

INFRA 2013 CONFERENCE

DECEMBER 2-4, 2013
QUEBEC, CANADA

“HISTORY OF THE TRENCHLESS TECHNOLOGY
INDUSTRY AND *TRENCHLESS TECHNOLOGY*
MAGAZINE

Bernie Krzys

CEO & Publisher

Benjamin Media/Trenchless Technology



Centre d'expertise et
de recherche en
infrastructures
urbaines

Trenchless
TECHNOLOGY™

BENJAMIN
MEDIA

PRESENTATION HIGHLIGHTS

- A look at the past 20 years of the trenchless technology industry
 - Who the players were vs. now
 - Innovations in the industry
- How *Trenchless Technology* has evolved over the last 20 years.
 - How and why it was launched
 - Early make up of *Trenchless Technology*
 - Benjamin Media today
- Trenchless technology industry potential.
 - Government as the driving force
 - Infrastructure issues

Major Trenchless Technology Disciplines

Rehabilitation

Pipe Relining

Sliplining

Pipe Bursting

Manhole Rehabilitation

Pipe Inspection

New Installation

Auger Boring

Microtunneling

HDD

Piercing Tools

Pipe Ramming

Rehabilitation

Pipe Relining – Insituform Story

- Started by Eric Wood of the U.K. in 1970
- Became Insituform
- Originally a licensor with licenses granted around the world
- Many, many protected patents
- About 10 licensees in North America
- Insituform Mid-America based in St. Louis, Missouri became largest world-wide licensee and bought all licenses world-wide.
- Became Insituform Technologies
- Established itself as a contractor
- Most patents have now expired
- In 2011, bought Bayou, Corrpro, and CRTS all related to oil & gas market
- In 2011 bought Fyfe - - fiber reinforced polymer
- In 2011, changed name to Aegion- now \$1.0 billion NASDAQ publically traded US company

Insituform Has Passed The Test Of Time.



In London, England, over 20 years ago, a new method of pipe reconstruction was first used to reconstruct a buried sewer and save the city's historic streets. The new method was called Insituform, and as a result, a new industry—Trenchless Pipeline Reconstruction—was born. This year samples from that original installation were removed and tested. The 20-year-old Insituform® was found to still exceed today's requirements for

strength by at least 30%. Inspectors also said the Insituform pipe "looked as good as new." Their inspection proved once again that Insituform will stand the test of time. You no longer have to put up with digging, danger or disruption. No more leaking pipes and expensive emergency repairs. And now, Insituform can even rebuild service laterals. Insituform can solve your buried pipe problems. Call or write Insituform today.

INSITUFORM OF NORTH AMERICA, INC.

3315 Democrat Road • P.O. Box 181071 • Memphis, Tennessee 38118 • Phone: (901) 363-2105 • Fax: (901) 365-3906

1-800-234-2992

Circle 27 on reader service card

WATER & WASTEWATER

LEADER

FOR OVER 40 YEARS, INSITUFORM HAS BEEN A
LEADER IN TRENCHLESS PIPELINE REHABILITATION.



Insituform's global expertise, project management capabilities and ISO-certified manufacturing processes enable us to successfully install more cured-in-place-pipe (CIPP) across the world than any other company.

Be sure to visit us at the No-Dig 2012 Show
Booth #913 in Nashville, TN



Insituform
An Aegion Company

800-234-2992
www.insituform.com

Insituform Technologies, LLC is a subsidiary of Aegion Corporation.

© 2012 Aegion Corporation

Pipe Relining Mainlines and Laterals

Am-Liner

BKP Berolina

Channeline

CIPP Corp.

Inliner

Infrastructure Repair Systems

Master Liner

National Liner

Perma-Liner

Reline America

Rib-Loc

Sekisui SPR

Ultraliner

Aquapipe

Brandenburger

City Liner

Easy Liner

Insituform

LMK

Maxliner

Premier Pipe

R. S. Technik

RelineEurope

Trolining

Starline

Plus, homemade lining systems

Various manufacturers of lining material

Numerous providers of resins

Lateral Rehab Methods

- **Laterals and I/I**
- -According to a 2013 *Trenchless Technology* survey, when relining mainlines, more than 50 percent of respondents indicate that they address laterals at the same time (44 percent address laterals and manholes, 7 percent address laterals only)
- -According to published reports, laterals can contribute up to 50 percent of infiltration entering a sewer system, making it a large contributor to sewer overflows.

Lateral Rehab Methods

- CIPP
- Pipe Bursting
- Grouting

Issues related to Lateral Rehab

- **Difficult to access (remotely controlled equipment or open cut)**
- **-Difficult to locate**
- **-Ownership differs according to local authority**



Sliplining Innovations

- Fusible PVC pipe
- HDPE
- Fiberglass reinforced pipe
- Use of HDD rigs

Pipe Bursting

- An exciting innovation that developed from piercing tools
- Percussive head or static head
- Powerful hydraulic winch is critical
- Only trenchless rehab method that can upsize existing pipe
- HDPE and PVC has given pipe bursting a major boost
- Initially introduced for wastewater, now expanding into drinking water
- British Gas had patents world-wide for many years

Manhole Rehabilitation

- Many materials:
 - Cementitious
 - Epoxy
 - Polyurethane
 - Chemical Grouts
 - Plastic
- Principal systems:
 - Spray on
 - Spincast
 - Trowel
 - Formed-in-place
- Which system to use depends upon wastewater make-up, original material, and geology

Pipe Inspection Innovations

- CCTV had a major start in Europe, specifically Germany
- Pan and tilt cameras big innovation
- Zoom cameras
- Ultrasonic /laser profiling/scanning
- Acoustic -- “Smart Ball” by Pure Technologies and SewerBatt some of the newest ideas
- Pressurized launch, CCTV, hydrophone technology, and acoustic sonde – Investigator + and LDS1000 by Global Asset Management Engineering, the latest new ideas
- More compatibility with GIS

