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CASE STUDY

HDD & THE 1ST U.S COMMERCIAL SCALE OFFSHORE WIND FARM

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FROM THE PUBLISHER

TRENCHLESS & Renewable energy



By Kelly VanNatten

ccording to the American Clean Power Association's U.S. Offshore Wind Market Report, there's a rapidly

growing pipeline of projects across 32 leases, totaling 51,377 MW of expected capacity (we're talking electricity to power 20 million homes). Consider the U.S. Energy Information Administration's projection that by 2050, renewable generation (mostly solar and wind) will supply 44 percent of U.S. electricity (up 21 percent from 2021).

I Googled these fun facts because I've been hearing a lot of talk about HDD and offshore wind farm projects, as well as other renewable energy projects. In this issue alone, Roly Acosta, president and CEO of JAG Companies, mentions that renewable energy has become one of Huxted's highest profile project areas, citing offshore wind as an especially strong area for the company. Later in the issue, James Mc-Intyre, managing director with Melcar Group, shares details from their Vineyard Wind One project, the first commercial scale offshore wind farm in the United States.

Trenchless at Utility Expo

It's that time again for the biennial Utility Expo! The *Trenchless Technology* team has had a lot of fun at this show over the years. From tradeshow shenanigans like hosting a Traxxas RC racing competition in our booth in 2019 to checking out the latest trenchless solutions on the show floor to catching up with customers at various hospitality events. So, if you're going to the Utility Expo, be sure to stop by and see us at Booth N856. You'll want to also be sure to check out the trenchless exhibitors highlighted in our Utility Expo Show Preview on page 30.

The 2023 Horizontal Directional Drilling Guide

Every August the *HDD Guide* is delivered to select *Trenchless Technology* subscribers, polybagged with their copy of the magazine (or as an additional URL link for digital subscribers). The Guide is packed full of expert advice, up-to-date rig specs and vacuum excavator specs, product directories and more practical information for HDD project stakeholders.

Oh... and you might notice an advertisement for the 2024 HDD Rodeo in Kansas City! Yep, we're excited to be bringing this fun, industry-engaging event back to life. We'll be keeping you posted through our various channels as details become available.

Renew Your Subscription or Subscribe

If you haven't renewed your subscription in the last year, you'll want to do so now so you continue to stay connected to the industry! Here's the easiest way to renew your subscription or become a new subscriber to *Trenchless Technology:*

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As always, the *Trenchless Technology* staff is here to serve you, our readers. Please feel free to reach out to me at *kvannatten@benjaminmedia.com* or 234-380-3030 if you have any topic suggestions or comments.

Until next month!

Jelly Van Natter

Kelly VanNatten Publisher, Trenchless Technology

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Trenchless **Pioneers**

Trenchless Pioneers: Dick Melsheimer

Trenchless Pioneers is a special monthly series sharing with readers the trailblazers who grew and expanded the trenchless industry.

rillers on today's jobsites doing the good work of horizontal directional drilling (HDD) using tooling to form their pilot and product holes can tip their hardhats to a trenchless industry innovator who blazed a trail for

HDD tooling that is still being felt today. Melfred Borzall celebrated its 75th anniversary in 2021 — an incredible feat for any company, but for a familyowned and -operated one, it's even more impressive. Today, the company is led by its third generation of Melsheimers, with some added consultation and expertise from their father, a true Trenchless Pioneer: Dick Melsheimer.

Fred Melsheimer founded the company in 1946, a venture to start his own business to make tools for the installation of utilities without the use of trenchers and shovels — a precursor to today's HDD. Dick Melsheimer joined his father and went on to become an HDD industry icon. He "retired" in 2016, handing the company reins to his sons, Eric and Peter; however, Dick, now 85, never totally walked away from the industry he helped create, remaining a strong presence at the company, offering perspective, insight and advice when called upon.

"Today, I'm pretty much semi-retired without any specific hours, but I still come to work about four days a week on average and help with special projects," Dick says. "I also focus my time on a lot of the outreach that we do at local schools, with educating about manufacturing jobs and HDD. I still love to go out to jobsites and talk with the operators and locators, and I'm always amazed at how far the equipment has come, but also still looking for ways to improve and solve problems."

Melfred Borzall has evolved into a highly specialized HDD tooling manufacturer and innovator. During the early years of HDD, the company manufactured and sold small directional drills. Later, the company returned to its tool-



ing roots, catering specifically to the compact and midsize rig market with its repertoire of drill rods, directional heads, backreamers, bits, blades and accessories.

Dick's innovations were critical to the success of Melfred Borzall, as well as the directional drilling market. He points to the first invention he was involved in: The making and designing of the first front-mounted water swivel. This tool allowed water to be used by horizontal drilling (just how it is with modern-day HDD). "This greatly improved production and allowed for a wider variety of soil conditions to be drilled," Dick says. "It became popular in the 1950s and 1960s. We designed the swivel and adapter that would aid in the HDD process."

He later designed a cable swivel for a reamer. "In essence, we had developed a pullback swivel along with the process of backreaming while pulling pipe directly behind the reamer," Dick explains. He also notes the development of the company's Sure-Shot drill system, saying it was one of the first HDD drill rigs available for utility contractors and utility companies to purchase.

He describes the early days of HDD as involving a lot of manual, hard physical labor, as there were no breakout wrenches, no stake down systems or pipe wrenches. He says early on, the gas main lines were made from steel, but the real gamechanger came with the introduction of polyethylene plastic pipe. "Back in the 1970s and 1980s when they started plastic pipe for gas, that started really expediting the industry growth and then we had a boom," Dick says.

He also points to the Dyna-Mole as a key industry advancement. This tool was diesel-powered with hydraulic rotation and feed, making it safer and faster compared to the handheld air motors. "This allowed drillers to make great gains on their bores that once took a long time," Dick says.

How does Dick view his legacy in the trenchless industry? "It took me a long time to really understand what we've actually built here," he says. "Since the very beginning, we've been in HDD and now to see how pipe is being installed all over the world is very rewarding. All over the world, the lengths and depths that drillers are drilling has tremendously increased, and I think it's just amazing to see how we have been a key player in that growth."

Sharon M. Bueno is editor of *Trenchless Technology*.

TRENCHLESS

DR. MO NAJAFI PARTNERS WITH XERXES CORP. to Test Underground Infrastructure

niversity of Texas at Arlington Civil Engineering associate professor Dr. Mohammad Najafi is working with Xerxes Corp. to create test procedures and product evaluations for stormwater storage, infiltration chambers and modules.

Najafi is working with Xerxes — a leading innovator in composite chamber and tank engineering — on material and full-scale inground product evaluations as part of a \$207,495 project to determine how well the equipment can withstand vehicle and soil loads under various reallife design scenarios.

"We're testing these products, which are designed for use under trafficked areas, with both shallow-cover, shortterm, high-load applications as well as deep-cover, long-term earth loads," Najafi said. "We'll take advantage of a lab-like controlled environment to apply different load scenarios on a number of chamber and module tank designs with and without features, like inspection and connection pipes."

Long-term loading tests will also be performed to assess small responses to earth loads typical of deep installations.

"We'll check durability by loading the equivalent of highway traffic on them and up to 26 ft of cover. We need to determine how best to design for many different and complicated load scenarios," Najafi said. "This project aims to do just that by leveraging existing test standards and our experience from other underground research projects."

Najafi said the chambers will be tested following all applicable American Society for Testing and Materials and American Association of Highway and Transportation Officials standards.

"What makes this testing so distinctive is the ability to simulate real-world loads on full-scale, commercially available products in actual field-installed conditions," Najafi said. "It will be like lab-testing the effects of heavy truck loads on the chambers and modules with full control of the test environment, but in the field. Our soil box laboratory and hydraulic actuator by MTS Systems can do that."

The entire project will be done in the Center for Underground Infrastructure Research & Education (CUIRE) lab, which is run by Najafi. CUIRE is a research, education and outreach organization and a part of UT Arlington's Department of Civil Engineering. Since its inception, CUIRE has focused on assembling exceptional and broad-reaching engineering and technical talent to address the needs of underground infrastructure on regional, state, national and international scales. Najafi is well-known internationally for his research and publications in



underground infrastructure.

Melanie Sattler, interim chair of the Department of Civil Engineering, said Najafi's work is integral to the functionality of the country's infrastructure system.

"It's always important for our department, our college and our University to partner with the private sector like Xerxes whenever we can," she said. "We believe these collaborations are essential to a thriving industry and, more importantly, the country's infrastructure."

BAMI-I HOSTING INAUGURAL GLOBAL Buried Asset Management Congress

he Buried Asset Management Institute — International (BAMI-I) announces the first-ever Global Buried Asset Management Congress (GBAMC), scheduled to take place on Sept. 28-30 in Tinley Park, Illinois southwest of Chicago.

This congress aims to advance the science and practice of asset management in the underground infrastructure industry, with a focus on the water and wastewater sector and other utilities that have buried assets. GBAMC will focus on advancing the science and practice of asset management under the theme, "Buried assets: out of sight but not out of mind through advancing the science and practice of asset management."

The GBAMC will bring together subject matter experts from around the world to identify the state-of-practice

TRENCHLESS

and present strategic future directions in buried asset management. The congress aims to establish a comprehensive set of global directions for the industry, addressing the challenges of managing buried assets and ensuring their longevity and efficiency.

Buried infrastructure serves as the lifeline of societies worldwide, requiring effective management to ensure its health, remaining service life, and timely maintenance. Key areas of emphasis include implementing best business practices for asset protection, advancing technology and management methods to enhance asset value, ensuring the longevity of buried assets through comprehensive health assessment and management, and ensuring compliance with current and future regulatory requirements.

