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SPECIAL REPORT
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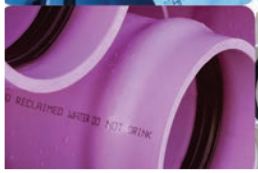
PIPE SELECTION GUIDE



FROM THE EDITOR

BY SHARON M. BUENO

NOT ALL PIPE IS THE SAME

2022 *TRENCHLESS TECHNOLOGY* PIPE SELECTION GUIDE

Pipe is the star of any trenchless project, as it is the conduit for whatever utility flows through — gas, water, wastewater, electric or telecom. The pros and cons of each product pipe on the market are critical to the end result.

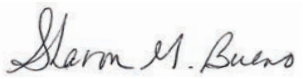
But pipe is pipe, right? To say or believe that clearly shows that you are uninformed — and that is a description we do not want our readers to be. So, we are here to help and offer some guidance in search of your pipe needs.

Concrete. Concrete pressure pipe. Ductile iron. Fiberglass reinforced. HDPE. Polymer concrete. PVC. Steel. Vitrified clay. These types of pipe are routinely the product pipe of choice on today's trenchless projects. Deciding which pipe is best suited for any given trenchless project — whatever that may be — is an important part of the project design process. How do you know which will serve your project's and/or system's needs the best?

This where the 2022 *Trenchless Technology* Pipe Selection Guide comes into play. To help our faithful readers out, *Trenchless Technology* contacted pipe associations and manufacturers of the nine pipes typically used in trenchless projects to showcase what their particular conduit offers. We have provided this valuable information several times in recent years, the last being in 2020. Some have changed over the years, others have not but we are offering our valued readers an updated roundup of these product pipe. Consider this Guide a starting off point in your search. As always, the information before you is only intended to give you a glimpse at the different pipe in the market. For more detailed information to see which pipe will work best for your project, please contact the manufacturer, pipe association or project engineer.

All the information presented was provided by the pipe associations or manufacturers.

We hope this aids in bettering your knowledge of product pipe.



Sharon M. Bueno
Editor, *Trenchless Technology*

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SEPTEMBER 2022

30 YEARS Trenchless TECHNOLOGY
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PROMOTING TECHNOLOGY IN THE UTILITY CONSTRUCTION INDUSTRY

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kwik-ZIP spacers provide clients with a cost efficient and simple solution to their spacer and centralizer requirements.

kwik-ZIP Spacers & Centralizers have been developed to solve support, grading and centralisation challenges in the trenchless and pipeline, vertical production drilling, and ground engineering industries.

A completely non corroding, non-metallic casing spacer for Pipe-in-Pipe (PIP) applications such as slip lining and cased crossings for all pipe materials including steel, ductile, MSCL, GRE, PVC, HDPE. Suitable for all diameters from 3.94" OD and beyond by addition of multiple segments. A range of product series applicable to Trenchless applications namely HD, HDX and HDXT.

- Made from Kwik-ZIP's engineered thermoplastic blend with high flexural strength, high temperature resistance, low co-efficient of friction, abrasion resistance and outstanding chemical resistance.
- Integrated rubber grip pads under collars to prevent slippage. No requirement to pre-wrap pipe.
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CONCRETE

TRENCHLESS APPLICATIONS:

Concrete Pipe is ideal for jacking and microtunneling and other instances where high compressive strength is needed for pushing a pipeline into its final location.

BEST SUITED FOR:

Buried precast concrete products are well suited for applications where high compressive forces are needed for the process of installation, such as jacking and microtunneling. Shapes, such as circular, elliptical, arch, and rectangular box sections allow for a variety of choices to accommodate physical obstructions that may limit space.

ILL SUITED FOR:

Concrete pipe is not well suited for applications having high internal pressure

See the light at the end of the tunnel FASTER and MORE EFFICIENTLY with United Underground Precast.

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Our Precision Fit Joints, Factory Installed Gaskets and Quick Lift System means faster installation from delivery to shaft.

Our multi-plant capacity and in-house steel fabrication allow us to deliver TOTAL SOLUTIONS: Molds, Bell Bands, IJS Stations & Steel Cans, Thrust Rings, Gaskets (equalized & glued on), Pressure Transfer Packers –all fit tested and certified to meet your project demands WHEN YOU NEED IT

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CONCRETE

HOW IS IT DELIVERED:

Precast concrete pipe and boxes are delivered in precast units that are ready for installation.