New Installation

Auger Boring Innovations Over 20 Years

- Safety Changes
- Cased bores
- Spoil door
- Signage
- Remote shut off
- Hydraulic track retraction
- Larger diameters – Up to 96"
- Better steering

Auger Boring over 20 Years

Manufacturers 20 Years Ago

American Augers

Bor-It

Michael Byrne

McLaughlin

Ditch Witch

Manufacturers Now

American Augers

Bor-It

Michael Bryne

McLaughlin

Barbco

Robbins

- **Pipe ramming now competitive with auger boring.**
- **Shorter distances**
- **Originated with piercing tools**

Directional Drills for Every Application

From creek and river crossings
to freeways or front lawns,
there's an American Directional Drill
that's sized right
for your utility or pipeline work.



DD-140 with Optional Driver's Cabin



Operator's Console

Model	Thrust / Pullback
DD-320	500,000 lbs.
DD-250	250,000 lbs.
DD-140	140,000 lbs.
DD-100	100,000 lbs.
DD-70	70,000 lbs.
DD-40	40,000 lbs.
DD-15	15,000 lbs.

UNDERGROUND TECHNOLOGY, INC.



Corporate Headquarters

3310 Columbus Rd., P.O. Box 460 • Wooster, OH 44691 U.S.A.
Phone 216-264-6666 • Toll Free 800-321-4590 • Fax 216-264-5514

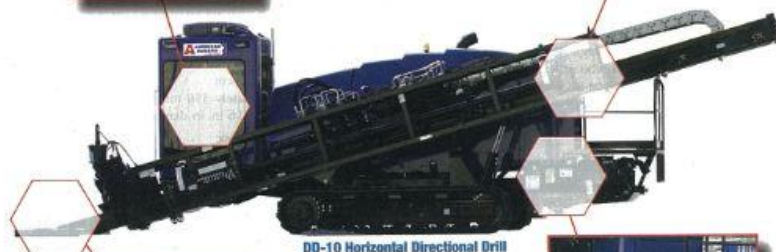
**A AMERICAN
AUGERS**
an Astec company



Operator's Cabin
Climate controlled, microprocessor control system, mud pressure gauge, digital mud flow meter and rotary tachometer, pressure control for rotary thrust, variable rotary speed, ergonomic joystick.



Rack and Pinion design is a field-proven feature that maximizes overall equipment performance, strength and reliability.



DD-10 Horizontal Directional Drill

Providing the most rotary torque in its class



On-Board Mud Pumps, Compact self-contained design, Rear Thrust Stabilizers.



NEW! Optional Quick Disconnect Anchor Plate allows for multiple drilling angles.

Productivity Defined

At American Augers, we define productivity in our self contained mid-size horizontal directional drills designed to work in compact hard-to-reach jobsites. These horizontal directional drills provide a climate controlled operator's cabin, Quiet Pak® noise reduction system, rear thrust stabilizers and an optional quick disconnect anchor plate for multiple drilling angles.

American Augers was the first manufacturer to eliminate chain and utilize a rack and pinion carriage design which is now the industry standard. Our rack and pinion drive provides smoother carriage movement, more precise operating control and enhances overall equipment performance, strength and reliability. **American Augers also offers FACTORY DIRECT for all your underground construction needs.**

Maxi-Rig Directional Drills • Auger Boring Machines • Product Tooling & Accessories • Mud Pump & Clearing Systems • Oil & Gas Drill Rigs • Mid-Size Directional Drills

AMERICAN AUGERS, INC an Astec Industries Company • 135 US Route 42 • P.O. Box 814
West Salem, Ohio 44287 • 800-324-4930 TEL 419-869-7107 FAX 419-869-7727 • americanaugers.com



36/42 Horizontal Boring Machine

You'll like
the color —
MONEY GREEN



36" or 42"

width slot with
simple change-over kit,
using the same engine and
drive train. Drive Train and power
pack stay together for power-pack lifts. No
tedious disassembly or reassembly. **Balanced**

Weight: power-pack and base unit weigh almost the
same for two easy lifts. **Dual Compensating Hydraulic Pump:**
more engine power to turn the auger when the going gets tough.

Turbocharged 24 hp Deutz air cooled engine. Sight Gauge on extra
capacity hydraulic oil tank. **Big tool box** built into front of rack.

Barbco INC.

5037 Southway Ave., S.W. ■ Canton, OH 44708

Main Suppliers of Horizontal Earth Boring Machines, Augers, and Tunnel Equipment

(216) 478-8300 ■ FAX (216) 478-8306

Toll-Free U.S. and Canada: 800-448-8934

All track
guaranteed 1/2"
thick steel



Equipment Dealer
800-448-8934
216-478-8300
19000 N. Highway 100, P.O. Box 100
Canton, OH 44708

Dramatic Results

Achieve your boring tasks with dramatic results...on time...on target...everytime.
Whether rock or soft ground, count on Barbco Palminders, Directional Drills and
Spring Machines to deliver bores with power to spare.