"Our congress is unique, as it is the only asset management congress fo-



cused on underground infrastructure. The congress is proudly co-sponsored by BAMI-I and Purdue University," says Dr. Tom Iseley, BAMI-I president. "Under the leadership of Wei Liao, our passionate team is fully committed to providing an outstanding experience that surpasses all expectations. We have curated an impressive lineup of world-class speakers who will guide us into the future of buried asset management. We invite you to join us and become our valued partner in shaping the trajectory of this vital industry."

The GBAMC offers attendees the opportunity to engage with asset management leaders, exchange knowledge and best practices, and gain insights into the latest trends and technologies. The congress will take place both in-person and virtually, allowing participants from across the globe to attend.

For more information about the GBAMC, including sponsorship opportunities, registration and the detailed program, visit *bami-igbamc.com*.

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72-inch Flow-Crete Pipe installed by Microtunneling on the Nassau County Bay Park project

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NASCAR Driver Michael McDowell



icote Solutions is partnering with Michael McDowell - driver of the No. 34 Front Row Motorsports Ford Mustang in the NASCAR Cup Series - for the 2023 racing season. This strategic partnership reflects a shared commitment and drive for excellence.

As a leader in providing plumbers and contractors around the world with innovative, reliable and efficient market-leading tools, the team at Picote is delighted to partner with one of the most accomplished and exciting drivers in the world of NASCAR. With several wins and top finishes, Michael McDowell has proved himself to be a true professional on the track.

"At Picote, we strive to provide our customers with the very best resources to work smarter and more efficiently," said Picote Solutions CEO Katja Lindy-Wilkinson. "We see the same drive and commitment to excellence in Michael McDowell and are thrilled to be partnering with such a talented driver."

Three prominent companies from the plumbing and trenchless industries will support McDowell this season, including Roto-Rooter Corp., MaxLiner and Picote Solutions.

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TRENCHLESS EVS

HAARTZ CORP. ANNOUNCES NEW PRESIDENT

he Haartz Corp. recently announced the appointment of John Millea to president. Millea transitioned to this new role on July 1. Acting president, John Fox, will be retiring at the end of August after serving in the role for 21 years.

"John Millea will make great use of his global business development expertise, a strong knowledge of our global production operations, and widespread relationships inside and outside of this company," said Haartz CEO Eric Haartz. "In 28 years with Haartz, John has embraced a way of doing things that harmonizes with the ethics and ethos we have built into our CARES Core Values. It is important to John Millea, as it is



to the Haartz Family, that we keep the tradition of Haartz being a good place to work, regardless of one's job within the company." "We want to continue our tenure as one of the world's strongest automotive materials suppliers," continued, Haartz. "At the same time, we look forward to growing new business markets and developing more environmentally sustainable ways of operating."

Millea has been in positions of increasing responsibility since joining the company as an research and development engineer in 1995, most recently holding the position of vice president, Global Automotive Interiors. He holds a bachelor's degree in industrial engineering from Waterford Institute of Technology (Ireland), and a Master's Degree in Manufacturing Engineering from Cranfield University (England).

ITPIPES APPOINTS NEW CEO, COO

une and July brought new faces to ITpipes, the Seattle-based pipeline condition assessment software provider.

In July, the company announced the addition of Ned Bebawy as CEO. Having previously served as the COO of AutoLeap, an automotive SaaS company, Bebawy has a solid grasp of the challenges and opportunities within software markets.

Prior to AutoLeap, Bebawy's career included a significant tenure at a leading global management consulting company, where he led cross-discipline teams and worked with Fortune 500 companies in solving their biggest strategic challenges. He is known for ensuring that organizations stay ahead of the curve in a rapidly evolving technological landscape.

"I am honored to join ITpipes as the CEO and excited to work alongside the talented team to build on the strong foundation and culture that Cori (Criss) and Al (Rossmeisl) have laid," said Bebawy. "ITpipes is renowned in the infrastructure inspection industry for its commitment to innovation, quality and customer satisfaction, and I am eager to lead the organization into its next phase of growth. I can't think of a better company to be at or a better market to be in."

Under Bebawy's leadership, ITpipes aims to further enhance its suite of cutting-edge pipeline inspection and asset management solutions. Leveraging his expertise, the company will focus on developing innovative technologies that address the evolving needs of both municipal and contractor clients in the infrastructure industry. Bebawy aims to rapidly expand the company's development efforts, while continuing to build upon strategic partnerships and delivering exceptional customer service.

"We are thrilled to welcome Ned to ITpipes as our new CEO," said Cori Criss, founder and president of ITpipes. "Al (Rossmeisl) and I were very diligent with our search to find the right person to continue to lead the company into the next era. With Ned at the helm, I'm confident in the company's ability to continue delivering innovative solutions that enable our clients to optimize their pipeline management processes." Criss will remain as president of ITpipes and join the board of directors, contributing her expertise to strategic decision-making, fostering partnerships, ensuring exceptional customer service, and guiding the company's vision for future growth.

In June, Lucas Lima joined ITpipes as the company's new COO. Over the past decade, Lima has built a vast and diverse managerial experience, having driven business growth and delivered exceptional results in the software and technology, infrastructure, and governmental sectors. As COO, Lima will be responsible for overseeing the company's day-to-day operations, executing strategic initiatives, and driving operational excellence across all aspects of ITpipes' business.

"We are thrilled to welcome Lucas Lima to ITpipes as our new chief operating officer," said Criss. "His extensive software industry knowledge and leadership experience will be instrumental in advancing our company's mission to provide innovative solutions for the pipeline inspection and asset management industry."

VORTEX COMPANIES OPENS TAP CUTTING INSTITUTE

ecognizing an industry-wide need for experienced sewer line tap cutters, the Vortex Companies announced the launch of the Vortex Tap Cutting Institute.

Located at the Vortex Products facility in Greenville, South Carolina, the Tap Cutting Institute features a fully functional robotics simulator to teach individuals how to cut taps without the risk of damaging pipe or liners. "Proper lateral reinstatement is a critical part of the sewer rehab process," said Vortex Companies CEO Mike Vellano. "The bottom line is that there simply aren't enough experienced tap cutters in our industry, and we are in a great position to provide training to anyone who wants to learn."

Vortex Companies Tap Cutting Institute features a Schwalm Robotics simulator and is designed to teach tap cutting skills to the trenchless contracting labor force

"Through the Tap Cutting Institute, we've made the training affordable to individuals who want to expand their capabilities and learn the tap cutting trade, or for contractors who want to send their technicians here to hone their skills," said Kenny Cochrane, vice president of Schwalm Products at Vortex. Although tap-cutting is only small part of a Schwalm robot's capabilities, it represents the bulk of its workload.

The Vortex Companies is a leading provider of advanced trenchless water and sewer technologies. Through its products and services divisions, Vortex delivers a comprehensive suite of rehabilitation products, equipment, services, and field support to the municipal, industrial, and commercial marketplaces. This includes pipe and manhole lining systems; sewer robotics; mortars; epoxies and resin materials; installation equipment; contracting services, training and field support.



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AUGUST COVER STORY

Combined Strength-

Merger Leads to Continued Growth for Huxted Trenchless

By Bradley Kramer

Huxted Trenchless management team (from left): Chris Bauer, senior project manager; Brian Haynes, shop manager; Ray Post, senior vice president; Harsha Reddy, project manager; and John Langford, operations manager.

W

hat's in a name? In the case of Huxted Trenchless, a new name comes packed with decades of experience and expertise in HDD and microtunneling. Huxted Trenchless was formed in 2022, with the consolidation of Huxted Tunneling and ECI Drilling, two long-standing trenchless construction firms owned by JAG Companies Inc. By combining the two companies, Huxted Trenchless is better poised for growth, expanding its revenue and geographic reach.

Ray Post, senior vice president of Huxted Trenchless, says the company specializes in complex, large-scale HDD work and all types of microtunneling projects, with occasional sliplining and guided boring projects.

Post joined Huxted in 2015 and helped shepherd the company through a move in 2020 from its original location in Palmetto, Florida, to Conroe, Texas, to co-locate with ECI Drilling. That move eventually led to the consolidation.

"Everyone wants to see growth," explains Roly Acosta, president and CEO of JAG Companies. "Both companies were feeling stagnant, with one solely in Florida and one solely in Texas."

Moving Huxted to Texas served as an opportunity to see how well the two companies could work together.

"Ray and his team were willing to move, and we were able to combine the expertise of the two companies," Acosta says. "Now, they're more than a microtunneling crew or an HDD crew, now we are a skilled trenchless crew.



Pull back of 1,305 If of 30-in. HDPE pipe in a hard rock formation under the Catawba River.

That team approach leads to more success and continued growth."

Post adds that the combined personnel has created crews "that can flow between disciplines," regardless of the project scope.

"We're able to overcome obstacles by combining our strengths," Post says.

Today, Huxted Trenchless brings in a revenue of approximately \$35 million per year and employs about 50 people. In addition, the company has been certified by the National Minority Supplier Development Council as a Minority Business Enterprise (MBE).

A Brief History of Huxted

Huxted Tunneling was formed by Dwayne Huxted, who had moved to Palmetto, Florida, from British Columbia, Canada, in the late 1970s.

When Dwayne arrived in Florida, he became a partner at Kerr Construction, an underground utility and tunneling business that was owned by his sister and brother-in-law. Dwayne eventually purchased the company and became sole owner.

Under Dwayne's leadership, Kerr Construction became a cutting-edge microtunneling and jack-and-bore business. He later renamed the company Huxted Tunneling and brought his wife Ruth and daughter Kimberly on board to help run the company.

Huxted Tunneling experienced significant growth in the 1990s, according to Post, and the company began to focus more on microtunneling projects, winning the 2003 *Trenchless Technology* Project of the Year for New Installation with the Potomac Yard Offsite Sanitary Trunk Sewer Project.

Unfortunately, the Huxted family experienced serious medical problems in the late 2000s, leading to JAG Companies purchasing Huxted Tunneling in 2010. Sadly, Kimberly died in 2009 at age 45 and Ruth died in 2010 at age 71, with Dwayne passing away in 2016 at age 76.

