduce the circumference of the jaws of the fusion machine. The machine accommodated the 54-in. pipe due to the installation of inserts in the jaws of the fusion machine. Inserts reduce the circumference of the jaws of the fusion machine. The machine accommodated the 54-in. pipe due to the installation of inserts in the jaws of the fusion machine. Inserts reduce the circumference of the jaws of the fusion machine. The machine accommodated the 54-in. pipe due to the installation of inserts in the jaws of the fusion machine. Inserts reduce the circumference of the jaws of the fusion machine. The machine accommodated the 54-in. pipe due to the installation of inserts in the jaws of the fusion machine. Inserts reduce the circumference of the jaws of the fusion machine.

Petty Construction chose a Certified McElroy Rental fusion machine because they are held to a higher standard than other rental fusion units in the marketplace. A Certified McElroy Rental location, like High Country Fusion’s, must check fusion machines using a McElroy factory-created checklist. If parts are needed, only genuine McElroy parts are used. Consistent training and audits ensure that each location maintains high-quality rentals.

Above all of the operations, the pipe was staged on top of Cory Bench. A piece of heavy machinery would bring a 50-ft stick of 54-in. pipe down one at a time and place it within the jaws of the MegaMc 2065 and within the built-in pipe roller of a MegaMc Pipe Stand. The pipe stand offered a self-contained, gasoline-powered HPU that could move the pipe up to 24 in. laterally and 34 in. vertically. This flexibility allowed fusion technicians from High Country to easily line up the pipe ends for the fusion process.

The pipe stand provided the largest benefit when heavy machinery was used elsewhere. The stand allowed the machinery to work and not “babysit” the pipe as it was being fused. The stands also prevent damage to the fusion machine.
The fusion area wasn’t as long as the tunnel itself, so after an initial length of pipe was fused, the pipe was pulled through the tunnel and a new 50-ft stick was fused onto the new tunnel liner. This process was repeated until the pipeline was complete.

The North Delta Irrigation Co. was happy with the timeline, cost and installation process using HDPE. Officials from NDIC believe HDPE could have a future in their irrigation system as they identify and pursue new projects within their 23 mile system.

Tyler Henning is public relations specialist at McElroy Mfg.

A Certified McElroy Rental MegaMc 2065 machine was rented from High Country Fusion to fuse the 54-in., SDR 17 HDPE piping.
FEW THINGS ARE AS DEPENDABLE AS THE SUN COMING UP, BUT PREMIER PIPE USA AND ITS CIPP LINER INSTALLERS CERTAINLY PROVED THEY ARE.

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Premier Pipe USA would like to congratulate Am-Liner East, Berryville, Va., Insight Pipe, Harmony, Pa. and Michels Pipe Services, Brownsville, Wisc. on their historical milestones as Premier Pipe USA installers.

15 YEARS
Am-Liner East – Mel Willett, VP of Operations.

15 YEARS
Insight Pipe (from left) – Mike Marburger, Owner; Curtis Montgomery, Project Manager; Derek Offutt, Field Operations Manager; Jerry Maharg, General Manager; and Francis McCollough, Chief Estimator.

10 YEARS
Michels Pipe Services (from left) – Brady Sonnenberg, Project Manager; Heidi Bremer, HSE Coordinator; and John Gauthier, Project Manager.
Dealing with market uncertainty and what appears to be a generally “slow positive” trend across the economy, companies are faced with many decisions. Sitting on your hands and waiting for perfect information is not a successful approach to lead in the face of volatility.

Another ineffective approach to leading in today’s market is rapid-fire initiative proliferation. Many executives are trying disjointed initiatives in an effort to see what sticks. Employees in these organizations refer to this syndrome as flavor-of-the-month leadership. Rather than leading with a set of prioritized actions and focus, leaders shift company initiatives every time they read a new success story. In some cases, the ideas applied are survival-based and reactionary.
As the economy continues to muddle through challenges, sputter through political decisions and show varying signs of improvement, some leaders are stuck in the harsh reduction mentality adopted during the downturn — the maniacal search for areas to “cut back” in order to survive now conflicts with effective preparation for the future. Across the industry, companies have appropriately analyzed the general ledger and reduced the fat. At some point, the constant drumbeating to cut costs becomes an overused motif, like the boy crying wolf. It no longer motivates employees or inspires urgency or action. In some extreme cases, cutting the coffee budget can only get us so far and nothing depresses morale quite like a missing that stout cup of Joe in the morning. Strategies developed two or three years ago to cut costs must be re-evaluated.

In the effort to get the most from every employee, tasking managers with multiple responsibilities is common. Previous reductions in force and new strategies improperly resourced in the name of lower cost have destroyed clarity across the company. As a result, corporate structures are unclear in some companies and in others they are non-existent or exist only on paper. Due to the changes over the past three years, most middle managers remain unclear about what is expected of them. Adding to the challenge of motivating our middle managers is today’s multi-generational workforce. Generation Y employees (in their early 20s), Generation X employees (30 to 50 year olds) and baby boomers each have unique perspectives, training, leadership and developmental needs. Many companies have begun robust training and leadership programs again as a result.

Maybe we are looking for the answer to the wrong question. Rather than, “How do we cut costs further to compete effectively?” we should be asking, “How can we create an adaptable company that will profit in a price-driven market?” While some would argue the differences in question are semantics, how these two approaches are led makes a great difference. One approach might be reduction-focused, through unceasing enforcement. The better approach is profit-focused, engaging experts across the company and ensuring clarity in priorities. This is similar to losing weight vs. getting healthy. A focus on reducing calorie intake and rapid weight loss goal may be difficult and only temporary. Developing healthy and active habits make for a better and longer-lasting health benefit. Within the company, the two approaches (reduction-focused and profit-focused) are worlds apart in leadership tactics and make a significant bottom-line difference in this challenging economic environment.

The cost-cutting mentality often depresses morale and reduces field leaders to execution-based tasks only. The focus of efforts for middle management becomes, “Did you complete this form?” A fear of admitting weakness echoes across the company. Reductions in the workforce, although many times necessary, often leads to fear across the company. Employees carefully walk the boundary of their duties and responsibilities, or what they perceive to be the expectations of their roles. In the dynamic construction environment, leading skilled managers in this manner typically results in frustrated employees focused only on pay as motivation. A symptom of this disconnect is hearing senior leaders suggest that they just don’t “get” young employees. “They aren’t dedicated to the company.” In some company meetings, this disconnect and lack of engagement appears.
Take the review meeting (sometimes called the post-job review). The purpose of this meeting is typically designed to:

• Identify areas the team executed well and share these.
• Identify areas the company can improve upon in the future.
• Create a growth experience for those involved to understand what really happened.
• Reinforce a learning culture across the company.
• Create a library of best practices for similar projects in the future.