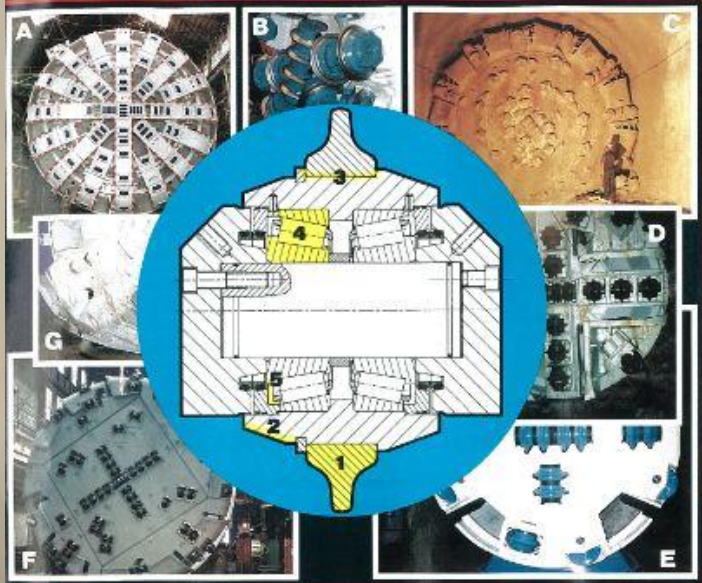
Call Barbco for all of your underground needs.

Barbco

barbco.com • 1-800-448-8934

215 Peck Rd. S.E. • East Canton, Ohio 44703-0492

ROBBINS THE BEST CUTTERS ANYWHERE IN THE WORLD... ALL TBM'S.



The Right Cutter For Every Tunnel Boring Machine . . . Every Ground Condition . . .
 State-Of-The-Art Engineering With Every Cutter Sold. Circle 40 on reader service card

Interchangeable Retrofits For Existing Equipment
 Complete New Cutter Design For New Equipment & Existing Equipment

Mitsubishi 10.8M E.P.B. - France - 18" Dia. Reverse Back-Load Design
 Boretec Cub 2-M T.B.M. - Canadian Mine - 33" Dia. Boretec Front-Load Design
 Robbins 8.2M Reversed Rock Machine - Iron Ariseles - 15 1/2" & 16 1/2" Dia. Front-Load Design
 Hitachi 8.2M E.P.B. - Milwaukee - 17" Dia. Boretec Back-Load Design
 Lami 9.7M Shield - Cincinnati - 13" Dia. Boretec Back-Load Design
 Robbins 3.8M T.B.M. - Chicago - 17" Dia. Front-Load Design
 Jones 4.4M T.B.M. - Nova Scotia - 15 1/2" Dia. Front-Load Design

Standard Cutter Type & Size

Diameter	Standard/Lease			
	Robbins	K.O. Corp.	Wirth	Boretec
18"	✓	✓	✓	✓
17"	✓	✓	✓	✓
16 1/2"	✓	✓	✓	✓
16"	✓	✓	✓	✓
15 1/2"	✓	✓	✓	✓
15"	✓	✓	✓	✓
14"	✓	✓	✓	✓
13"	✓	✓	✓	✓
12"	✓	✓	✓	✓

- Boretec Cutter Features**
- **Disc Design** - Boretec uses a special alloying that is compatible with the heat treatment process to produce very wearing discs. The manufacturing process is strictly controlled to ensure consistent quality.
 - **High Hardness** - Not only are some projects known for their high strength and abrasive conditions, Boretec has also made a special bearing process to improve the life of the equipment. The bearing of Boretec provides the best life and reliability.
 - **Wide Disc Fit** - On Boretec equipment, we use the actual hole (70% accuracy) measured the disc to fit. This is usually done and for a specific tolerance of 0.001 to 0.002 inches. This precision allows the addition of 0.001 to 0.002 inches of fit in each disc. This fit is not only 100% accurate, it also allows the discs to fit a range of disc hole sizes within a hole, which is not possible for other designs.
 - **Existing Equipment** - The design of Boretec is standard. Boretec is a cost-effective solution for existing equipment.
 - **Discs** - Boretec uses a special alloying that is compatible with the heat treatment process to produce very wearing discs. The manufacturing process is strictly controlled to ensure consistent quality.
 - **Discs** - Boretec uses a special alloying that is compatible with the heat treatment process to produce very wearing discs. The manufacturing process is strictly controlled to ensure consistent quality.

ROBBINS
 The TBM Equipment Engineering Company That
 Can Supply All The Answers On TBM Tunnelling.
 Boretec Inc.
 P.O. Box 39429
 28110 Hill Street
 Solon, OH 44158 U.S.A.
 Telephone: (216) 246-3000
 Telex: 510913002
 Telefax: (216) 243-1793



Support as Dependable as Our Machines
 From launch to breakthrough, Robbins is with you 24/7.

No matter the location, every SBU project launches with Robbins field service on-site. Whether you purchase or lease, work in hard rock or mixed ground, are a tunneling expert or novice, we'll be with you the whole way.

On a recent SBU project in Afghanistan, three Robbins technicians helped the excavation team locate and avoid underground land mines. Working on-site throughout the project, the technicians enabled the team to double production—advancing at five inches per minute upon completion.

Robbins
 RELIABLE | RESPONSIVE

THE Robbins COMPANY.COM

Microtunneling Innovations over 20 Years

- Curved tunnels
- Pilot tube microtunneling
- Guidance systems that automatically adjust the cutter head
- Interjack stations
- Jacking Pipe
 - Fiberglass reinforced pipe
 - Polymer concrete pipe
- Boring fluids uniquely formulated for microtunneling

Microtunneling over 20 Years

Manufacturers 20 Years Ago

Soltau

Iseki

Herrenknecht

American Augers – just 1 system

Manufacturers Now

Iseki

Herrenknecht

Akkerman

RASA

MTS

Bortech/Icon Tunnel Systems

- **Japan is world leader**
- **Germany in number 2 spot**
- **North America still not a dominant player**
- **North American Microtunneling Association - NEW**

HDD Innovations over 20 Years

- As-built mapping
- Guidance systems that project exit position
- Ground penetrating radar
- Rock drilling
- Remarkable cutting heads and reamers
- Wide range of drilling fluids
- Self contained rigs
- Rack and pinion vs. chain drive
- Enormous rigs
- Intersect drilling projects