However, their name and legacy lives on with Huxted Trenchless.

Growing the Footprint

Huxted Tunneling mainly worked in Florida and neighboring states, roughly the footprint of college football's Southeastern Conference (SEC), Post explains. ECI would work on projects all over the United States, and in some cases internationally. "Now, the combined companies are pursuing work from the Rocky Mountains to the Atlantic Ocean and down to the Gulf of Mexico, but if it's the right job, we will pursue work in any state," Post says.

Under the ownership of JAG Companies, Huxted Trenchless continues to seek continued growth.

"My family has a long history in the construction industry," Acosta says. "This is our 45th year in business, with Northeast Remsco Construction as our first business."

Northeast Remsco Construction was formed in 1978 as Northeast Utilities Inc. by Juan A. Gutierrez, who had immigrated to the United States from Cuba. JAG Companies was formed in 2009 to become the parent company of Northeast Remsco and Caldwell Marine International Inc. (CMI), a subaqueous utilities and heavy civil marine construction firm that Gutierrez acquired in 2003.

"We were looking at growth opportunities, and that led to the acquisition of the original Huxted Tunneling in 2010 and ECI Drilling in 2014," Acosta says. "Then we had an opportunity to consolidate those two companies to become a bigger trenchless powerhouse in the industry."

Huxted Trenchless boasts a fleet of about 18 machines across all its specialties, including five HDD rigs from such manufacturers as American Augers, Iseki and Herrenknect, ranging in size from 200,000 lbs to 1 million lbs and diameters from 24 to 120 in.

Post explains the strategy behind how Huxted Trenchless chooses its projects.

"Considering diameter and length on a microtunneling project, we'll look at anything, long, short, straight or curved," Post says. "We're more selective on HDD projects."

On the HDD side, Post says that the company targets "larger, more complicated jobs," giving such examples as 3,000 ft of 48 in., 2,000 ft of 24-in. through rock, or 8,000-plus ft of 12-in. with an intersect.

"It would not make sense for us to bid on a 100-ft job in our competitors' backyard," he says. "But we're not afraid to pursue any type of microtunneling job, including underwater retrievals for intake and outfalls."

AUGUST COVER STORY



Site setup for 72-in. RCP crossing of I-275 in Tampa, Florida.

A Partnership Approach

When working with customers, Post says there can be a "tremendous amount of education" involved in explaining the benefits and capabilities of trenchless. However, Huxted works with its clients to provide the best solution.

"We like to take a partnering approach whenever possible," Acosta adds. "Certainly, there is education involved on what certain methods might be a better solution for the project. Ultimately, we strive to deliver the project that the owner wants. The last thing we want is when the project is done, and everyone walks away with their backs to each other. We want those high fives at the end."

The way Huxted Trenchless approaches its customers and overall business is through the company's three core values of reputation, work ethic and team accomplishment.

"One key point on partnering is that it can be hard at times," Post says. "Sometimes you have to tell someone that they're not looking at the right trenchless solution. I could lie and say it's a microtunneling project when it's not, but being truthful in the pre-design phase helps build that level of trust."

In addition to partnering with

customers on projects, Huxted Trenchless also partners with the industry at large through participation in organizations such as NASTT, NUCA and NAMA.

"Collectively, as an organization we're active in various industry trade associations," Acosta says. "We're definitely out there advocating for funding from the national level and local level for infrastructure investment."

One of the big challenges that Acosta and Post see for the utility construction and trenchless industries is finding people to perform the work, from entry-level labor to management positions and everything in between.

"How do we get young people engaged in the trades and construction? We need to get them to understand that this is a respected industry with well-paying jobs," Acosta says. "It is important for our industry to advocate for support for the trades and engineering communities."



Expertise and Scope

Among the key personnel at Huxted Trenchless, Post estimates that the organization has more than 200 years combined of education in the trenchless field.

"That's a lot of history, a lot of years figuring out how to do things right," Post says. "I know I won't stop learning until I retire. I was interviewing a soon-to-be college graduate and was asked, 'How long did it take you to learn microtunneling?' My answer was, 'I never stop learning. No job is the same."

Huxted Trenchless serves a variety of markets, including water, wastewater, power and gas.

Acosta adds that renewable energy has become one Huxted's highest profile project areas, citing offshore wind as an especially strong area for the company.

One of the biggest projects Huxted Trenchless is currently undertaking is the Champlain Hudson Power Express (CHPE) project, which is bringing renewable energy in the form of hydroelectric power from Quebec, Canada, through Lake Champlain, across the Hudson River and into New York City.

Huxted was subcontracted to perform the marine drilling work on the project by sister company CMI, which was awarded multiple marine phases of the project by NKT, a global provider of turnkey AC/DC cable solutions.

Developed by Transmission Developers Inc., a Blackstone portfolio company, the CHPE represents one of the largest infrastructure investments in the history of New York state. The project combines CMI's expertise of marine cable laying and Huxted Trenchless' expertise of shore end drills.

Posts adds that Huxted is also involved with a major force main project in Virginia that crosses under the James River, as well as another project to reroute an existing storm drainage system so that the merger of two major interstates in Tampa, Florida, can be reconstructed.

"One of the advantages of relocating to Conroe, which is north of Houston, is that it allows us to reach out to more of the United States to pursue work," Post says.

Acosta believes the work that Huxted Trenchless, as well as its sister companies, are making a difference in the world.

"This is an exciting, dynamic industry," Acosta says. "Every job we complete is improving something for someone. Every time we drill or mine, we must be ready for the challenges. Those are driving forces for our business."

Bradley Kramer is a contributing staff editor for *Trenchless Technology*.

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AUGUST FEATURE

ACHIEVING ACCURATE AUGER BORING

By Laura Anderson



uger boring contractors have a host of convenient tooling choices for tackling

the expected and even unforeseen ground conditions for common diameter steel casing installations.

According to industry practice, a shortcoming with traditional auger boring is a lack of accuracy, limited to 1 percent. Over the years, contractors have developed manual methods to determine alignment, but they are limited to installation lengths up to 200 ft and are often time-consuming. These solutions to correct alignment are effective unless the bore requires installation within a narrow easement. From this necessity, technology emerged to ease the path for auger boring contractors.

Guided Auger Boring or Pilot Tube Guided Boring technology became available for the auger boring industry in the early 2000s and was a gamechanger. Borrowing the concept from horizontal directional drilling (HDD) using drill rods, called pilot tubes or guide rods, and adding a digital camera system, contractors could install a bore on line and grade, which held all subsequent tooling to specification.

The advantages of a guided auger bore do not end with accuracy. Pilot tubes also do three things: Determine alignA retractable cutter head with carbide cutter tooling and wing cutters is recommended to follow the pilot tubes for denser, more compacted ground with N-values greater than 30.

ment for surveying before committing to the bore, identify obstructions within the bore path and detect changes in geology by noticeable fluctuations in jacking pressures. The operator can identify the location of obstructions and geological changes by calculating the number of installed pilot tubes.

Using a pilot tube to guide an accurate course expedites the installation of steel casing, as contractors no longer need to trip augers. And with today's digital cameras, up to 600-ft installations have been achieved in the right ground conditions.

The known ground conditions and the



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project's geotechnical data inform the appropriate tooling selection to upsize from the pilot tube to the steel casing diameter. An added benefit is that the crew will know locations of ground variability based on its pilot tube installation experience.

Tooling for Low Blow Count Geology

Low blow count geology is defined as soft, displaceable, non-compacted ground with N-values up to 30.

The most selected tool for low blow count geology for up to 36-in. steel casing is the weld-on reaming head, also known as a reaming head, needle or dart. It is welded to the last pilot tube and the lead steel casing section. Rigidity is provided through the pilot tube connection and reaming head casing arms to ensure proper alignment and quality of the bore. In this process, steel casing installation is accomplished in one step.

The two-step weld-on reaming head

method, is recommended if the project's steel casing diameter is 36 to 72 in. in similar ground conditions. First, contractors follow the same installation procedure as the small-diameter weldon reaming head. Next, per common industry practice, an intermediary steel casing section, approximately half the size of the final casing diameter, is connected to the first reaming head to hold the alignment, and the opposite end gets welded to the first final steel casing section. This two-step approach covers more surface area for alignment stability and is most successful using larger-capacity auger boring rigs.

The standard cutter head or lead auger with carbide teeth aids ground excavation and removal into the auger flighting.

Tooling for Harder Geology

Harder geology is defined as denser, more compacted ground with N-values greater than 30. On projects with steel casing up to 24 in. in harder geology, inserting a small bearing swivel between the pilot tube and the cutter bit is a dependable approach. The bearing swivel accommodates continuous thrust loads and absorbs the pilot tube rotation to keep them stationary to maintain the alignment.

For more than 24-in. steel casing installations, a larger internal bearing swivel with a more robust connection is recommended on the second pass. Bearing swivels are typically inserted inside an intermediary casing linked between the auger flighting hex connection and function to withstand thrust loads and jacking forces as the borehole diameter is increased. A standard cutter head performs ground excavation.

Suppose pressures are higher with evidence of solidified material. In that case, the contractor is advised to add a cutter head with carbide cutter tooling and retractable wing cutters to the tooling string instead of a standard auger boring cutter head. This type of cutter

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head serves three functions. First, it offers more robust cutting tools to excavate the ground as the auger flighting rotates. Second, the wing cutters extend slighting beyond the outside diameter of the steel casing to allow for a minimal overcut for clearance for the steel casing to slip inside the borehole easily. Last, suppose an obstruction prevents the auger string from turning. In that case, the contractor can retract and pull back the cutter head inside the casing, remove the obstacle, and reinsert it without losing alignment.

Tooling for Rock Geology

More aggressive tooling and a different strategy are necessary for projects where the geotechnical baseline report shows evidence of high compressive strength rock. Successful rock auger boring is all about knowing your options and selecting the right combinations of tooling and lubrication for each increase increment.