All too often, we miss the mark. Too much shin-kicking occurs across the team with sword fights that result in wider differences between departments (taller silos), or numbingly ineffective discussions of how everything was out of our control. Neither results in any value for the company, nor do they address areas that can lead to improvement for the company leadership. As a result, companies are stuck in repeating failure unless demanded from the top. At that point, senior leaders often do not have a clear grasp of exactly what needs to change or the best method for change. The misperception from the top of the company is that any change seems to require direct intercession every time by the top.

Done correctly, we empower project level/mid-level managers and field leaders to improve profit. We can generate a climate open to sharing strengths and weaknesses for the sake of constant improvement. Implementing change effectively in this manner creates adaptable organizations that are not locked into just following orders.

From a leadership development perspective, great construction leaders today display authentic, self-aware leadership in order to build trust and clarity. They do not have all of the answers, but know the right answer lies within the company and put their energies into helping the company develop the best solutions. These leaders must develop and communicate a vision. Their chief skills are understanding, respect and awareness of the people they lead. They maintain agility in the face of changing circumstances around them, keeping vision and people at the front of priorities.

This is one of the most difficult markets to lead a business. There is more importance to helping project management teams develop situational understanding and clarity of a mediocre strategy, than having a CEO announce a perfect strategy (if there is such a thing) in a memorandum. Effective change management is generated by great leadership at the top. The vision and culture is set and reinforced continually from this seat. Best-in-class teams often work together to identify effective market strategies and systems to execute effectively. In order to keep effective change and competitiveness in the market, the company leadership must share situational understanding across the field managers and project teams.

In essence, great companies in this volatile market recognize great opportunities around them. Uncertainty and lack of clarity can be an impediment, but for companies that can adjust quickly, they can take advantage of this challenge and pull ahead in the market. A mentor once stated that leading an organization during an environment of complexity requires “simple plans repeated clearly and often.” The essence of leadership is clear priorities and focused efforts.

Jim Schug is a senior consultant with FMI, based in Tampa, Fla.
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WE STAND BY OUR PROMISES AND BELIEVE OUR REPUTATION IS OUR MOST VALUABLE ASSET.

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STEVE JERGENTZ, GENERAL MANAGER
In order to maximize the life of your pump, it is crucial to perform the proper periodic maintenance at designated intervals.

The key to a good pump maintenance program is preventive maintenance. This includes adjusting and tuning up equipment and detecting and correcting minor problems before they become major problems. Routine pump maintenance not only maximizes a pump’s lifespan, it saves money with increased pump availability, improved productivity, and decreased repair costs.

Limited, preventive maintenance checks should be conducted after every eight hours of operation. Full service maintenance is recommended after every 250 hours of operation. Be sure to record all maintenance activities for future reference. And always refer to the pump manufacturer and the engine manufacturer maintenance manuals before performing maintenance or repairs to the pump.

Safety is first. Always shut down the unit and allow it to cool before performing any maintenance.

THE IMPORTANCE OF ROUTINE PUMP MAINTENANCE

By Kirsten Petersen Stroud
Routine maintenance after every eight hours of operation:

- For engine driven pumps, engine fluid levels and conditions should be checked after every eight hours of operation. In excessively cold or excessively hot weather, oil and coolant specifications may need adjusted. Be sure to refer to the engine manufacturer’s recommendations.

- Next, check the fuel system. Open the filler neck to check the fuel level or, if equipped, observe the fuel gauge, but make sure that the unit is level. Inspect all fuel lines, clamps, and connections for cracks, leaks, breaks or dark lines.

- If the pump is equipped with a water-cooled engine, the engine coolant level should be at or just below the filler neck in the radiator and the condition of fluid must be clean and free of oil. Be aware that certain types of coolant do not mix. Color is normally a good indicator of the coolant type, but not an absolute differentiator. Check the MSDS to be sure.

- Continuing the eight-hour maintenance, the engine oil should be clean and the level should be within the operating range on the dipstick. Verify that the radiator core is clean and free of any debris or residue. If applicable, check the air filter and air-restriction gauge and clean the dust port.

Routine maintenance after every 250 hours of operation includes several advanced assessments, replacements, and lubrications:

- On the diesel engine, drain the engine oil. Be sure to use the engine manufacturer’s recommend oil type and dispose of used oil in a manner that is compatible with the environment. Replace the oil filter.

- Drain and replace the fuel filter. If applicable, check the air filter and air-restriction gauge and clean the dust port. Replace the engine inlet air filter.

- If equipped with a compressor-assisted priming system that is not integral to the engine, replace the inlet air filter on the air compressor. This is not required if the compressor is integral to the engine.

- Continuing the 250-hour maintenance, visually inspect the overall condition of the pumpset and note any items for further inspection. Check for signs of wear and leaking such as spots on the block, pump, priming system or the frame.

- Check all of the pump’s fittings, nuts, bolts and flanges, including mounting feet, for tightness. Inspect all the wiring, battery cables, and the fluid level in the battery. Use caution and wear appropriate eye and skin protection when opening battery ports.

- Check the fan, belts, hoses, guards and tensioner. Belt guards must be in place and free of cracks or damage. En-
gine belts must not be cracked, frayed or torn. If the unit is equipped with one, be sure the tensioner is operational and has restricted movement.

- Examine the radiator hoses and clamps; check for tightness or cracking, leaks or damage.
- Also, inspect the pump's suction and discharge hose connections and clamps to make sure they are not loose or damaged.
- Locate points that need to be greased or oiled. These areas are painted in red and outlined in the operation and maintenance manual. Do not grease the mechanical seal while the unit is running. And only use two pumps of a hand-operated grease gun to grease the mechanical seal.
- Furthermore, be sure to check the discharge priming valve. Gaskets and O-rings should be smooth to the touch upon inspection.