HDD Manufacturers and/or Rigs out of the Market

- HDD started in 1974 by Martin Cherrington of Sacramento, California who completed the first project for Pacific Gas & Electric in California, it was a canal crossing
- Earth Worm – ceased operation
- Sure Shot – Melfred Borzall stopped producing rigs
- Bor-Mor – bought by Case, than American Augers and now owned by Toro
- Horizontal Rig & Equipment – bought by Vermeer
- International Boring Systems – bought by Ditch Witch
- Underground Technologies – ceased operations
- ARDCO – ceased operations
- Contractors Manufacturers Services – bought by Robbins, than Universal HDD
- Stewart & Stevenson – ceased operations
- Ingersoll Rand – stopped producing rigs
- Maxi-Sneaker - StraightLine stopped producing rigs

Remaining HDD Manufactures

- Toro – small rigs only
- American Augers
- Ditch Witch
- Vermeer
- Barbco
- Herrenknecht
- Tulsa Rig Iron
- Prime Drilling
- TRACTO-TECHNIK/TT Technologies
- Terra-Jet
- Various Chinese Manufacturers

UNBEATABLE PITCH

If you own a guided boring system or your drilling about, try to see, compare the job!

SPEED. DCI's latest generation DigTrak™ E for existing guided boring systems available today. The first, and only, guided boring system with depth, roll and pitch to 20 degrees. And, no limitation of working to 26 feet. For faster drilling and more precise results, use the DCI 2600 to bore and grade to size. With real-time digital display.

PRECISION. The DigTrak E is designed specifically for guided boring. It's a piece of 2600 DCI. It's being ready to position and full diameter of the drilled hole from precise cutting, straightness, and more production spending cost.



MINUTE. DigTrak E's 2600 is the most accurate product in the world. This means great production for you. And, you can see the DigTrak E's 2600's system can get to 26 feet in a few weeks of time.

DCI's latest generation E system is for your existing system. Faster drilling, real-time display, superior results. Call for details.



THE FASTEST DRILLING SYSTEMS
IN THE WORLD
1-800-288-3873

DCI

DIGITAL CONTROL INCORPORATED™

DRILL POWER



Your drill rig may have a million pounds of thrust and plenty of power. But it's not coupled with precise guidance and real-time accuracy. It may not be pulling its weight.

Enter the next generation DigTrak™ E3e. Five transmitter frequency options and a downhole, dual-frequency transmitter for greater accuracy. Intuitive "ball-in-hole" locating technology for easy grab-and-go use and training.

Real-time angular fluid pressure sensing, tension monitoring and enhanced LWD (Long-White-Drilling) DataLog™ feature with Bluetooth technology.

Backed by world-class customer service 24/7. For more information, contact your DCI distributor or visit www.digitrak.com. The E3e from DigTrak. Power the investment in your rig with greater accuracy -- and greater intelligence.

Navigate The Underground!



NAVIGATOR

Go where you want to go! Straight ahead. Around buildings. Along streets or walkways. Under streams and rivers. Laterally! Vertically! Accurately! Cost effectively! The NAVIGATOR out-performs them all. Superior operator protection and comfort throughout. Unparalleled put-back power, speed, directional control. Outstanding maneuverability.

HAMMERHEAD

You can see the difference in superior technology. Now experience the difference in underground boring performance.



"THE LOGG (O)TO (H)W"

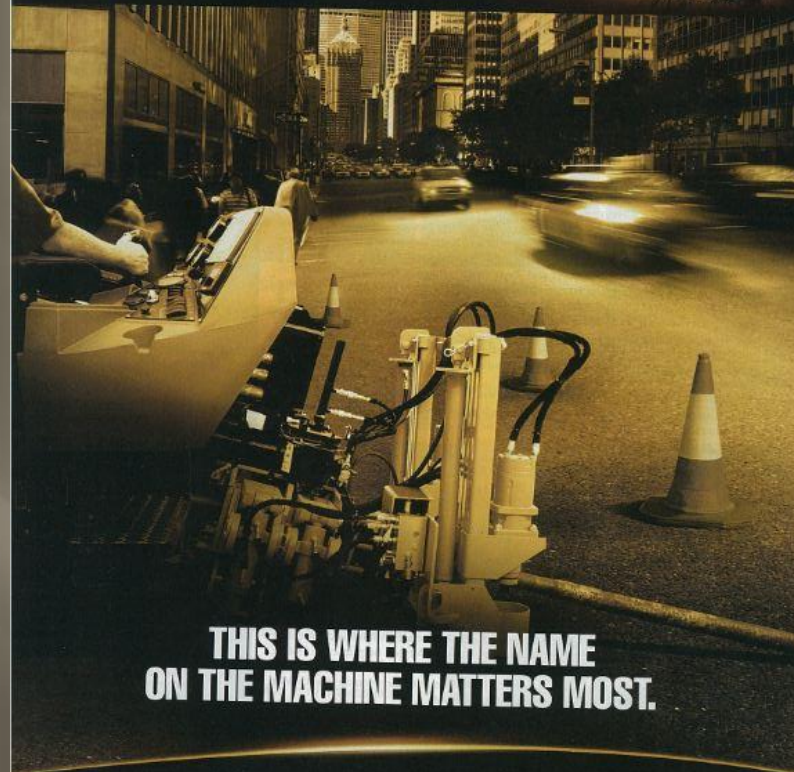
Vermeer

New Braunfels
Texas 77616
(979) 279-8901

Expect The Best

Call today! (800) 829-0051 for details and a free demonstration.