DESIGN LIFE:

Concrete pipe has a proven service life of more than 100 years.

HOW IS IT JOINED:

Precast concrete pipe and box units can be supplied with soil resistant, silt resistant, and leak resistant joints. For microtunneling installations, gasketed joints are typically used, along with a large bearing area in the joint for jacking forces.

AVAILABLE DIAMETERS:

Circular reinforced concrete pipe is available from 12 in. to 144 in. in diameter. Elliptical and Arch shapes are available for locations with limited vertical or horizontal clearance. These shapes have sizes equivalent to 132 in. diameter circular pipe and less. Additionally, square and rectangular shapes are available in standard dimensions up to 12 ft. by 12 ft., with larger nonstandard sizes available.

LATEST DEVELOPMENT OVER THE LAST FIVE YEARS:

Advancements in the use of cementitious and non-cementitious materials and admixtures continue to provide greater strength, longer durability, and more sustainable products. Additionally, manufacturing equipment and processes continue to evolve and improve product quality. ASTM Standard C1885 for Circular Precast Concrete Culvert, Storm Drain, and Sewer Pipe for Pipe Jacking was developed in 2021, and a microtunneling pipe standard is being developed.

WHAT IS NOTABLE ABOUT YOUR PIPE:

Precast concrete pipe can be supplied in a variety of sizes, shapes, and strengths. When precast concrete pipe is specified and installed, there is less anxiety about conforming to product limitations and greater confidence in performing to expectations. Its resilience to both the installation and final loading conditions ensures performance is sustained for many years to come.

Source: American Concrete Pipe Association
Web: www.concrete-pipe.org

Rinker
MATERIALS®
A QUIKRETE® COMPANY

Rinker Materials® is an industry leader in the design and manufacturing of Reinforced Concrete Jacking Pipe and Boxes for Storm Drains, Culverts, Storm Sewers and Sanitary Sewers. To learn more about how Rinker can support your next trenchless project, visit: ***Rinkerpipe.com***

CONCRETE PRESSURE PIPE

TRENCHLESS APPLICATIONS:

Jacking and microtunneling operation that requires high compressive strength pipe and watertight joints. In North America, Reinforced Concrete Pipe (RCP) has been installed by jacking for nearly 100 years and by microtunneling since 1986.

BEST SUITED FOR:

Concrete pressure pipe is best suited for a wide range of trenchless applications including, but not limited to, gravity, storm and sanitary, outfalls, force mains and transmission mains casing pipe etc. Reinforced Concrete Pipe – Non-Cylinder Type (AWWA C302) Reinforced) low pressure pipe and Reinforced Concrete Cylinder Pipe (AWWA C300) pressure pipe can be used as the carrier pipe in a single pass operation.

NOT WELL SUITED FOR:

Thicker pipe wall may not be suited with small boring machine diameters.

CONCRETE PRESSURE PIPE

HOW IS IT DELIVERED:

Concrete pressure pipe is delivered by truck in 10-ft (3-m) to 20-ft (6-m) lengths that are ready for installation.

DESIGN LIFE:

It is generally agreed that CPP has a service life of 75 to 105 years.

HOW IS IT JOINED:

Reinforced Concrete Cylinder Pipe (C300) is provided with steel bell and spigot joints, sealed with a confined rubber gasket. C300 pipe is suitable for high pressure applications. The joints can be welded to provide thrust restraint. Additional sand resistant exterior bells can also be provided.

Reinforced Concrete Non-Cylinder Pipe (C302) is typically provided for low-pressure applications, and commonly have a steel bell and spigot or a steel bell and concrete spigot, also sealed with a confined rubber gasket.
Both pipe joints are available with Double Gasket Air Testable. Joints and can be deflected for long radius curved drives.

AVAILABLE DIAMETERS:

Pipe is generally available in diameters from 24 in. to 144 in. (600 mm to 3,600 mm).

LATEST DEVELOPMENT OVER THE LAST FIVE YEARS:

Enhanced C300 design to allow for single pass water main or other high-pressure applications. Continuous improvement of AWWA standards ensure the high-quality of concrete pressure pipe.