While the pump is running, monitor the following:

- Heat
- Flow
- Noise
- Speed
- Strain
- Pressure
- Vibration
- Liquid level
- Power Consumption
- Product contamination
- Leakage and Emissions

Use of the pump in dusty, dirty, wet or otherwise adverse conditions may require more frequent inspection and maintenance.
Top Tips for Pump Maintenance

1. Safety First
2. Prioritize maintenance
3. Perform pre-shift inspections
4. Use maintenance logs
5. Audits those maintenance logs
6. Adhere to suggested maintenance intervals
7. Match the application to the use
8. Plan to avoid emergency repairs
9. Perform good housekeeping
10. Fix the root cause of a problem, not the symptom
11. Keep common parts in stock
12. Use only genuine OEM parts
13. Read and make copies of the manufacturer’s manual
14. Commit to an employee training program or outsource to pump professionals
15. Operate the pump within its designed limitations

The quality and timeliness of pump maintenance and repairs can make a real impact on the bottom line. Having an outside trained service technician perform these tasks may increase the initial cost of the service when compared to using staff, but a trained technician will do the job correctly and identify components inclined to fail — which avoids downtime and damage in the long run. Thus, reducing repair costs throughout the life of the pump and resulting in savings much more than the initial cost of a service call.

A good pump maintenance provider should offer 24-hour emergency service to provide on-site repairs or transportation to a full-service facility to enable quick repairs that minimize downtime and get you back to business faster. Look for a service company that provides their pump technicians with continuous product and repair training to assure they stay up-to-date on the constant evolution of pump and engine technologies and practices. A provider who is able to maintain and repair many different types and brands of pumps, including competitor’s pumps, is ideal for one stop shop time savings.

Utilizing a factory-owned full-service pump service provider provides multiple benefits:

- Rental pumps are often available to keep the project on task in the unfortunate circumstances of a major repair.
- Parts are usually stocked and readily available for most brands, makes and models. Automatic scheduling is available for pump preventative maintenance.
- In-house full repair capabilities are assured to be up-to-date and efficient for quality repair turnaround.

When choosing a maintenance and service provider, you should expect quality, value and timeliness. Qualified pump technicians assure your investment is well maintained and repaired. Utilizing factory trained pump technicians for scheduled and emergency field repairs ensures that every service is done right the first time and that you get answers to questions and solutions to challenges that can help you avoid future failures down the road.

Kirsten Petersen Stroud is marketing manager at Thompson Pump, based in Port Orange, Fla.
J. Fletcher Creamer & Son Inc.

Marks
90 Years in Business

By Andrew Farr

When a company has been in business for nearly a century, it’s generally a good indication that it’s doing something right.

There are a variety of solutions for the structural repair of water and wastewater pipeline rehabilitation. One technology is the widely accepted cured-in-place pipe, or CIPP, a trenchless solution that creates a new pipe-within-a-pipe without digging or destruction. This product has recently been modified to include a fiber-reinforced structural solution.

Another technology that can add structural reinforcement to pipelines is a product known as the Tyfo® Fibrwrap® System. This system consists of a fiber reinforced polymer product that is applied manually using an epoxy matrix. It is suitable for pipelines greater than 30 inches in diameter for projects with poor accessibility, limited timeline, sectional repairs, bends and laterals, complex geometry, above-ground pipe, and high pressure requirements.

Providing long-term repair, Fibrwrap® can sometimes be combined with CIPP on projects to provide a more comprehensive pipeline solution. This presentation will detail the technical properties and various pipeline applications. A recent project utilizing both technologies will be highlighted.

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Trenchless Technologies for Pressure Pipeline Rehabilitation

2013 EDUCATIONAL WEBINAR SERIES
That certainly is the case for J. Fletcher Creamer & Son Inc., a full service contracting company, based in Hackensack, N.J., that consistently finds itself on ENR’s annual list of the top 400 contractors in the United States. This year, J. Fletcher Creamer & Son Inc., with the fifth generation active in the business, is celebrating 90 years.

According to a statement announcing the company’s 90-year anniversary, CEO J. Fletcher Creamer Jr. said, “Between night work, emergency work and time zones, there is a Creamer crew working somewhere every hour of the day across the United States.” Having worked in 37 states, the Creamer name, distinctive hard hat logo and trademark ‘Creamer brown’ equipment are recognized from coast to coast.

Founded in 1923 and based in New Jersey, Creamer specializes in several facets of the construction industry, including roads and bridges, underground utility work, guide rails and sign structures, parking garages, internal pipe seals marketed as In Weg, piles, marine work and more recently, renewable energy. Creamer Environmental Inc. is the remediation entity. Today, the Creamer companies have a workforce of more than 1,000 employees with a fleet of more than 2,000 pieces of equipment. Since day one, the business has been owned and operated by the Creamer family.

Today, the business is owned by the fourth generation of Creamers: brothers Fletch Jr., CEO; Glenn, executive vice president and Dale, vice president.

Despite its many initiatives in a variety of areas, the company, like many contractors, started off small and simple. In the early 1920s, when J. Fletcher Creamer started his business, he owned a single Ford rack truck, which he used to make deliveries and perform various routine jobs. It wasn’t until a decade later that Creamer worked its way into major projects in New York and New Jersey. One of those projects involved the hauling of excavated materials during construction of the George Washington Bridge. Over the next few years the company became more involved in highway work and later developed relationships with water, electric and gas utilities as well as telecommunications companies.

Safety is of utmost importance in the company. In-house safety coordinators and outsourced personnel are active across the country and available 24 hours. They are not only dedicated to teaching and monitoring safety but are available to every project team to outline safety procedures for specific circumstances.

The 1980s was the time when Creamer ventured into new markets with underground infrastructure work, specializing in cleaning and cement mortar lining of water mains, as well as the manufacturing and installation of internal pipe seals. These activities are performed from coast to coast.

**Moving Toward Trenchless**

In the 1990s, as trenchless construction practices became more accepted in various applications, Creamer moved into pipe bursting, horizontal directional drilling (HDD) and slip lining. The company maintains a fleet of directional drills and various types of plows including a pair of spider plows. On the pipe rehabilitation side, the company is currently partnering with 3M to perform applications of spray-on lining.
“We have been performing trenchless technologies for many years,” said Creamer business development manager Robert A. Flock, who has worked with the company for 20 years. “We do a lot of HDD work for all types of utilities including gas, electric, telecommunications, water and fiber optics. We have completed numerous HDD projects under major rivers and streams, highways other utilities and environmentally sensitive areas. We have found that trenchless technology in construction has grown quickly and has become a large part of utility construction. It is a great method for crossing wetlands and roadways.

“The trenchless market has progressed to a point where we may consider HDD on certain jobs even though it is not specified as part of the scope of work,” Flock said. “We may offer a client the option of slip lining even though it was not the original intent. No one should doubt that trenchless technology is a major part of construction in the 21st century.”