The steering head used with the pilot tubes displaces the soil as it is advanced,

so choosing a steering head with cutting tooling has proven beneficial.

For even harder-density ground, contractors have turned to pneumatic hammers. They create rock chips, which are pressurized and removed by foam injection from the entry point. This process establishes a borehole typically up to 10 inches. Specialty rock pilot tubes and other tooling are necessary to withstand the thrust loads and vibration.

Small diameter boring units feature a full face of disc cutters to install steel casing up to 48 in. in common diameters. These assemblies are welded to the steel casing and can follow a bearing swivel in an interim casing section or even a smaller boring unit and bearing swivel. The boring unit's disc cutters fracture the rock. The outer disc cutters excavate a minimal overcut while scoops on the cutter head periphery transfer material from cutter head inlets into the auger flighting for removal. The operator maintains alignment using the boring unit's exterior stabilizer pads. It is necessary to introduce cooling water to cool the boring unit's main bearing and assist with material transfer from the cutter head to the auger flighting. This practice will result in extended performance and reduced disc cutter wear.

Of significance to note is the positive impact lubrication or mud and a mud pump system can have on any steel casing installation. Appropriate selection and application of mud are essential to reduce friction, decrease jacking thrusts, and, if applicable, flush cuttings. Contractors are advised to consult with a qualified mud supplier to provide the correct choice for the project's geological conditions before embarking on the project.

With competence in guided auger boring tooling selection, auger boring contractors will find their expertise in high demand.

Laura Anderson is the internal communication director of trenchless equipment manufacturer Akkerman of Brownsdale, Minnesota.



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AUGUST FEATURE

INCREDIBLE MICROTUNNELING PROJECT TACKLED IN FLORIDA

By Dan Shitae

he Harbour Island Force Main is an essential pipeline in the City of Tampa's wastewater system. Placed into service in 1951, it conveys more than 15 million gallons, or 30 percent of the city's wastewater from the Hillsborough River corridor to the Howard F. Curren Advanced Wastewater Treatment Plant on Hookers Point.

Since 1976 the City of Tampa has replaced and relocated several segments of the force main and has upgraded the Krause Street Pumping Station. Due to the deteriorating condition of the approximately 9,000 If of the original pipe and the critical service the force main provides to the city's wastewater system, city officials embarked on the Harbour Island Force Main Replacement Design-Build Project.

This project includes all engineering and construction services necessary to modernize the remaining original components of the force main. This included the evaluation of pipe and pipeline route alternatives, preliminary surveys and soil sampling, selection of alternatives, final design and construction. The design-build process assisted the city in delivering a cost-effective, reliable wastewater pipeline that will serve future generations.

Kimmins Contracting Corp., a well-respected local civil contractor, which is celebrating its 100th year in business in 2023, was selected by the city as the design-builder. Kimmins teamed with Wade Trim to provide the engineering and design services. The key component of the project is the installation of approximately 9,000 lf of 48- and 54-in. force main pipeline from the Krause Pump Station to the Curren AWTP.

Crucial to the success of the project was a long, subaqueous crossing of the Ybor Turning Basin from the Gulf Marine shipyard to the Cotanchobee Park adjacent to Amalie Arena. A 3,156-lf, 78-in. diameter steel cased microtunnel was designed to be installed beneath the Ybor Turning Basin to reduce the length of the pipeline route and impact to the local businesses and residents. A 54-in. carrier FRP force main will be installed in the casing, making connections on both the west and east end of the Ybor Turning Basin.

To design and construct the microtunnel crossing, Kimmins partnered with Vadnais Trenchless Services Inc. (VTS), a Primoris Services Corp. company. VTS is a specialty general engineering contractor that has been in business for more than 60 years. VTS entered the microtunneling business in 1993 and has been successful-





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ly performing microtunnel installations ever since. Through the end of 2022, VTS had installed more than 265,000 lf of microtunneling throughout much of the United States.

Overview of Entire Project

VTS' scope of work consisted of designing, furnishing and installing a single reach of 3.156 lf of 78-in. OD steel casing by microtunneling method with the installation of 54-in. Pressure Fiberglass Reinforced Polymer Mortar (FRPM) carrier pipe for the new sewer force main. VTS was also tasked with the design and installation of two Secant Pile Shafts approximately 80 ft deep on either side of the Ybor Turning Basin. The jacking shaft was 40 ft inside diameter and the reception shaft was 20 ft inside diameter. VTS subcontracted the shaft construction to Ebsary Foundation Co. of Miami, Florida. The microtunnel crossing was installed primarily in limestone, clay and dense sands beneath the

Turning Basin. The entire tunnel alignment was approximately 60 ft below the water surface in Tampa Bay.

The launch and reception shafts were completed in late August 2022.

The MTBM (an MTS 1970) was launched in early September 2022. The MTBM was designed as a five-piece machine — cutterhead with face access and articulating steering joint, a second steering joint to assist in steering if soft ground was encountered, a decompression chamber section for three men, decompression operation section and the MTBM powerpack section — with an overall length of 53 ft. The jacking system deployed on this project was an MTS 1,250-ton indexing frame in the launch shaft assisted by six intermediate jacking stations (IJS), each with a capacity of 1,000 tons. The lubrication for the tunnel was accomplished with an MAT SCC-12-C colloidal mixing plant and 78 automated lubrication stations. VTS deployed one of its large Derrick separation plants

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and a 7,200 big bowl centrifuge working in tandem with a large Kubco centrifuge. The entire crossing was achieved using a strictly water-based slurry without bentonite. Trinity Products LLC (Tri-Loc) supplied the 78-in. OD x 1-in. thick weldless interlocking steel casing on the project. To mitigate risk during the crossing, VTS and Tri-Loc agreed to seal weld all the joints.

As the tunneling was beginning to hit its stride, Mother Nature intervened with Hurricane Ian, headed directly for Tampa on Sept. 28, 2022. VTS crews did extraordinary work to prepare in 48 hours, dismantling most of the topside equipment and welding off the tunnel with a steel bulkhead anticipating the shaft would be flooded. Fortunately, the storm turned east about 100 miles south of Tampa. The devastation to the area where the storm made landfall was enormous. VTS was fortunate to escape relatively unscathed and was back in operation in about a week.

Tunneling production was variable

across the drive as the MTBM encountered different materials from clay, limestone and Gneiss, near the end of the drive. The cutting tools were not changed during the 3,156-lf drive. The lubrication program was well planned and executed, resulting extremely low jacking loads of around 550 to 700 tons during jacking operations. Most impressively, the IJS's were not activated until the machine recovery process.

The carrier pipe in the tunnel is 54-in. HOBAS pressure pipe. Once installed annular grouting will occur and the tunnel will be complete.

This microtunnel is the third-longest completed in North America and the longest steel cased microtunnel in the Western Hemisphere. Great planning, 30 years of experience and great teamwork between Vadnais and Kimmins made this achievement possible.

Dan Schitea is vice president of Vadnais Trenchless Services Inc.







AUGUST FEATURE

PNEUMATIC PIERCING TOOLS Are central to california contractor

By Aaron James



ylmar, California-based Fibertel Communications specializes in fiber splicing, aerial and underground fiber optic installation, performing mainline stitch boring with pneumatic piercing tools. The company's president, Ben Preciado, initially started doing cable installation for cable TV in 1993. He transitioned to fiber-optic fusion splicing in 1995. In 2006, he decided to start his own company with a

bucket truck, compressor and a Vermeer Hole Hammer piercing tool.

Fibertel Communications has contracted for Spectrum Communications, a broadband connectivity service, since 2006, when it was known as Time Warner cable. "We cover four different zones for Spectrum," said Preciado. "We are one of their prime contractors." About 35 percent of the business is maintenance-related, fixing damaged fiber. The company performs mainly mainline work in the Antelope Valley, the San Fernando Valley and Ventura County. "We have good relations with most of the Spectrum managers, supervisors and coordinators in the area that we do work for, and we work on all types of projects from big to small." he said.

Stitch Boring Provides Advantages for Mainline Work

Even after years of operations, Fibertel Communications continues to use stitch boring for mainline work. Its crews use piercing tools to install conduit for TV cable and fiber. Preciado said there have been some changes in the bundle sizes since they started, though. "Customers started using 1.5-in. conduit but now prefer 3-in. conduit. So, we have a full array of Vermeer Hole Hammer pneumatic piercing tools sizes to accommodate whatever they need."

Stitch boring has proven effective in the often cramped and crowded spaces the company encounters, and they currently use Vermeer Hole Hammer quarter-turn pneumatic piercing tools. "We do a lot of the stitch boring on the commercial side because of all the utilications did recently add a Vermeer D23x30 S3 horizontal directional drill (HDD) to its fleet. "There are times where drilling is more efficient than stitch boring," explained Preciado. "For a long time, we subcontracted that work out to others. But this summer, we added an HDD crew of our own so we could better manage our day-to-day operations." to stitch boring. you only need two guys who don't mind digging," said Preciado. "In comparison, there are usually four to five people on a horizontal directional drilling crew."

Most of the time, the company runs three stitch-boring crews at a time, averaging 350 ft a day, with the conduit being 36 in. deep. While those crews are working in tight areas, the rig has



ties involved," said Preciado. "As long as everything is marked, there is not much of a difference with the directional drilling. We use missiles to pull a 3-in conduit. We also have a 4.5-in. Vermeer piercing tool."

Stitch boring does offer a smaller footprint. "You show up with a compressor and a piercing tool, and that's pretty much it," explained Preciado. "You don't have to close anything down. You don't have to dig big holes for your drilling machine."

Directional Drill Expands Capabilities

With that said, Fibertel Communi-

Pairing the HDD with a Vermeer trailer vac for handling the mud means the company no longer has to rely on subcontractors to take on more projects; the company can also pursue longer runs.