OUR NEWEST HIGH-PERFORMANCE MACHINE.
www.vermeer.com



**THIS IS WHERE THE NAME
ON THE MACHINE MATTERS MOST.**

VERMEER HELPS MEET YOUR TOUGHEST UNDERGROUND CHALLENGES. Whether you're facing a tight, congested urban setting or a remote river crossing, Vermeer and our global dealer network will be right beside you. We know the conditions you work in are demanding — it's why we make equipment that's up to the task. We offer the industry's most complete lineup of horizontal directional drills, tooling, and accessories designed to take on your installation challenges. So when it's tough going out there — look to Vermeer — the trusted name for proven equipment and reliable support.

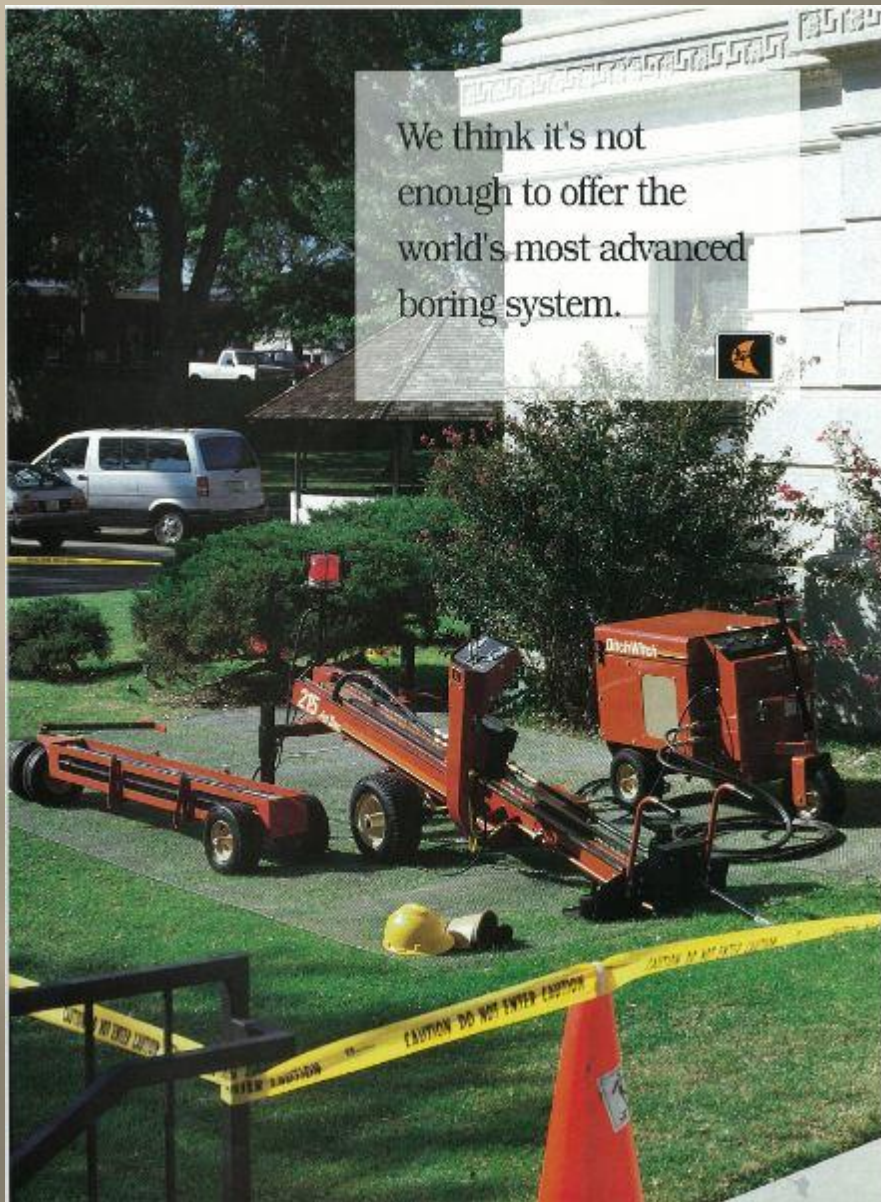
Vermeer



VERMEER.COM

Vermeer and the Vermeer logo are trademarks of Vermeer Manufacturing Company in the United States and/or other countries. © 2017 Vermeer Corporation. All Rights Reserved.

We think it's not
enough to offer the
world's most advanced
boring system.



WHEN WE SAY ALL TERRAIN, WE MEAN ALL TERRAIN.



Why *All Terrain*? Because it's the directional drill that's most effective in the widest range of ground formations, including solid rock. Its patented shaft-within-a-pipe design features a hex-shaped rod that turns inside an outer pipe to allow continuous rotation of the drill bit. Can your machine drill and steer simultaneously through rock and rocky soil? Only if it's got the name *All Terrain*. To learn more, see your dealer or visit ditchwitch.com/at.

**ORIGINAL, INDUSTRY-LEADING
TRIHAWK™ DOWNHOLE TOOLS**
NOW AT YOUR DITCH WITCH DEALER.

Learn more at
ditchwitch.com/trihawk.

 **Ditch Witch**
ditchwitch.com

©2012 Ditch Witch World, Inc.