The company performs hundreds of jobs each year and some notable projects the company has completed include 120 miles of fiber optics that were installed in Tennessee and hundreds of miles of conduit and cable installed for the E-Z Pass toll collection system in New Jersey. Thousands of miles of duct and fiber have been installed around the country by Creamer crews. Guide rail projects have been completed around the country including 180 miles of design-build in Florida. Countless miles of water mains have been installed in the northeast from Massachusetts to Maryland and Washington, D.C., as well as the installation of 42-in. pipe in the Mojave Desert.

Legacy & Moving Forward

Flock elaborated on how Creamer has been able to remain successful after 90 years, noting the company’s ability to enter new markets and reinvent the type of work it approaches. In one of the first new ventures of the 21st century, the renewable energy market became an area of focus for Creamer and the company has constructed wind and solar projects. Creamer Environmental Inc. is the remediation entity.

Creamer has been able to remain successful by being adaptable to the ever changing ideas and types of construction. They have been innovators. Creamer employs knowledgeable and ambitious people who have the client and the company’s reputation in mind. Employees adhere to the corporate core values of Safety, Quality, Reliability, Integrity and Productivity.”

J. Fletcher Creamer & Son Inc. has a history of close affiliation with local communities. Whether through the philanthropy of the family foundation, the funding of college scholarships since 1988 for students of employees, or volunteering time to serve on charitable boards, the Creamer family has been a part of giving back for decades. The company also prides itself on its many long-time employees and multi-generation employee families working for the company. A successful family-owned business, J. Fletcher Creamer & Son Inc. plans to be around to celebrate a century in business in 2023.

Andrew Farr is assistant editor for Trenchless Technology.
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Tunnel Achievement Awards
will be presented for Project Excellence and Innovations in Mechanized Tunneling
Any mariner, aviator or expedition leader today finds it harder to venture into uncharted territory and make headlines. It just seems every corner of the globe is mapped to some degree diminishing the drama a couple of octaves.

Amazingly, directional boring contractors face the prospect of making headlines they never intended since the underground world of buried utilities is akin to 1492 when the Spaniards set out to discover the West Indies — particularly when boring on private property. In this case, the great mystery is not what lies beyond the horizon of the Atlantic Ocean but rather what lies beyond the meter. In the United States, the system in place through various one-call centers, while not perfect, has reduced the risk of utility conflicts to HDD contractors or others involved in underground construction activity by large margins in public rights of way.

However, what is the solution beyond the meter? Documentation is not required for buried utilities at private facilities and is seldom available. In fact, it is very likely a private entity whether a manufacturing facility, industrial plant, resort, office park, etc. possesses original blueprints that are quite accurate I might add of the building(s) and even landscaping but underground facilities—no such luck.

The Situation
This is the exact problem recently faced by an HDD contractor at an established condominium complex in Hutchinson, Fla. A new electric feed installed with a directional bore was proposed for the complex and a lack of underground information was a major concern for the HDD contractor. The list of unknowns included water, sewer, fire protection line for the hydrant system, and as well the original major electric feed. To make matters even more challenging the nearest manholes were several feet away from the site and both the sanitary and water lines were constructed of plastic and the public utilities do not provide locate services beyond the meter.
We are currently accepting abstracts for the 2014 Trenchless Technology Road Show in Niagara Falls.

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So where to start?
The HDD contractor hired Ground Hound Detection Services Inc. of Boynton Beach Fla., to provide the underground details needed along the proposed boring corridor. Ground Hound is quite familiar with private locates beyond the meter and in fact, according to Ground Hound president Jeff Poppe, the vast majority of their locate expertise involved these scenarios for the past two decades. In addition, Ground Hound employs a full suite of technology including ground penetrating radar (GPR).

One of the biggest challenges in the underground is non-metallic non-conductive utilities whereby conventional EM location tools simply cannot be used to locate them. GPR is now an established tool and in all but a few circles can now be considered conventional. According to Poppe, GPR — like the latest offering from MALA, the Easy Locator with HDR — provides incredible resolution, as well as simple user interfaces not found in systems in the past. Poppe should know since he was a pioneer in the use of GPR for utility locating when systems were expensive and the user interfaces were designed for scientists not locators. As well, the cost of GPR systems, such as the Easy Locator HDR and others, is one-third of the systems on the market just 10 years ago. Many systems have seamless integration with GPS today and optional mapping tools built into the user interface.

The strength of GPR is twofold; it is the only non-destructive/non-intrusive method to
locate plastic, terracotta, ACP or other non-conductive (tone-able) facilities; and it is an extremely effective tool for wild catting or blind searching an area for unknowns. GPR does not need to be physically coupled to receive a signal as is the case with EM tools.

In this instance, GPR was essential to survey and mark out the corridor by scanning the entire area to look for conflicts. According to Sean Halsey, director of South Florida operations at Ground Hound, the field crew located a 4-in. PVC water line and an 8-in. PVC gravity sewer line directly in the HDD trajectory with GPR. However, by gridding the corridor and performing several GPR scans the field crew noticed an additional utility not anticipated in the proposed HDD path. Using the GPR, the field crew located the utility back to its source off the property and discovered it was the existing main electric supply to the condominiums. This was a shock — no pun intended — since the power company graciously marked out the line on the ground surface on the private portion of the property. Unfortunately, the line was marked 8 ft off from its actual location. As well, access to the metallic fire protection line was so far from the HDD path, conventional EM tools could not transmit a carrier signal where it was needed to provide an accurate locate. So in this instance GPR was also needed to locate a utility that EM tools are normally very effective at detecting.

Although GPR can provide reasonable depth estimates by most standards it is always good practice to “pot hole” an area when HDD activity is involved. According to Halsey, all targets were verified with vacuum excavation including the erroneously marked underground power line.

As with any non-intrusive technology, there are limitations to the GPR method HDD contractors should understand. Soil conditions, particularly moisture content, is highly variable regionally and in some cases locally. The moisture content and the soil type affect the velocity of the GPR signal and as a consequence depths can normally be constrained to no more than plus or minus 10 percent. In addition, not all soil types are ideal for GPR. Clean Florida Ocala sands are undoubtedly at the top in terms of GPR performance whereas downtown Houston, gumbo clay probably ranks equally at the bottom. One can expect depth penetration in clean sands beyond 20 to 30 ft; alternatively penetration in clay may be as low as 1 ft.