Not Going Away from Pneumatic Piercing Tools

While the addition of a drill is an important investment in Fibertel Communications' future, Preciado says pneumatic piercing tools and stitch boring will remain a staple of his business. "There is a labor advantage proven an effective choice along street rights of way where the crews have more space and longer bores are required.

While labor intensive, stitch boring has helped Preciado grow his business and establish outstanding relationships with some of the biggest companies in the fiber industry. Now with the addition of the company's first drill, Fibertel Communications is even better equipped to meet the demands of its customers.

Aaron James is product specialist with Vermeer MV Solutions.

AUGUST FEATURE

AUGER BORING AT O'HARE

Barbco BMTA Used to Complete Runway Crossing





s 2023 has come into full swing in the underground construction world, many engineers and constructors are faced with a similar question: What trenchless method is best? In today's world, there is surely no lack of effort from trenchless equipment manufacturers in touting their latest models with the newest innovations. For new projects, this means even more choices than ever in determining what methods are specified and ultimately employed for a trenchless crossing. While new machines offer advanced features and unique capabilities, the downside is the cost of purchasing new equip-



ment, especially in today's market with escalating prices. As a result, many contractors are wondering: "Is there another way?"

The team consisting of Drake Barbera, Clay Gillilan, and Tyler Nestleroad, of BGN Trenchless Consulting, with John Barbera, of Barbco Inc., had set their sights on a project facing the same question. The project involved the installation of 84-in. casing to be built by guided jack-and-



bore or conventional tunneling. The project, held by Archon Construction, of Addison Illinois, needed an answer. As the team reviewed the crossings on the project, 270 lf of 84-in. steel casing and 350 lf of 84-in. steel casing, the answer was clearly to tunnel the crossings.

In the past few years, new tunneling methods have been become increasingly popular for underground utility construction: Direct Pipe, microtunneling, large diameter TBMs – all of which are different methods to achieve similar results. As for the BGN team on site, none of these options were cost achievable, except for the Barbco BMTA. The BMTA (boring machine tunneling attachment) is similar to traditional TBMs, except that it uses a common jack-and-bore machine and auger to remove cuttings from the cutting face. With the Barbco BMTA, and the team's existing equipment provided a cost-effective solution for the O'Hare project.

On the project, the first crossing was 270 lf under a busy runway at the airport. Due to the airport restrictions, the team could only preform work from 10 p.m. to 6 a.m., creating a tight window for forward production. The team set up its Barbco 48-950 ABM, as any other jack-and-bore would be performed, and then moved on to the BMTA and accessories.

Following the complete setup in the jacking pit, it was time to launch. The team entered a face of swelling clay



and maintained line and grade by utilizing the electric-over-hydraulic steering system in the BMTA. As the tunnel progressed, wet and running sugar sand was encountered roughly 30 ft in. Upon seeing the sand, a simple adjustment to the "spoil doors" from the inside of the BMTA's cutting head mitigated risks of ground "hour glassing," which could ultimately lead to voids above the tunnel's path.

After about 10 ft of encountering running sand, the team was able to fully open the doors, and progress normally back into the clay. Throughout a span of 15 days under the tight restrictions of the airport and precise line and grade requirements of the crossing, the team entered the exit pit, perfectly in line with the preset structure for the casing to enter. Following a standard post survey, the team was able to simply remove the BMTA from the first piece of 84-in. pipe, pull augers like any normal jack-and-bore, and make way to celebrate the day.

In conclusion, an experienced contractor, such as Archon Construction, partnering with experienced teams, such as BGN Trenchless Consulting and Barbco Inc., can lead to successful results while utilizing more costeffective, project-capable equipment, ultimately moving a project forward successfully, and under budget.

Article provided by Barbco.

2023 UTILITY EXPO

EXHIBITOR PROFILES

UTILITY INDUSTRY RETURNING TO LOUISVILLE FOR 2023 UTILITY EXPO

hen it comes to exhibitions and education focused on the new installation side of underground utility infrastructure construction, there is no bigger event than the Utility Expo.

Boasting more than 30 acres of indoor and outdoor exhibit space, this biennial event heads to the Kentucky Exposition Center Sept. 26-28 for the 2023 iteration of the expo.

Early data by the Association of Equipment Manufacturers (AEM) – the show's owner and producer – indicates that the 2023 show will have 6 percent more exhibit space than the recordbreaking show in 2021. The show will feature more than 850 exhibitors and 50 innovative education sessions during its return to Louisville.

"Our team worked to create additional space this year while grouping similar product types together better, making it even easier for everyone to find what they're looking for," said John Rozum, show director of The Utility Expo. "That's important given the show covers more than 1.4 million square feet of indoor and outdoor exhibits."

Education Opportunities

Continuing education and professional development hours are important parts of the utility industry, and learning about new technologies and equipment is a focus for The Utility Expo. The show has updated session offerings based on attendee feedback, and utility pros can learn more and register for the show and education here.

New this year, The Utility Expo features a Safety Symposium, with 10 sessions and two different certifications from the American Traffic Safety Services Association (ATSSA).

The Utility Expo will offer more than 50 education sessions, including the following that allow participants to earn professional development hours (PDHs):

Advanced Horizontal Directional Drilling (HDD): Challenges and Good Practices for a Successful Installation - with Dr. Sam Ariaratnam (Tuesday and Wednesday). Utility pros will walk through considerations including geological conditions, locating technologies and mapping tools to improve jobsite productivity and end the job with a successful installation. Eligible for 1.5 PDHs.

Electromagnetic Underground Utility Locating - with Mike Parilac (Tuesday and Wednesday). Utility pros will walk through how electromagnetic locating instruments interpret information, letting the user better understand the accuracy of each measurement, and how to use improved knowledge of the devices to improve locating results. Eligible for 1.5 PDHs.

Safety Tech Trek - with Monica Rakoczy (Tuesday and Wednesday). Utility pros will take a tour of the new and exciting innovations in the utility and construction industry that will make safety easier and more manageable on the jobsite. Eligible for 1.5 PDHs.

Everything You Need To Know as a New Engineer - with Doug Houseman (Wednesday morning, Wednesday afternoon, or all day Wednesday). Engineers focused on the utility industry will take part in a conversation about how utility equipment is used, how to think about it on the jobsite and advantages and disadvantages of different types of equipment in different situations. Eligible for up to 8 PDHs.

The Jobsite from Planet Underground also returns to host hourly, free peer-to-peer demonstrations of Predictive Analytics Software, Electromagnetic (EM) locating, Ground Penetrating Radar (GPR), Subsurface Utility Engineering (SUE), Underground RFID Marking Devices and GIS Mobile Applications.

New Community Zone Experience

Utility and infrastructure pros are not only able to see and experience the latest overhead and underground infrastructure equipment and technologies at work, they will also have a new space to gather and recharge. The new Community Zone experience, located in the North Lobby, will feature daily events including presentations, live music, and samples of local products.,

"The Community Zone is both a place for attendees to gather and recharge, but also a gateway to the City of Louisville itself," Rozum continued. "We hope everyone that stops by this area is then inspired to explore this fascinating city at the end of the show day."

Another feature at The Utility Expo is the free Utility Rocks party Sept. 27 at 8 p.m., featuring local rock band The Crashers at Louisville's famous Fourth Street LIVE! outdoor stage.

For more information about the show including a complete exhibitor list, registration and accommodations, visit *theutilityexpo.com*.





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2023 UTILITY EXPO

EXHIBITOR PROFILES

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Barbco, a family-owned business, is a manufacturer of quality trenchless construction equipment

located in East Canton, Ohio. Brothers David, Tony and Jim Barbera lead a team of 80 employees who build and support a wide range of underground equipment designed with the underground contractor in mind. The flagship product for Barbco is its line of Auger Boring Machines (ABM) up to 96", with thrust capabilities of over 2 million pounds. Barbco manufactures two of the strongest Guided Boring units in the world, the Pathfinder and the Tribor, which is a three in one machine capable of Auger Boring, Guided Boring and Directional Drilling. In addition to this line up. Barbco produces a line of Horizontal Directional Drilling (HDD) that is known to have accomplished record breaking bore lengths. Rounding out the product line is a wide range of auxiliary equipment, accessories, and parts, marketed to support the needs of the underground industry.

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AUGUST FEATURE

ASCE MOP Addresses Direct Steerable Pipe Thrusting

Five-year Process Yields First-of-its-Kind Manual for

Popular New Install Method

hen it comes to new installation trenchless technologies, one of the youngest methods in the toolbox is the use of direct steerable pipe thrusting technologies for large diameter pipeline installations.

Direct Steerable Pipe Thrusting (DSPT) — commonly known as Direct Pipe — was first used in 2007 to install 48-in. diameter casing under the Rhine River.

"DSPT was developed by Herrenknecht AG, in Germany in the early 2000s under the trade name Direct Pipe with the first installation occurring in 2007. Subsequently it has gained increasing acceptance worldwide with more than 200 installations completed," says Jonathan L. Robison, P.E., principal, GeoEngineers Inc. He adds that in addition to Herrenknecht's Direct Pipe system, Prime Drilling GmbH makes a comparable system.

In 2010, the DSPT method made its U.S. and North American debut on a Florida Gas Transmission Co. project. REM Directional Inc. installed a 705-ft pipe string under Highway 70 in Arcadia, Florida as part of the utility's Phase VIII Expansion project.

In 2014, Michels Canada was the

By Mike Kezdi

first to use the method in Canada on a pipeline project. Michels installed a 1,122-ft, 42-in. pipeline under the Beaver River as part of the Inter Pipeline Ltd.'s Cold Lake and Polaris Expansion Program.

Early on, many conceptualized DSPT to be a hybrid of horizontal directional drilling (HDD) and microtunneling. Robison notes that the main innovation that differentiates DSPT and the already established new installation methods, is that the pipe thruster machine grips the outside of the pipe and pushes it into the ground. This, he notes, allows for long sections of steel pipe to be prefabricated, pre-tested, and installedsimilar to HDD pipe strings.