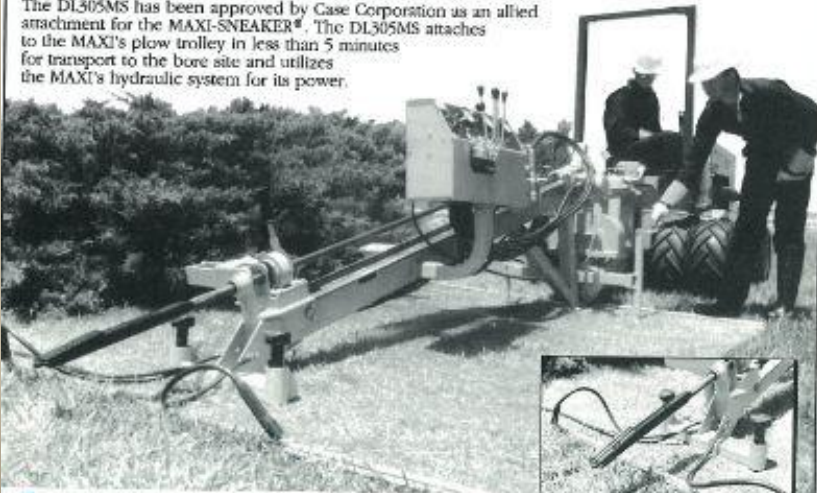
NEW

Directional Drill for the *Maxi-Sneaker*

The DirectLine DL305MS

is a surface-launched directional drilling unit which virtually eliminates damage to surface features. It allows the contractor to invisibly install telephone, CATV, electric, gas, street signals and sprinkler pipes.

The DL305MS has been approved by Case Corporation as an allied attachment for the MAXI-SNEAKER®. The DL305MS attaches to the MAXI's plow trolley in less than 5 minutes for transport to the bore site and utilizes the MAXI's hydraulic system for its power.



Features StraightLine's 4th generation directional head (pat. pend.) for aggressive cutting and steering. Additionally, there is a wide selection of fluid-assisted returns available.

The DL305MS is fast and efficient!

- QUICK:** Setup and tear down in just five minutes!
- ACCURATE:** Hit desired target the first time!
- PRODUCTIVE:** Allow you to make several installations per day!
- CLEAN:** Cultivate customer and utility company good will due to no surface damage!
- PROFITABLE:** Is highly productive with no reclamation cost!



The PowerWrench (pat. pend.) provides fast, easy and safe drill stem changes — and maximizes your in-ground production.



Drill stems right where you need them: mounted on the drill frame in the convenient drill rod rack.

Maximize profits from your MAXI-SNEAKER® investment!

Call 800-654-3484 for your nearest dealer.

STRAIGHTLINE
CORPORATION

1450 South Spencer | Newton, Kansas 67114
(316) 283-5511 | (800) 654-3484 | FAX (316) 283-2783

Setting New Standards

YOUR ROCK PROBLEMS ARE A THING OF THE PAST



RockEye

PRECISION STEERABLE AIR HAMMER SYSTEMS

You know the economics of drilling in rock. The higher rates you earn are typically eaten up by expensive tooling, high fluid costs and the extra time it takes to complete the bore.

The StraightLine Air Hammer System causes the economics of drilling rock to take a U-Turn. Pair our system with any drill rig, and start pounding out rock holes at astounding rates. Best of all, unlike other hammer systems, StraightLine Air Hammers deliver extreme durability, precision steering, while cutting drilling fluid use to a meager .3 to 1 gallon per foot.

See for yourself how contractors' around the country are turning the most challenging rock conditions into profit by visiting www.straightlinehdd.com and clicking the "stories" link.

STRAIGHTLINE
CORPORATION

800.654.3484 www.straightlinehdd.com

Piercing Tools

- One of the oldest forms of trenchless technology
- First invented in **Poland**
- Became the “father” of
 - Pipe bursting
 - Pipe ramming
 - HDD rescue
- Principal world-wide manufacturers
 - TRACTO-TECHNIK/TT Technologies
 - Hammerhead/Ditch Witch
 - McLaughlin/Vermeer
 - Allied

Trenchless Technology Magazine

- Established June, 1992
- 2 employees
- 12,000 circulation in North America
- Bi-Monthly
- Family owned

Trenchless Technology Magazine continued

Now

- 36,000 circulation in North America
- Monthly
- Trenchless Road Shows 2-3 per year
- Annual *Directory of the North American Trenchless Technology Industry* --1,700 listings
- 2 supplements per year – HDD and Micotunneling.
- Part of Benjamin Media Inc.
 - 30 employees
 - 7 total print publications (125,000 total circulation) with 7 bi-weekly Enewsletters
 - 6-8 conference events with 5 brand names including management of the NASTT No-Dig Show
 - 15 webinars per year; over 150 to date
 - 9 websites/brand names
 - Social media presence – LinkedIn, Facebook, Twitter
 - App for Apple iPad launched September 2013
- Still family owned

App for Apple iPad launched September 2013



You now have access to the best coverage of the trenchless industry from where ever you are in the world, at any time. The *Trenchless Technology* App – available at the App Store for download to your newsstand.

Trenchless Technology Global Reach

- **Print Readers – 36,000**
- **Website Monthly Visitors – 14,000**
- **E-newsletters Bi-Weekly recipients - 9,000**
- **Webinars Annually - 8**
- **App Launched September, 2013**
- **Face to Face Events - 4**

TRENCHLESS TECHNOLOGY

Serving The Utility, Pipeline And Distribution Construction Markets.

July/August 1992



Mini-Directional Drilling

Midwest electrical contractors Warren & Ken Aldridge foster trenchless operation.

*Also In This Issue:
Directional Drilling Family Tree
Microtunneling with PVC Pipe
Sacramento Delta Crossings*

Trenchless TECHNOLOGY.

OCTOBER 2013
TRENCHLESSONLINE.COM

Corning, N.Y.