The case presented is a classic example of how GPR provides value as an integrated locate technology. Moreover, since private property seldom has documented underground information, and, as well as a paucity of aboveground clues such as valve boxes and meters beyond those at the edge of the public/private domain, it is essential to have a tool that can be used in a manner that can survey areas blindly with no preconceived information.

Surely even Columbus would have appreciated some advanced tools as he looked over the Atlantic horizon and perhaps actually located his chosen objective. For HDD contractors it is no longer that daunting and it is certainly good practice to avoid making the headlines.

Matthew J. Wolf is president of MALA Geoscience USA Inc.
The use of recycled or reclaimed water continues to gain traction as water demand increases while potable water supplies dwindle. Recycling the water we ‘waste’ after domestic use makes good sense in terms of the cost, efficiency, scarcity and local control of our water resources.

A very popular use for recycled water is public park and landscape irrigation. One major issue with recycled water distribution piping networks is that the infrastructure required for a new dedicated distribution and delivery system must oftentimes be installed in areas of established communities and development. This type of construction requires additional easement space and is often performed with very tight project site constraints considering public access, traffic patterns and existing build-out. One potential way to help ease the installation pains in this situation is to employ trenchless methods. Trenchless methods, including horizontal directional drilling (HDD), minimizes excavation requirements, which go a long way to easing the impact of a construction project on the area of installation.

The North Marin Water District (NMWD) is located in Marin County in the San Francisco Bay Area of California. In terms of raw water, NMWD relies on imported Russian River water for nearly 80 percent of its supply. However, this source has been impacted by limitations promulgated to protect fish habitat and the river environment. Reacting to these constraints in water supply going forward, NMWD officials have endeavored to reduce potable water demands within their service territory. They have done this primarily with two methods. First, they undertook an aggressive and successful water conservation program, reducing the amount of water waste in their system. Second, NMWD has been
proactively developing recycled water for parks, schools, and common area landscape irrigation as another drought-proof water source.

In 2011, NMWD began advertising a series of recycled water expansion projects for its North and South Service Areas to be completed by the end of 2013. The Novato Recycled Water Phase 2 Expansion Project, which totals approximately 10 miles of recycled water pipe, is part of a regional conservation effort in partnership with the Novato Sanitary District and Las Gallinas Valley Sanitary District.

Understanding that these projects would be installed in communities of established infrastructure and development, NMWD designed them to allow the use of HDD as an alternate form of installation to the standard direct bury, or open trench methodology. The idea was that if the HDD installation methodology could save the contractor money and hassle in terms of construction practice, NMWD would realize both the financial benefit of a competitive price, and the socioeconomic benefit of less intrusive public impacts of the trenchless construction for the project.

Two of the recently contracted projects for NMWD’s system ended up going the way of trenchless construction and HDD installation for these very reasons. The first project was installed by Ghilotti Construction (Ghilotti) and

The pipe material used for the installation was Fusible PVC pipe (FPVCP).

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The project site included areas of extremely 'tight' working environment, with two-lane streets and a crowded infrastructure easement, along with work on a very busy thoroughfare. Ghilotti performed the work in 500- to 600-ft increments. The HDD installations would be angled to get to depth with the use of an insertion pit, and then run at the correct grade for the length of the run. Typical depths of bury were in the 7- to 8-ft range to limit issues with inadvertent returns of drilling fluid, but to keep the pipeline accessible for the future.

The pipe material used for the installation was Fusible PVC pipe (FPVCP), which due to the thermal butt fusion used to make the joints, is capable of installation by being pulled into place. This is a requirement for HDD installation, which creates a bored hole along the desired alignment and as a last step of installation, pulls the new pipeline through the space created by the process. The 8-in. FPVCP was generally fused and staged in the lengths required for the installation at a location separate from the actual location of the final alignment. When the HDD sections were properly prepared the lengths of FPVCP were moved into position for the insertion and then installed. All crossing utilities were potholed prior to the installations to make positive identification and to ensure that the drilling operation would not result in a utility strike. HDD was very successful in limiting the amount of construction impact in these tight locations, keeping access available for the residences and businesses along the project route.

Project No. 2
The second project was installed by Ranger Pipelines (Ranger) and consisted of more than 6,000 lf of 12-in. recycled distribution waterline. This project, like the previous one, took place in a very busy and congested area. The main route of the alignment was on Redwood Boulevard, with heavy traffic congestion as well as a high volume of commercial properties. As part of Ranger's project, there was a 700 lf Sonoma Marin Area
Rapid Transit (S.M.A.R.T) train crossing required. This crossing was accomplished with HDD by first installing an 18-in. FPVCP pipeline to act as a casing. This casing was then used to house the 12-in. FPVCP carrier pipe. The S.M.A.R.T train HDD crossing was designed by Jacobs Associates Engineers of San Francisco.

Another section of this project included the crossing of the pipeline alignment under a Hwy 101 overpass. This section was drilled to eliminate the need to try and dig under the overpass which would have been very difficult for excavators due to the minimal clearance of the bridge structure and the existing road. Much like the first project, pipe was fused in one location and brought to the specific installation locations for insertion. Pipe trolleys were used to move the pipe and keep it from dragging on the ground.

As water becomes more and more precious, recycled water systems will become more and more prevalent. The construction required for these systems will tend to be very disruptive both in scope and location, and trenchless technologies like HDD are helping to ease this disruption. For NMWD, two recent projects were bid with the option to install the new pipelines via open-cut or HDD with both contractors choosing the less disruptive HDD method as the most efficient and competitive. Trenchless methods are providing a viable means to limit the impact of these critical infrastructure installations as well as save construction dollars.

Drew McIntyre, P.E., is chief engineer with the North Marin Water District, San Francisco.
Horizontal directional drilling (HDD) has commonly been used to install telecommunications duct, conduits, water, sewer and gas lines for many years. There are many things to consider when performing an HDD job. Construction site holes or pits, size of equipment, drilling fluid systems, drilling head design, back reamers, pipe type and numerous other basic construction requirements are all important.

One often overlooked item is the tracer wire requirements to ensure that a good and accurate locate can be done when required long after the project is completed and the pipe or duct is in service.

The types of piping material that are used for most HDD jobs are non-metallic. Polyethylene and PVC, both joint restraint and fusible, are the most prevalent for HDD projects. Since these types of material do not allow for a locator to send a signal on, it is necessary to add a metallic component with them when performing a drill. Tracer wire is the preferred product to install along with the piping. If the correct tracer wire type is used and installed properly, the pipe will be easily located when required in the future.