"DSPT uses microtunneling technology to excavate the ground and remove the cuttings while installing welded steel pipe in a one-pass, typically along a curved profile. It provides a niche capability between HDD and conventional microtunneling," says Robison. "Relative to HDD, DSPT can operate at lower annular fluid pressures (reducing inadvertent drilling fluid surface release risk), tackle tougher, granular ground conditions, and offer shorter and shallower installation geometry. Relative to conventional microtunneling, DSPT can launch and end close to or at the ground surface and can install welded steel pipe over much longer distance."

While many DSPT projects have

successfully been completed, a good practices type document had not been created for the method. To fill this void in the industry, the American Society of Civil Engineers (ASCE) Committee on Trenchless Installation of Pipelines (TIPS), as part of the Utility Engineering & Surveying Institute (UESI) convened a task committee to develop a manual of practice (MOP) for DSPT.

Robison was chair of the committee, which formally created, "ASCE Manuals and Reports on Engineering Practice, 155: Direct Steerable Pipe Thrusting." Commonly known as ASCE MOP 155, the MOP was released in March 2023.

"As distinct from a conference paper or journal article, an MOP is a consensus document written by a group of industry experts and then subsequently peer-reviewed by a second group of industry experts," says Robison. "Its purpose is to provide general information and specific due diligence, design and construction recommendations for project teams contemplating the use of the DSPT method."

Jeff Scholl, P.E., vice president of J.D. Hair and Associates, served as vice chair of the committee and credits Robison with helping bring the MOP to fruition. He also notes some of the nuances between how different sectors of the underground construction industry viewed the DSPT method that made a document like MOP 155 necessary.

"Jon deserves all the credit in the world for managing the development of the MOP and keeping all the various personalities on task and keeping things moving and helping us build consensus," Scholl says. "One interesting thing about the document is that Direct Pipe is still such a young technology, there really isn't even established terminology yet. Depending on your background, whether HDD or tunneling, you might have differing opinions on what to call something. For instance: Is it an exit point or reception point? Drilling fluid or slurry? [What] do you call the pipe that is being thrust into the ground? Thrust section? Lots of work even on simple things like terminology."

The process to create MOP155 began with a TIPS discussion in 2016. It was formally approved to proceed by ASCE in January 2018. The kickoff meeting for the MOP took place at the NASTT 2018 No-Dig Show in Palm Springs, California. In the ensuing five years, the MOP was written and reviewed by the primary authors (listed below) and a "cold eyes" peer review completed by a blue-ribbon committee before being approved and published by ASCE.

In addition to Robison and Scholl, the primary authors of MOP 155 are:

• Andrew Sparks, P.E., MOP Task

Committee Secretary, Laney Directional Drilling

- Joachim Engelhardt, Herrenknecht AG
- Andrew Finney, P.E., Jacobs
- Norm Joyal, P.E., McMillen Jacobs Associates
- Chris Lamont, P.Eng., Associated Engineering Alberta Ltd.
- Michelle Macauley, P.E., LEG, Macauley Expert Services
- Mary Neher, P.E., Bennett Trenchless Engineers
- Matt Smith Michels
- Nic Strater, PG, Brierley Associates
- Webb Winston, P.E., Williams

Helping contribute to the MOP and blue-ribbon panel are a cross-section of the underground infrastructure construction industry that includes academia, contracting, engineering, manufacturing and pipeline owners.

The 176-page MOP covers:

- History of DSPT;
- Overview of the DSPT method;
- Parameters that should be considered when determining the applicability and constructability of a potential DSPT project;
- Guidance on how to conduct site investigations that are critical to the DSPT process;
- Design process involved in the DSPT installation method, pulling techniques from both HDD and microtunneling;

- Installation stresses, evaluation, considerations, and calculations;
- Contract documents and forms, delivery methods, and potential legal issues associated with DSPT projects; and
- Overview of the construction phase of DSPT installations.

"As the DSPT technology has evolved beyond the proof-of-concept phase, and become increasingly accepted for applications around the world, an industry consensus document was needed to provide a reference for project teams to assist in the development, engineering, and delivery of DSPT installations," says Robison. He adds that the document is designed not only for the engineering community but system owners, contractors, equipment manufacturers, academia and any other underground infrastructure construction stakeholders.

To help acquaint the construction community with the DSPT method and inform the industry of the availability of MOP155, Robison is leading a four-hour workshop on Aug. 13, at the UESI Pipelines 2023 Conference.

Those interested in ordering ASCE MOP 155, can visit *asce.org/bookstore* and search for MOP 155.

Mike Kezdi is managing editor of Trenchless Technology.

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DUAL HDD INSTALLS

Key to Cape Cod Offshore Wind Farm

By James McIntyre

elcar Group recently completed the landfalls for the Vineyard Wind One project in Massachusetts using horizontal directional drilling (HDD). The project involved installing dual 32-in. HDPE outfalls into the Northern Atlantic Ocean as the critical link between land and sea for the Vineyard Wind One **Offshore Wind Farm.**

Melcar was contracted less than a month before operations began, adding to the risk profile of the already technically challenging installation. To overcome the lack of time between contract and execution, the contractor's large rig HDD team began the planning, design and preparation phases immediately, working in parallel to maximize efficiencies. Due to the magnitude and importance of this project for the future of the U.S. offshore wind industry, Melcar was committed to ensuring project success by being the key link between onshore







and offshore development.

While Vineyard Wind handled the community outreach, operations began with a site survey and the installation of a sound wall to isolate construction noise from the surrounding community. The Covell's Beach parking lot served as the landfall works package site and as a staging yard for pipe and materials for the onshore duct bank, restricting the working room to 160 ft by 110 ft. The site was outfitted with all-weather sanitation facilities, office containers, frac tanks, light towers and a crew drying cabin. HDD construction began by installing 54-in. surface casings to protect Covell's Beach, a highly trafficked vacation spot for locals and visitors during the summer. The 54-in. casing was supplied by Trinity Pipe, and installed with a TT Technologies 24-in Taurus hammer.

During casing cleanout, the drill team encountered boulders and





cobbles greater than 40 in. in diameter — an indication that the geotechnical reports were inconclusive and the engineered mud plan would need to be re-evaluated. Once the casings were cleaned out, the pilot drill on HDD 1 (East) was completed using a gyroscopic steering tool provided by Brownline. The pilot drill of HDD East exited the seafloor less than 60 in. off target and the BHA was recovered onto the barge deck and removed.

The reaming process started immediately following the successful pilot hole installation. To mitigate the risk for an inadvertent return, the reaming process was highly analyzed and engineered due to the high risks introduced by the abnormally shallow drilling depths required by the project owner. The ground conditions being that of boulders and poorly graded sand, the analysis of the risks of an inadvertent return represented low annular pressure limits. To minimize the annular pressures, a three-stage reaming process was performed. Starting with a 24-in., then 36-in., followed by a 48-in. final ream pass, Melcar's HDD team enlarged the borehole via forward reaming, with a Tonghand on the barge. A barrel reamer was pulled through the borehole



to ensure integrity prior to pulling in the product pipe. The processes employed resulted in an expeditious installation of the bore hole and there were no adverse environmental impacts on the project.

In order to offset schedule impacts

due to extreme offshore weather events during the start of the project, Melcar mobilized a second HDD machine and support equipment spread. The second HDD crew began the installation of HDD 2 (West) while HDD East was still in progress. This additional effort





advanced the project schedule and ensured the project owner of Melcar's dedication to completing the project on time and under budget.

HDD West was installed following similar guidelines as HDD East, taking into account the differing ground conditions encountered during the execution. Due to the varying nature of the ground found in the Northeastern United States, Melcar had initially mobilized with appropriate tooling to counteract all ground conditions including rock and mixed-face materials. This ensured that when altering ground conditions were encountered, the HDD team was able to adjust as needed with no down time. Although a boulder bed was encountered during both HDD installations, no inadvertent returns or releases occurred and downhole annular pressures were consistently monitored.

The dual installations were completed using Herrenknecht HK250C and Vermeer D330x500 rigs. Once both HDD installations were complete, demobilization was performed in parallel with conduit proofing, casing extraction and restoration works. The HDD conduits were proofed using a pig



launcher attached via an MJ-adapter. The casing annulus was filled with the specified backfill and extracted with a Taurus hammer and extractor kit. The 32-in. HDPE was left 5 ft below ground surface, and the Covell's Beach parking lot was temporarily restored.

The Vineyard Wind One project is the first commercial-scale offshore wind farm in the United States. Daily project management meetings were held between the contractors and employer to overcome project challenges included scheduling restrictions, inclement winter weather conditions and extremely tight design tolerances for final HDD placement. The project teams worked through the 2021 holiday season and extended hours to meet weather windows for both pipe pull installations. The operational durations per phase were completed in less than half the allotted time per the owner's schedule.

No safety incidents occurred during the completion of this project. Due to the high level of QA/QC present on all Melcar projects, all teams worked simultaneously. The dual installations were completed with no adverse effects to the shoreline or marine environments.

The success of the HDD landfalls on the Vineyard Wind One project established a standard for all offshore wind and landfall applications in the United States, and sets a precedence of success for efficient, environmentally friendly and safe installation procedures. Once

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completed, Covell's Beach will be fully restored, with clean, renewable energy transferring below the shoreline to power over 400,000 homes and businesses across Massachusetts.

James McIntyre is managing director at Melcar Group.

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MAXI RIG MAXI RIG MAXI RIG MAXI RIG Strength and New Markets

By Sharon M. Bueno

hings are looking positive, strong and steady for the horizontal directional drilling market these days, whether the work involves compact, midsize or maxi rig work. When's the last time all three market segments were in such good places?