Empire Connector Extension Using HDD

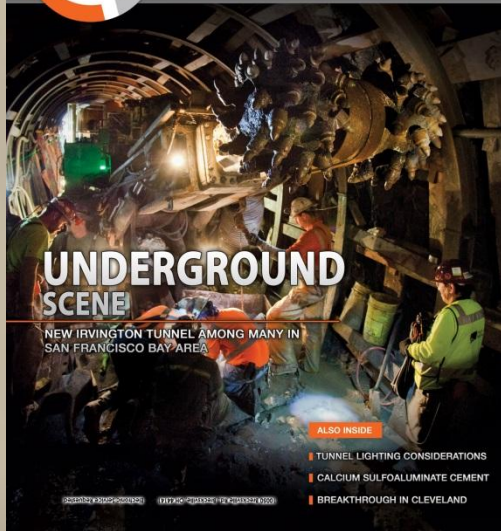
Inside Cover

Rehabilitation Winner:
Lakewood, Colo./Pipe Bursting





TUNNELINGONLINE.COM
TUNNEL BUSINESS
 OCTOBER 2013 **MAGAZINE**



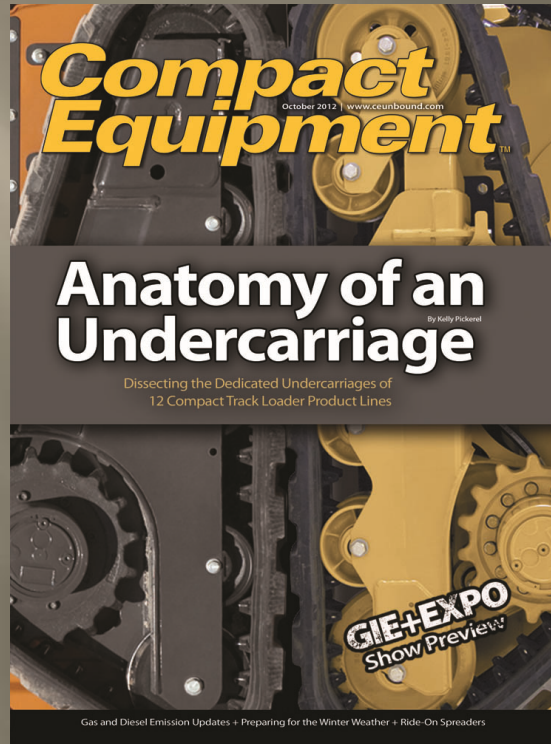
UNDERGROUND
SCENE

NEW IRVINGTON TUNNEL AMONG MANY IN SAN FRANCISCO BAY AREA

ALSO INSIDE

- TUNNEL LIGHTING CONSIDERATIONS
- CALCIUM SULFOALUMINATE CEMENT
- BREAKTHROUGH IN CLEVELAND

ISSN 1547-0302 (print) ISSN 1547-0310 (online)



Compact Equipment
 October 2012 | www.ceunbound.com

Anatomy of an Undercarriage
 By Kelly Pickens

Dissecting the Dedicated Undercarriages of 12 Compact Track Loader Product Lines

GIE+EXPO
 Show Preview

Gas and Diesel Emission Updates + Preparing for the Winter Weather + Ride-On Spreaders

Utility CONTRACTOR
 October 2012

Charting the Course
 NUCA Chapters Map Out Growth and Success in the Industry

Also Inside
 Digging into the History of Track Trenchers
 Minimizing Downtime with Mechanics Trucks

The Official Publication of **NUCA** www.utilitycontractoronline.com



WATER UTILITY INFRASTRUCTURE MANAGEMENT

October 2012
uimagazine.com



Got Corrosion?

What You Need to Know About Making Good Pipe Material Decisions



North American Oil & Gas PIPELINES

napielines.com | October 2012

DIGGING TRENCHES, NOT DEBT

John Deere Financial Helps Pipeline Contractors Beef Up Fleets



Also Inside
Employing Remote Monitoring
Impact of Natural Gas Prices
Growing Merger Trend

SOLAR BUILDER

SOLARBUILDERMAG.COM | SEPTEMBER/OCTOBER 2012



MAKING BIG PLAYS

NFL stadiums turn to solar for cost savings



- MOUNTING SOLUTIONS
- METAL FOUNDATIONS
- component testing

MAJOR FACTORS DRIVING THE NORTH AMERICAN WATER UTILITY CONSTRUCTION MARKET

- U.S. Environmental Protection Agency
- Canadian Environmental Assessment Agency
- Aging Infrastructure
- Water Asset Management

U.S. EPA & Department of Justice

- Many cities operating under Consent Decrees
- Pursuing criminal prosecution of cities found in violation of the Clean Water Act
- \$530 billion over next 20 years needed to cover water infrastructure needs
- Financing is a big problem for municipalities
- Private Activity Bonds could provide much needed investment

Five Biggest Bankruptcies in U.S.

- Detroit, MI - \$18.5 billion; 2013
- Jefferson County, AL - \$3.2 billion; 2012
- Orange County, CA - \$1.7 billion; 1994
- San Bernardino, CA - \$1.0 billion; 2013
- Stockton, CA - \$700 million; 2013

PRIVATE ACTIVITY BONDS

- **Could provide \$ 50 billion annually in private investment for water infrastructure**
- **CBO budget score of \$ 250 million over 10 years**
- **AWWA, WEF and U.S. Conference of Mayors support PAB's**
- **Sustainable Water Infrastructure Coalition is spearheading passage of PAB's**
- **www.sustainablewaterinfrastructure.org**

U.S. Water Infrastructure Innovations Authority

- Included in Water Resources Development Act of 2013 (S.601)
- Would lower the cost of capital for water utilities with little effect on the U.S. Federal budget deficit
- Offers loans, loan guarantees, and credit support
- Approved by Senate May, 15 2013, awaiting House of Representatives approval
- Has AWWA and WEF support

Water Main Breaks

- Over 300,00 annually in North America
- Repair costs of \$3.0 billion nationwide
- Average age of failing water mains is 47 years
- Vast majority of water breaks are due to metabolic pipe corrosion