Unfortunately, there are times that the choice of tracer wire type and installation of the tracer wire with the pipe is not properly completed. There are several types and sizes of tracer wire available to the piping industry today. Some are designed for small open-cut projects and at the other end of the spectrum for violent pipe bursting projects. HDD falls toward the more difficult, violent end of the spectrum for tracer wire. Soil and rock conditions, length of pullback, power required to make the pull and properly connecting to the existing tracer wire after leaving the drilled section are all very important.
Past Tracer Wire

In the past, the most common type of tracer wire being used for HDD was solid copper with a coating to protect the wire. At times larger diameter wires were used; some as large as 6AWG. Another option was to use multiple copper wires, hoping one of them makes it through the bore. Both large sizes of wire and multiple wires being used are sometimes the case even today. Broken tracer wires during the process are very costly to the installer doing the job.

There are also some stainless steel stranded tracer wires used due their strength, but the low conductivity of stainless steel makes it more difficult to locate accurately with the best pinpoint frequencies of today’s locating equipment.

In 2004 Copperhead Industries introduced a copper clad steel (CCS) tracer wire that was as much as six times the strength of the same size of solid copper wire. The method of using this CCS wire for HDD operations was patented in 2008. CCS wire is stronger, less costly than solid copper wire and volatility of copper prices is also eliminated. This wire greatly increases the success rate of getting the tracer wire to come through an HDD project in good shape. CCS tracer wire with the proper HDPE coating is also protected from the abrasive elements in the pullback process. CCS tracer wire has become the preferred wire for many HDD projects.

Another consideration for HDD project success is the proper attachment of the tracer wire to the pulling head of the pipe. If the wire is not strongly attached and protected in some manner, it is possible the wire may be removed from the pulling head, leaving the driller to try and find the end of the wire or perform a costly re-bore.
tected in some manner, it is possible the wire may be removed from the pulling head, leaving the driller to try and find the end of the wire or perform a costly re-bore. There are techniques that have proven to be successful in tracer wire attachment, such as welding a short chain section to the pulling head and attaching the tracer to the trailing end of that chain. This better guides and protects the tracer wire during the pull back. Another good option is to attach the wire under the expander to protect the leading segment from being damaged or tearing off.

It is also important to install tracer wire that has the proper coating to eliminate or minimize any damage to the wire during the pipe installation. A very durable high density polyethylene (HDPE) coating of 45 mil thickness on the wire is important. Smaller thicknesses or low density, high molecular weight polyethylene (HMWPE) or other lesser materials can more easily result in the coating being damaged during the pullback process. THHN wire should never be used for tracer wire in any application, HDD or open ditch. Also, the correct APWA color coating for the wire is important. This readily identifies the usage of the pipe being installed.

Once the drill has been completed with the proper tracer wire installed, it is important to perform continuity or locate check on the installed tracer wire. This will find damage in the wire installed or lack of signal for future locating needs. If the signal is not present or continuity is not found, the wire must be re-installed. This means performing a re-bore. Typically this only happens if the correct wire is not used and breaks during the pullback or wire with the incorrect or thin coating is used and is scrapped off during the process. HDPE coating prevents this from happening.

**Proper Connectors**

In addition to having the right tracer wire for the job, connectors for the wire outside of the HDD operation to the...
tracer wire are important. Connectors that are rated for direct burial, have a dielectric gel and are sealed must be used. This prevents any potential corrosion of the wire and ensures that continuity of the locate signal is good. Connectors not designed for direct burial should not be used. It is never recommended to have any wire connection of the wire being used during the pull.

It is also important that proper test stations for connecting the tracer wire and protecting the ends when brought above-ground to attach the locator are installed. There are numerous types of test stations available. The preferred type is ground level with a locking lid to prevent vandalism or damage by mowing or traffic. These are color coated with the correct APWA color and usually note what utility type the pipe is being used for. Other types of test stations include posts and short tubing with conduit terminals. Simply bringing the wire above ground, leaving it exposed to the elements, vandalism, theft and grass trimmers is not acceptable.

The final part of the tracer wire system is the far-end ground on the wire. This further ensures a good strong locate signal to precisely locate the tracer wire. Grounding anodes for this purpose are a good investment, providing the locate technician an advantage compared to locating tracer wire without a good far-end ground, completing the locate circuit.

Lee Dester is vice president of sales for Copperhead Industries Inc., based in Monticello, Minn.

Points to always consider when using tracer wire for HDD jobs:

- Always use the right type of tracer wire, coated with the correct APWA color coating for the job
- Make certain the connection to the pulling head is protected and secure
- Check the continuity or locate the tracer wire before closing the receiving and entrance pits
- Use the proper connectors designed for buried tracer wire applications
- Incorporate test stations for easy access to attached locators to the tracer wire
- Utilize grounding anodes to enhance the locate signal for all tracer wire systems

This complete guide to trenchless technology project management describes how to plan, schedule, and implement efficient and cost-effective trenchless technology piping projects. Filled with detailed illustrations and real-world examples, this valuable resource explains how to accurately compare the costs of trenchless projects, considering geotechnical and rock mass impacts, drilling fluids, and locating and tracking equipment. A wide range of trenchless technology methods suitable for various ground and project conditions are discussed in this practical resource.

Publisher: Mohammad Najafi, Ph.D., P.E.
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n recent years, a lot of awareness has been generated regarding the importance of rehabilitating laterals and lateral connections.

Most municipalities, in an effort to reduce SSOs, have used cured-in-place pipe (CIPP) for renewing their main collector pipes. Yet the impact of renewing main pipes alone often proved to be insignificant, and the requirements for sealing collection systems has led to a significant focus on trenchless products that rebuild and seal a sewer lateral connection. In its early stages, lateral sewer pipe rehabilitation included excavating and exposing a section of pipe, typically at the property line or the house foundation. A section of pipe was cut and removed, and a resin saturated liner was inserted, pressurized and cured. It was first believed that by running the liner long and extending into the main that the lateral liner would bond with the mainline liner and form a seal.

It was later discovered that lateral linings do not bond to the opening of the mainline liner, and so the connection leaked and even allowed roots to enter the pipe. For most municipal agencies, continued leakage was unacceptable and cities began to investigate and address the cause for continued sewer overflows. Technology began to grow as materials and installation methods were being modified to address the sewer lateral connection. Some technology focused on just the connection while some addressed both the lateral pipe and the connection by using a single CIPP liner assembly.