On the compact and midsize side, contractors are continuing to feast on the smaller size projects, led by the telecom and fiber-optic sectors. For maxi riggers, there has been a resurgence in recent years, with increases in bidding projects, expansion into new market segments and more projects getting under way, much to the delight of the manufacturers and contractors that occupy space in the big rig market.

Historically, maxi rig work has been dominated and impacted (for better or worse) by the cyclical oil and gas industries; however, today, maxi rig work is being driven by the push into renewal energy, carbon capture, large diameters and even some fiber-optic and telecom work. This uptick and expan-



sion has given manufacturers and contractors a bounce in their step and a confidence in their forecasts when talking about the present and future of maxi rig work.

We reached out to a few rig manufacturers and contractors for their insight on the strengths and weaknesses of the maxi rig market, as well as the latest trends they are seeing.

Overall, the word is that maxi rig work has picked up in recent years, after being slowed a few years back by the oil and gas downturn. Even as that work has started to return, other doors opened for large diameter work, gaining interest and strength in renewable energy, offshore wind farms and carbon capture pipelines, among others.

"Maxi HDD has demonstrated tremendous resilience in traditional oil and gas markets," says Vermeer Pipeline sales manager Andy Bremner. "New market factors are driving growth in renewable transmission, infrastructure supporting data centers and water and sewer. All of which are seeing significant investments from both the public and private sectors. There is a lot of activity across the market, with plenty of domestic government funding and substantial growth projected."

Josh Ugrich is president of Minnesotabased contractor North Country Directional Drilling and he sees a lot of positives in the maxi rig market for 2023 and going forward. "In 2022, we started to see there may be large diameter pipe coming back through budgetary quotes, constructability reviews and word of mouth," he explains. "Now in 2023, the reality of large diameter pipeline is present and NCDD has had a part in that by installing numerous 36-in. lines. Looking into the future, between recent bids, constructability reviews and meetings, the push for large diameter pipe is here to stay, for a little bit anyway, where utilizing maxi rigs is a requirement for success.

"We see this trend frequently, though, [and] we also realize that this is typically always a roller coaster trend," he adds. "But between the large diameter pipe scheduled in the Southern portion of the country and plans in place for carbon capture, the need for the large maxi rigs is relevant in today's industry."

The American Augers team has seen a stronger 2023 for the big rigs, as well, most notably rigs in the 100,000- to 250,000-lb range for fiber-optic installs in urban corridors. "As the demand for fiber-optics continues to rise, maxi rig projects are increasingly being used in urban areas, presenting additional challenges in already congested jobsites," says American Augers product manager Richard Levings. "Contractors working on compact sites face significant concerns regarding equipment size and weight restrictions. These limitations make it difficult to accommodate the extra equipment necessary to support maxi rigs. Because of this, the maxi HDD industry has been adapting and evolving to address these challenges. One notable development is the increasing reliance on telematics and insights by operators to gain better visibility into their operations, resulting in a more productive and efficient process."

Cory Baker is chief operating officer at HardRock Infrastructure, a Texas-based contractor. Baker sees a lot of growth in the market, with the potential for even more to come, with contractors navigating larger diameters and longer lengths. He describes the current outlook as an exciting time to be in HDD. He tempers that excitement, pointing to a few areas that are negatively impacting maxi rig work: pricing and labor struggles.

"The bad part of our market is pricing. We have seen all our consumables go up from the actual rig to drilling mud and everything in between," Baker says. "The market has not allowed us to go up in price, but it has demanded more in safety and project management. With crossings getting longer and bigger, of course the risk and cost goes up as well and hopefully we will see a trend for the opportunity for our prices to go up."

All agree that the struggle for finding, hiring and retaining qualified workers for the HDD sector has not gotten any easier - it's been a challenge across the construction industry for many years. So, how can HDD make inroads in this industrywide problem? Baker and Ugrich offer some insight as they work to build their crews. Ugrich suggests that the industry needs to adopt a multi-faceted approach in attracting qualified operators to their ranks. "This includes investing in training programs, promoting the industry, providing apprenticeship opportunities, offering competitive incentives and collaborating with educational institutions," he says. "These efforts can help address the shortage of skilled operators and ensure the availability of qualified personnel will be available in the years to come."

Baker has been frustrated with the search for growing the HDD workforce, explaining that HardRock's part, the company has offered incentives and increased pay to no avail in retaining qualified and reliable crewmembers. "We have increased benefits and hourly wages and we still cannot find quality labor who can come in and learn our trade," he says. "At HardRock, we are managed by guys who worked their way up from the bottom. I always say there is so much opportunity in our industry and our next CEO and COO are already working out there in the field. We must find a way to make HDD sexy again to bring attention to our industry and get the youth back involved."

Market Growth

Our panel sees promising pockets of growth for maxi rig work and specifically point to renewable energy, carbon capture, undergrounding, fiber, and water and sewer.

Bremner notes that in North America, several utilities have begun to harden the electrical grid to improve reliability and resiliency. He also says that outside of North America, such as Europe, there is a push toward renewable energy that requires underground infrastructure to support electrical transmission and distribution. "With a lot of power being placed underground, these projects often require 100,000-lb [rigs] or larger," he says.

Baker and Ugrich both note the uptick in large diameter work as a critical cog in the HDD wheel, as well as the increased and commonality of intersect crossings. "The big movement in the maxi rig industry is the amount of 30-in. and larger pipe being installed currently," Baker says. "This is brought on by the increased demand for natural gas pipelines. The other big movement you are seeing is the increased number of intersects that occurring. This is due to the longer crossings being designed and the environmental factor using hydro fracture analysis to determine the amount of pressure the over burden soil can handle."

"We have also noticed a large demand for intersect method pilots with maxi rigs," adds Ugrich. "This style of pilot construction has become more and more common and does provide some flexibility for the contractor during the construction of the pilot and even so while reaming the hole, depending on the size of the ream pass and formations down hole encountered."

HDD and Electrification

Success of electrification and hybridization of the HDD market depends on various factors, such as technological advancements, cost considerations, infrastructure development and regulatory frameworks. But the positive impact of electrification and hybridization is tipping the scale toward moving in this direction.

"Lower environmental impacts, minimizing noise pollution and regulations are leading factors for adoption as the industry adapts to the changing landscape," Levings says. "For example, electrification can lead to reduced carbon emissions and lower environmental impact compared to traditional diesel-powered equipment. The use of electric or hybrid systems can contribute to cleaner air quality and support sustainability initiatives."

Ugrich adds that as governments and industries continue to prioritize renewable energy projects, such as undergrounding cables for wind and solar farms, the demand for environmentally friendly HDD solutions and equipment grows with it. "It's very possible that the electrification and hybridization of HDD equipment could have a positive impact such as through environmental sustainability, cost-savings with fuel, reduced noise and vibrations and improved efficiency," he says, cautioning there may be some negative aspects to this as most of the work is away from available power sources. "There will definitely need to be more studies and baseline testing to see how it will truly shape the future of the industry."

Baker believes electrification/hybridization to be the HDD industry's future, noting that the HardRock team is studying how electric rigs will benefit their business. "Just imagine if on municipal projects in town that you could take a drop from the grid and run your rig with nearly no decibels," Baker says. "This to me is the future. I do believe the manufacturers have some more work to do to be able to take power from the grid with the inconsistent power that goes through the grid. When we reach this point, I do believe that the electric rig will take over this work."

Sharon M. Bueno is editor of *Trenchless Technology*.



CROSSING THE SCHUYKILL RIVER Extensive Planning, Adjustments and Finally Success

Il contractors have encountered a project at one point or another where upon initial review of the drawings, the crossing looks straightforward, but the more you delve into the contract documents, a seemingly standard project becomes more complex.

Beyond contractual requirements, oftentimes there are unforeseen difficulties that crop up during the construction process. As all horizontal directional drilling (HDD) contractors know, you don't really know what you're getting into until you put the bit in the ground. A full redesign, monitoring soil settlement, and encountering wood and other debris downhole were only a few of the challenges Carson Corp., of Lafayette, New Jersey, encountered on this project crossing the Schuylkill River in South Philadelphia, Pennsylvania.

The 1,320-ft crossing of the Schuylkill



The initial design of the crossing was deemed not favorable due to a lack of information related to both the required drill parameters and existing piles and bulkheads on either side of the river. The Carson engineering team completed an extensive survey and redesign of the trenchless crossing. The drill alignment was adjusted to split a 20-ft gap in existing H-piles, approximately 1,000-ft out from the entry point. Additionally, the profile was deepened to allow for sufficient separation between existing bulkheads while staying above the bedrock. Finally, installation force calculations were completed to ensure the integrity of the casing and product pipes would not be impacted during the installation.



Concurrently with the redesign, the operations team, led by Trenchless Division vice president Colin Harris and project manager Nate Hubbard, focused on obtaining approvals from various agencies, as well as developing plans to satisfy the additional requirements on the construction side. In addition to the basic breakover, traffic control, soil management, and testing plans, Carson had to provide a detailed settlement monitoring plan to measure any settlement that may occur during the HDD installation. The settlement monitoring process consisted of measuring elevations at 18 locations along the alignment in order to check if any settlement occurs due to the HDD process.

After all plans were approved and all pre-construction activities completed, casing installation could commence. Carson installed a 60-in. steel conductor barrel casing to a depth of 25-ft below ground surface which meant installing approximately 120-ft of centralized casing. The casing served to mitigate any inadvertent release of drilling fluid, as well as the risk of settlement throughout the shallow portion of the HDD.

Upon completion of casing installation, one of Carson's three American Auger 440s was rigged up at the entry point.





The bottom hole assembly consisted of a 10.625-in mill tooth bit and Carson's Vector Magnetics Paratrack2 system and gyro module. The pilot hole was completed efficiently in approximately four shifts. After the completion of the pilot hole, Carson's American Auger 210 was moved into place on the exit side to act as a catch rig, ensuring consistent torque and face pressure on the reamers during the hole opening passes. The original execution plan for the reaming phase consisted of three hole opening passes of 24 in., 36 in. and 48 in.