WJLA

JUST IN

AMERICAN
MORNING

WATER MAIN BREAK CLOSES BELTWAY

LIVE
CNN

UPDATE This is CNN, the Worldwide Leader in News

4:21 AM PT

BETHESDA, MD WATER MAIN BREAK

- 12/23/08
- 150,000 gallons of water per minute
- 66" water main – Washington Suburban Commission
- A dozen commuters trapped in their cars
- Rescue workers had to use helicopters and boats to save people
- Eyewitnesses
 - “Never saw anything like this...a mountain of water.”
 - “It looked literally like the Potomac River.”
- Broken pipe was installed in 1964

Leaking Pipes

- 17% of all water pumped in U.S. is lost due to leaking pipes
- 2.6 trillion gallons of drinking water lost each year
- 57% of utilities use some form of leak detection
- Leaky sewage pipes a source for viruses

Certification of Training in Asset Management

Online Water Asset Management Training

CTAM COURSE

Launch Date

- CTAM-100 - Overview of Asset Management 2010
- CTAM-200 - Developing an Asset Management Program 2013
- CTAM-300 - Managing an Asset Management Program Spring 2014
- CTAM-400 - Funding an Asset Management Program Spring 2014

- Enrollment in CTAM 100 exceeds 250 from 10 countries

- Associate Water Asset Manager (AWAM) certification: requires completion of CTAM 100-400 and an application submitted to BAMI-I Asset Management Certification Board.

- Professional Water Asset Manager (PWAM) certification: requires completion of CTAM 100-400 , four years of relevant asset management experience, and application submitted to BAMI-I Asset Management Certification Board.

GAS DISTRIBUTION MAIN PIPELINES

- In the U.S., nearly half were constructed during the 1950's & 1960's.
 - Prior to 1940 the primary materials were wrought and cast iron
 - 1970's brought in transition from steel to plastic, except for large diameter pipelines
 - U.S. federal pipelines safety rules mandated cathodic protection of all steel pipe installed after 1970
- - - - -
- In the U.S., over 112,000 miles of gas mainlines are susceptible to corrosion and leaks.

Miles of Gas Main

	<u>U.S.</u>	<u>Canada</u>
Bare Steel	62,329	213
Coated Unprotected Steel	15,935	-
Iron	34,329	142
Copper	30	-
➤ Subtotal of Probable Replacement Miles	112,623	355
➤ Percent of Total	9.1%	0.2%
Protected Steel	473,871	72,013
Plastic	644,418	162,864
Other	893	991
➤ Total:	1,231,805	236,223

Federal Government Responsibility for Pipeline Safety

- The Department of Transportation's (DOT) Pipeline and Hazardous Material Safety Administration (PHMSA)
- National Energy Board of Canada

World War II Bombing??



More World War II?? NO San Bruno, CA Gas Pipeline Explosion



CALIFORNIA GAS LINE EXPLOSION

- September 2010
- 30" steel gas pipeline
- 8 people killed
- 38 homes destroyed
- PG & E has launched millions of dollars in pipeline inspection

Dresden, Germany World War II Bombing??



More Dresden, Germany World War II Bombing?? NO Allentown, PA Gas Pipeline Explosion



ALLENTOWN, PA GAS PIPELINE EXPLOSION

- February 10, 2011
- 5 people dead
- 47 homes damaged; 8 homes a total loss
- 12" 83 year old cast iron gas main
- Routine leak detection test a few days earlier was clean
- UGI Utilities Inc. is the gas utility.

Oil Spills

- Kalamazoo River in Michigan pipeline spill
 - July 2010
 - 800,000 gallons of crude oil spilled
- Yellowstone River in Montana pipeline leak
 - July 2011
 - 63,000 gallons of crude oil spilled
- HDD work will be driven by oil spills
 - Existing water crossings may have to be drilled deeper

GAS/OIL SHALE DRILLING

- North Dakota has 3.0% unemployment rate
- North Dakota is second largest state in oil & gas production after Texas
- Big in Pennsylvania (Marcellus), Ohio (Utica), Texas, New York (on hold to resolve fracking concerns)
- Pipelines are needed to transport the oil/gas
- HDD will benefit substantially
- Vacuum excavation of fracking fluids is needed for disposal of the fluids.

Oil Sands in Alberta Canada

- Keystone XL Pipeline
- Northern Gateway Pipeline
- Tremendous amount of HDD work will be required

ISTT

- Founded 1986 in London
- ISTT holds usually one major No-Dig Show annually, plus numerous regional No-Digs
- ISTT Executive Director based in Washington, D.C.
- Now there are 27 ISTT Chapters
- Largest chapter is North American Society for Trenchless Technology
 - Founded in 1990
 - Has 9 regional chapters
 - Has 12 university student chapters
 - 1300 members
 - Annual NASTT No-Dig Show draws 1800 attendees, 140 exhibitors, and over 140 technical paper presentations

NASTT

- Founded in 1990
- Has 9 regional chapters
- Has 12 university student chapters
- 1300 members
- Annual NASTT No-Dig Show draws 1800 attendees, 140 exhibitors, and over 140 technical paper presentations

NASTT Canadian Related Regional Chapters

- British Columbia – Province of BC
- Great Lakes, St. Lawrence & Atlantic – Ontario, Quebec and the four Atlantic Provinces
- Northwest Alberta, Manitoba, Saskatchewan and BC Provinces and State of Washington

NASTT Canadian Student Chapters

- Concordia University
- Laval University
- McGill University
- Queen's University
- University of Alberta

TRENCHLESS TECHNOLOGY RESEARCH & DEVELOPMENT

- Centre for Advancement of Trenchless Technologies (CATT) – University of Waterloo
- Trenchless Technology Center (TTC) – Louisiana Tech University

Merci!