This led to the development of the CIPP lateral connection liner that actually renews a section of the lateral pipe and extends into the mainline and forms a seal with the interior surface of the mainline liner. Over the years, this connection liner has been pushed, pulled and inverted into the lateral pipe either through the cleanout or robotically from the main pipe. These lateral connection liners can be chemically cured, heat cured or cured by a light source. Technology has continued to advance over the past 20 years and today a host of CIPP technology is available for sealing or even rebuilding sewer lateral connections with no digging required whatsoever. But that is only part of the solution.

It is important to understand that when a mainline pipe is lined, ground water tracks behind mainline liners and re-enters the collection system at service connection openings (Figs. 1 & 2), but it is also important to understand the chal-
Challenges surrounding this important space between the main and lateral pipe. Everything including gorilla glue has been tried to rebuild and seal a sewer lateral connection from infiltration. There is a lot going on at the deepest part of a lateral pipe and you can be sure that a couple things that will always be encountered during the application; a wet environment and a greasy pipe. When we consider other obstacles such as large over cuts during service connection reinstatement, and we add some root blockage; elliptical pipe openings at various angles, 4-in. cast-iron pipes projecting into a 6-in. clay factory fitting …. well, let’s just say you better use a skilled professional that knows what they are doing to first evaluate and then install an effective product.

Chemical grouts and grouting equipment have also been modified and improved over the years and today grouting techniques are being used to seal the main connection and the lateral pipe as far as 30 ft (Fig. 3). Other grouting applications are now available for structurally rebuilding a lateral connection by injecting a curable resin into void areas around the lateral pipe opening. These grouting and resin injection processes are completely trenchless and both systems may be used in conjunction with CIPP lateral lining. In cases where a structural CIPP liner is specified and significant infiltration may have adverse effects on the installation of the liner system, chemical grout is used before installation of the CIPP lateral connection liner. In other cases, the structural resin injection system is used to form a seal at the mainline liner combined with a CIPP lateral liner that is usually inverted from a clean-out to the main. Some CIPP lateral liner systems have been designed to form a seal by the inclusion of hydrophilic materials located at the mainline interface and also at the upper end of the lateral connection liner (Fig. 4).

Each lateral connection repair technology offers different advantages and the good news is municipalities have an option to choose the right solution for their specific need. There is a lot of great technology out there and our biggest hurdle as an industry will be to help owners and specifying engineers understand the benefits and the service life of a product so they can quantify and select the proper repair for their specific need. You can see this happening all around us as organizations like ASTM now have lateral standards published for sealing lateral connections by using chemical grout as well as another standard for renewing a lateral pipe and the main connection using a single piece CIPP liner. Other organizations like NASSCO have committees exclusively focused on lateral technology that publish informational articles like this one, and NASTT is on schedule to publish a lateral rehabilitation good practices manual. Together, companies involved in the trenchless industry are working to improve public awareness and share information with contractors, engineers and municipal agencies on the many viable solutions for renewing and sealing lateral pipelines.

Today, owners are taking a more holistic approach toward renewing and sealing sewer collection systems, including laterals. There are a host of lateral connection technologies available today, and the increasing demand for a sealed system will continue to advance innovation and product capabilities in the future.

This article was written by the NASSCO Lateral Committee.
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HAMMERHEAD TRENCHLESS EQUIPMENT

HammerHead Trenchless Equipment introduced its new epoxy system for the recently released Hydraliner Lateral Lining system. Expanding on its previously available options, this single base resin system comes with three choices of curing agent hardeners. The 100 percent solids epoxy is used for installing cured-in-place pipe (CIPP). Hydraliner epoxy base resin is tinted transparent blue. Hardeners are transparent yellow. When the two are properly mixed, they create a uniform green color. This combination has proven to work well with felt or fiberglass liner material. Winter Blend is the fastest curing Hydraliner hardener and is ideal for cold weather conditions or for short applications that require a fast return to service. Standard Blend is the customary hardener with an increased working and cure time sufficient for most project applications. Summer Blend is useful in long or large diameter pipe runs and high temperature applications with a sustained temperature of up to 200 F. The speed of cure for any of the hardeners increases with the addition of heat via hot water, hot air or steam. The epoxy base, winter and standard hardeners are classified by the Department of Transportation as non-regulated and non-corrosive, minimizing shipping issues for hazardous materials. Hydraliner Epoxy Resin System for CIPP with hardeners is available in 5-gal pails, 55-gal drums, and 275-gal Intermediate Bulk Containers (IBC).

NORTH AMERICAN SPECIALTY PRODUCTS

Responding to positive industry feedback for its C900/RJIB restrained-joint integral bell PVC pipe with Certa-Lok technology, North American Specialty Products is adding new 10- and 12-in. outside diameter options. The larger pipe provides a cost-effective solution for completing trenchless water and sewer installation and replacement, and the integral-bell design helps save time by eliminating the need for traditional couplings. Also available in 4-, 6- and 8-in. diameters, North American Specialty Products C900/RJIB PVC pipe features the company’s time- and field-proven Certa-Lok mechanical joining system, which utilizes a combination of precision-machined grooves and a nylon spline to provide exceptional tensile strength in pulling or pushing operations. Rounding out the design, a flexible elastomeric gasket within the integral bell provides a solid pressure-certified hydraulic seal. Unlike HDPE or fusible PVC pipe, C900/RJIB does not require a time-consuming and costly fusion process and can be assembled in real time as pullback continues, eliminating the need to string out several hundred feet of pipe within or beyond the work zone.

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SEPTEMBER
1-3 2013 No-Dig International Conference, Sydney, Australia, ISTT, Web: www.nodigdownunder.com
17-18 18th CzSTT NO-DIG Conference, Pize, Czech Republic, CzSTT, Web: www.czstt.cz/
23-27 47th IPOCA Convention, Washington, DC, Web: www.ipoca.com

OCTOBER
1-3 2013 ICUEE Expo, Louisville, Ky., Kentucky Exposition center, Web: www.icuee.com
3-4 2013 NSST No-Dig Conference, Vlijn/zuizen, Netherland, NSTT, Web: www.no-dig-event.nl

2014
JANUARY
29-31 UCT 2013, Houston, Web: www.uctonline.com

FEBRUARY
4-9 DCA’s 53rd Annual Convention, Ritz Carlton, Cancun, Mexico, DCA, Web: www.dca-online.org

MARCH
4-8 CONEXPO-CON/AGG, Las Vegas, Web: www.conexpoconagg.com
13-17 2014 NASTT No-Dig Show, Gaylord Palm, Orlando, Fla., (330) 467-7588, Web: www.nodigshow.com

JUNE
2-6 2014 Pumper & Cleaner Expo, Indianapolis, Web: www.pumpershow.com

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8-10 2013 HDD Seminar: Productivity & Profitability, Las Vegas, (330) 467-7588

DECEMBER

Which title group best describes your job title? (check only one)

A. Owner/Partner  H. Superintendent
B. President  I. Engineer/Estimator/Consultant
C. Vice President  J. Director/Commissioner
D. C.E.O.  K. Safety
E. CO.O./C.F.O.  L. Operator/Field
F. Manager/Coordinator/ Admin.  M. Other; Specify:
G. Supv./Foreman/Insp.  