During the reaming phase, subsurface conditions varied slightly from what was expected in addition to encountering wood and other debris throughout the alignment. Due to these factors, Carson adjusted the drilling plan slightly to ensure the crossing was a success. The first was to perform planned tooling trips where the reamer was tripped out of the borehole. This process helped to clear the reamer of any blockage and remove any debris that had settled in the bottom of the borehole. The second adjustment was to complete an additional ream pass, bringing the final borehole size up to 54in. The larger ream size served to both add additional clearance for the casing pipe and to clear additional debris from the borehole. After the ream passes were completed, a swab pass was completed to clean the borehole and preparation for pullback commenced.

Prior to pullback, Carson's certified fusion crew fused the pipe and strung it out into two strings in a nearby paved area. The actual stringing alignment required clearing and grubbing including the construction of an air bridge over a nearby roadway perpendicular to the pipe stringing alignment. Timed perfectly with the completion of the swab pass, the pipe was pulled into the stringing alignment and connected to the drill string for installation. Buoyancy control was utilized to reduce the calculated pull forces on the 36-in. casing pipe and to smooth out the installation process.

Another unique caveat, due to all agencies and stakeholders involved, pipe pull needed to start Saturday evening and be complete before Monday. Timing worked out and pipe pull started late in the afternoon and was completed early in the morning the following day without issue. The only downtime Carson experienced during pullback was due to one mid-fuse completed during pull back operations.

The Schuylkill River Crossing was very involved from start to finish both from a planning aspect and from having to react to surprise conditions while drilling. The Carson team had nothing to complain about in the end as the project was completed on schedule and under budget. Carson CEO Bryce Carson applauded superintendent Sam Hays and the Carson field personnel for being able to make adjustments in the field to ensure a successful installation.

This article was provided by Carson Corp.

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NORTH AMERICAN SOCIETY FOR TRENCHLESS TECHNOLOGY

TRENCHLESS TIMES

2024 NO-DIG SHOW



Municipal & Public Utility Scholarship Award

"This event allows you to meet and talk with manufacturers, installers and end users who are not normally the case at other shows. Thank you for the opportunity." – Joe Devito, Beaufort Jasper Water and Sewer Authority

NASTT's 2024 No-Dig Show Municipal & Public Utility Scholarship Award has been established to provide education and training for North American municipalities, government agencies and utility owners who have limited or no travel funds due to restricted budgets. Selected applicants will be awarded complimentary full conference registration to the NASTT 2024 No-Dig Show in Providence, Rhode Island, April 14 – 18. Registration includes full access to all exhibits and technical paper sessions... all you have to do is get yourself to the conference! Certain applicants will also be eligible to receive overnight accommodations. Selection based on responses to the application as well as need.

Apply today! Application deadline is October 30, 2023. nodigshow.com/no-dig-show-municipal -public-utility-scholarships



NO-DIG NORTH

The NASTT Canadian chapters work together to host No-Dig North, a must-attend event for underground infrastructure professionals doing business in Canada. The show consists of two days of technical paper presentations and industry exhibits in the trenchless technology field. Who Should Attend? The following professionals will benefit from this conference:

Municipalities: public works officials, construction and rehabilitation personnel, engineers, senior city staff and elected officials

Contractors: sewer, water, gas utility, industrial, pipeline, damage prevention and safety

Consulting Engineers: firms serving the underground infrastructure and industrial markets

Gas/Electric Utilities: officers, managers, construction, maintenance and rehabilitation personnel

Pipelines and Energy: officers, managers, construction and maintenance personnel for transmission pipeline construction, rehabilitation and maintenance

Upcoming CONFERENCES, COURSES & EVENTS

September 28 Gas Good Practices VIRTUAL

October 11 *Trenchless Elevated 2023* Golden, Colorado, USA

October 17-18 *ISTT International No-Dig* Mexico City, Mexico

October 23-25 **No-Dig North 2023** Edmonton, Alberta, Canada

November 16 Municipal Sewer Grouting Good Practices VIRTUAL

December 13-14 **Pipe Bursting Good Practices** VIRTUAL

April 14-18, 2024 **NASTT 2024 No-Dig Show** Providence, Rhode Island, USA

October 21-23, 2024 **No-Dig North 2024** Niagara Falls, Ontario, Canada

March 30 – April 3, 2025 **NASTT 2025 No-Dig Show** Denver, Colorado, USA

March 29 - April 2, 2026 NASTT 2026 No-Dig Show Palm Springs, California, USA

For more information and the latest course offerings, visit nastt.org/training/events.

Industrial Facilities: construction and maintenance personnel, engineers and environmental assessment personnel

Damage Prevention: personnel involved in managing damage prevention and safety issues

Join us October 23-25 at the Edmonton Convention Centre in Edmonton, AB. Visit *nodignorth.ca* for details and registration.

NASTT.ORG

nassco report

By NASSCO Health and Safety Committee Chair Dennis Pivin, CSP

WORK ZONE Safety and Traffic control

ccording to the Bureau of Labor Statistics, transportation incidents and workers struck by vehicles account for the highest number of fatal work injuries. Especially vulnerable are utility workers that work in areas where there are moving vehi-

cles. To prevent this from occurring, the rules of traffic control and work zone safety are important in order to keep employees and the general public safe at all times on or near the jobsite.

Companies must pay close attention to and develop solid traffic control plans prior to starting any work. In addition, construction workers must also wear the proper retro-reflective Personal Protective Equipment (PPE) in order to be as visible as possible to construction equipment operators, as well as motorists. The focus of this article is to review the use of traffic control devices and worker PPE when conducting work on public roadways.

Let us begin by developing a better understanding of the purpose of traffic control devices. What are these devices? Traffic control devices include safety cones, candle sticks, barricades, and signage. These devices help promote traffic safety by providing the orderly movement of all motorists on the roadways and around the construction work zone. Traffic control devices help notify road users of the construction ahead and provide a level of warning and guidance necessary for the safe and efficient flow of the traffic.

In the trenchless industry, traffic control can span night or day for long hours and in all types of weather conditions. The contractor should create a traffic control plan which will involve designating part of the road for a work area. How this is executed depends on the type of road where the crew may be working.

On high-speed roadways, the traffic control plan may have traffic diverted around the work area by using advanced signage, warning motorists of upcoming construction work, barricades, illuminated signage, arrow boards, message boards, traffic control drums and cones. Typically, cones or candlesticks can define a new centerline to divert traffic around the work zone. In some cases, it is necessary to close a lane. This special setup will likely require a trained flagman or other specialized traffic control methods.

On lower speed roadways, a worksite setup will typically have warning signage in advance of the actual work area. In addition to signage, a crew will divert traffic by placing a number of cones around the work zone. These cones are set up to direct traffic so that



motorists can clearly see the work zone and have plenty of time to adjust speed and safely motor around the workers.

One of the most valuable reference tools one should consider using for designing traffic control plans is the Manual on Uniform Traffic Control Devices (MUTCD). This manual is published by the Federal Highway Administration (FHWA) and provides information regarding design, placement, and guidance for traffic control devices in the Unites States. The primary purpose of the MUTCD is to provide uniformity of traffic control and the devices used. Keep in mind that some states have adopted supplements to the code which need to be referenced when applicable.

In addition to traffic control devices, the PPE that site workers wear helps to keep them out of danger by making workers as visible to motorists as possible. High visibility safety clothing is specifically designed to increase the visibility of the employee in the work zone, especially during low-light conditions such as nighttime work, rain, fog, or any other type of inclement weather.

Safety vests that meet the American National Standard Institute (ANSI) requirements combine both fluorescent and retro-reflective materials that enhance the visibility of workers under even the most compromised lighting conditions. The ANSI standard also specifies the vest dimensions and outlines the amount of retro-reflective tape for a specific class. For example, a Class 3 vest will have a higher visibility than a Class 2 vest, due to the amount of reflective material on the vest.

In order to keep employees safe in the traffic work zone, it is essential that companies pay close attention to developing a solid traffic control plan prior to starting any work, provide the crew with the proper traffic control devices (signage, cones, candlesticks, signal boards) to execute the traffic plan, various styles of work zone protection (concrete, water, sand collapsible barriers), and trained flaggers, when necessary. In addition, ensure that all workers have the proper retro-reflective PPE in order to be as visible as possible to motorists. When all of these practices are combined, it is the best possible scenario to protecting the workers and the general public in traffic work zones.

To learn more about safety best practices, visit NASSCO.org/Safety. For specific safety questions, email Safety@NASSCO.org.

TRENCHLESS EVENTS CALENDAR



*All events are current as of July 20. Please check the event's website for updates.

RED BOX DENOTES NOTABLE EVENTS

AUGUST

- 8-9 2023 Water Finance Conference Cleveland, Ohio Web: waterfinanceconference.com
- 12-16 UESI Pipelines 2023 Conference San Antonio, Texas Web: pipelinesconference.org
- 14-17 2023 DoD Corrosion Prevention Technology and Innovation Symposium Tucson, Arizona Web: dodcorrcon.org

- 22-24 The Water Expo Miami, Florida Web: thewaterexpo.com
- 22-24 The Energy Expo Miami, Florida Web: theenergyexpo.com
- 27-30 PWX 2023 San Diego, California Web: pwx.apwa.net

SEPTEMBER

11-13 Breakthroughs in Tunneling Short Course Denver, Colorado Web: tunnelingshortcourse.com

- 11-15 IPLOCA 2023 Convention Vancouver, British Columbia Web: iploca.com
- 24-26 Tunnelling Association of Canada 2023 Conference Toronto, Ontario Web: tac2023.ca
- 26-28 The Utility Expo Louisville, Kentucky Web: theutilityexpo.com
- 28 World Trenchless Day Global Celebration Web: worldtrenchlessday.org

30-Oct. 4

WEFTEC 2023 Chicago, Illinois Web: weftec.org

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