How would you describe your primary trenchless activity?

A. Rehabilitation  B. New Installation  C. Both

What is your company’s primary function? (check only one)

CONTRACTING FIRMS
A. Utility  H. Water and Sewer
B. Distribution  I. Gas and Electric
C. Road Boring/ Directional Drilling
D. Tunneling
E. Pipeline
F. Cable
G. General
H. Pipe Cleaning
I. Other; Specify:

UTILITY COMPANIES
R. Water and Sewer
S. Electric
T. Gas
U. Cable/Telephone
V. Other Utilities; Specify:

ENGINEERING FIRMS
J. Construction  X. In-House Contracting
K. Geotechnical  Y. In-House Construction
L. Environmental  Z. Other; Specify:
M. Pipeline
N. Other; Specify:

INDUSTRIAL FACILITY
W. In-House Contracting
X. In-House Construction
Y. In-House Engineering
Z. Other; Specify:

OTHERS IN THE TRENCHLESS INDUSTRY
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C. Pipe Manufacturer  D. Pipe Cleaning; Mfg/ Supplier
E. Other; Specify

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1. Why did you get involved with ISTT? When did you become chairman?
I started out at the grassroots level as one of the people involved in the formation of the Northwest Chapter of NASTT. From there, I served six years on the board of director’s of NASTT including a year as secretary. In 2005, I was elected to the ISTT Executive Subcommittee and was elected as vice chairman in 2007 where I served under Dr. Doc Downey for three years. I assumed the chairmanship in 2010 at the International No-Dig Show in Singapore.

2. What are ISTT’s plans for 2013?
ISTT is continuing its mission of education and training to help promote trenchless technologies on a global stage. As such, ESC members support the local events put on by our Affiliated Societies throughout the year. Additionally, ISTT’s outreach for 2013 involves hosting four No-Dig Summits in Thailand, India, Sri Lanka and the Philippines. The Summits are smaller shows intended to help cultivate new Affiliated Societies in regions of the world that have been identified as promising opportunities. ISTT is also launching a Trenchless Technology Photo Book this year. The book will feature photos of trenchless projects from around the world. I am particularly excited about this initiative, as it will truly showcase the global impact of trenchless technologies.

3. Discuss the importance of the ISTT chapters around the world.
Our 28 Affiliated Societies are the backbone of ISTT. We have Societies spread throughout the world in 40 countries and are continuing to grow each year. ISTT provides a mechanism for information dissemination and collaboration among Affiliated Societies. These Societies are critical as they possess a lot of authority and often influence regulations within their own countries.

4. You’ve added a few new chapters since you became ISTT chairman. What does that say about the state of the global trenchless market?
The trenchless market continues to grow yearly as more and more people are exposed to the environmental, social and economic benefits of the technologies. There is power in knowledge and the education and training performed by our Affiliated Societies definitely pay dividends in attracting new supporters. Additionally, most of our Societies have key relationships with universities in their country, which facilitates exposure through lectures and research activities. We continue to receive inquiries about forming new Affiliated Societies from all corners of the globe. I see ISTT’s role as one of providing due diligence and mentorship to those interested parties. I can easily see us grow to 40 chapters within the next decade.

5. What areas of the world have you seen the most trenchless growth?
Growth in trenchless is found in all areas of the world; however, as with the rest of the economy, China continues to outpace others in terms of trenchless growth. It is remarkable to see projects that are expanding the boundaries of these technologies. The United States and Canada are being bolstered by strong oil and gas sectors, which utilize a lot of horizontal directional drilling (HDD). Brazil is also a strong growth market in the oil and gas sectors. Today, their municipal sector is starting to engage in more trenchless methods mainly due to the educational efforts of our Affiliated Society in Brazil (ABRATT). India is currently engaging in a major multi-year upgrade of its telecommunications network, which involves a significant use of horizontal directional drilling. The German trenchless market remains strong as evident by the numerous suppliers and manufacturers based in the country. Emerging markets include Colombia and Turkey, where our Affiliated Societies are doing an amazing job of promoting trenchless technologies.

6. What do you see as the most important industry issues you have faced and will face as ISTT chairman?
Perhaps the most important industry issue I have faced during my tenure as ISTT Chairman is in educating government officials and regulatory agencies on the benefits of adopting trenchless technologies. Their acceptance is essential for growth. Unfortunately, there are a number of for-profit entities that hold trenchless events that are commercially-based and often filled with misinformation. As ISTT Chairman, I have had to intervene when these groups try to put on events in our territory. ISTT has strict ethical standards that all of our Affiliated Societies must abide by. Thus, attending a training event held by any of our Affiliated Societies should provide the most accurate and unbiased information regarding the trenchless industry.

7. Where do you see trenchless technology heading in the short-term and long-term?
In the short-term, we need to continue educating society on the merits and applications of trenchless technology. This includes exposure at universities as we cultivate the future generation of contractors, engineers and owners. Additionally, the industry needs to move to the center stage in terms of acceptance from regulators and other governmental entities. In the short-term, we need to continue engaging in monumental projects that showcase benefits of adopting trenchless. In the long-term, the trenchless industry needs to continue to advance in terms of its technology portfolio and materials to stay in the cutting-edge of the construction sector.

8. What has been the impact of trenchless shows around the world, outside of the International No-Dig Show, to the growth of the industry (such as the Trenchless Middle East Shows)?
Certainly there are numerous trenchless shows that continue to promote the technologies. Trenchless Middle East is just one example of a show with major impact. The event has been held bi-annually for a number of years. The 2013 show was the best to date in terms of attendance and technical program, which shows great promise for the next show in the region. I have had the privilege of attending the annual No-Dig Shows of a number of our Affiliated Societies. Each of these shows has been unique, but have all proven to be outstanding in contributing to the global growth of the industry. I strongly recommend attending a trenchless show outside of your home country just to gain a broader exposure of our industry.
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