WHAT IS NOTABLE ABOUT YOUR PIPE:

All ACPPA plants are audited annually by Lloyds Register Quality Assurance (LRQA) to assure that all pipe is manufactured in strict compliance with both the AWWA Standards and project specifications.

CPP is "wet cast" and cured in its forms, providing a dense smooth-wall pipe, round on the barrel and square on the ends, with a dimensional accuracy such that every pipe is essentially a carbon copy of the others.

Naturally resistant to corrosion and can accommodate a wide variety of applications. Since pipe is engineered for the project application, design considerations can often be made to accommodate unique project requirements and site conditions.

Source: American Concrete Pressure Pipe Association
Web: www.acppa.org

DUCTILE IRON PIPE

APPLICABLE STANDARDS:

- ANSI/AWWA C150/A21.50 – Thickness Design of Ductile-Iron Pipe
- ANSI/AWWA C151/A21.51 – Ductile-Iron Pipe, Centrifugally Cast
- ANSI/AWWA C111/A21.11 – Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
- ANSI/AWWA C104/A21.4 – Cement-Mortar Lining for Ductile-Iron Pipe and Fittings
- ASTM A746 – Ductile Iron Gravity Sewer Pipe
- ASTM A716 – Ductile Iron Culvert Pipe
- ANSI/AWWA C105/A21.5 – Polyethylene Encasement for Ductile-Iron Pipe Systems
- ANSI/AWWA C110/A21.10 – Ductile-Iron and Gray-Iron Fittings
- ANSI/AWWA C153/A21.53 – Ductile-Iron Compact Fittings
- ANSI/AWWA C600 – Installation of Ductile-Iron Mains and Their Appurtenances

TRENCHLESS APPLICATIONS:

Horizontal directional drilling, pipe bursting, microtunneling, and pipe jacking

BEST SUITED FOR:

Water and wastewater pipeline installations, both gravity and pressure applications, and any installations that require a robust/strong pipe.

ILL SUITED FOR:

There really isn't a water or wastewater pipe project where ductile iron pipe would be ill suited.

SIMPLIFY YOUR JOB SITE.

When it comes to Horizontal Directional Drilling, nothing is easy. Or at least that's how it used to be. Today, HDD is as simple as the push of a button thanks to the McWane Pocket Engineer™. Designed to simplify the complex calculations needed to complete your drill-op, the Pocket Engineer compiles decades of field experience into one pocket-sized tool. Visit pe.mcwane.com or download the Pocket Engineer from the App Store or Google Play Store.

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DUCTILE IRON PIPE

HOW IS IT JOINED:

For underground service, gasketed push-on joints are normally specified. In HDD applications, a restrained joint is needed – check with pipe manufacturers for recommendations. Other proprietary compression ring gasketed joints that facilitate trenchless applications. The push-on joint is deflectable (as much as 5 degrees) to facilitate HDD applications and routing the pipeline with minimal fittings.

AVAILABLE DIAMETERS:

3-in.diameter through 64-in. diameter (3, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 30, 36, 42, 54, 60, and 64-in. diameters)

LATEST DEVELOPMENT OVER THE LAST FIVE YEARS:

Introduction of seismic joints for use where permanent ground deformation events are anticipated.

HOW IS IT DELIVERED:

Normally, 18- or 20-ft lengths. The standard push-on joint can also be cut in the field if shorter lengths are needed.

DESIGN LIFE:

Indefinite when properly designed and installed.

WHAT IS NOTABLE ABOUT YOUR PIPE:

Successful trenchless installations have firmly established ductile iron pipe as a viable, and in many instances superior, pipe option. The advantages of using ductile iron pipe for trenchless installations include:

1. Standard pressure capabilities up to 350 psi (greater upon special request)
2. Great material strength for handling pull-back, column, and external dead and live loading
3. Better distribution of thrust or pulling forces around the bell and barrel
4. Greater allowable pulling forces than other pipe options
5. Generous allowable joint deflections
6. Quick, easy joint assembly
7. Cartridge installation option for limited easements or ROW for HDD installations.
8. Can be located from surface with commonly used locators
9. Performance capabilities are not impacted by elevated temperatures
10. Demonstrated to withstand temperatures generated in wildfire conditions
11. Material strength that does not creep or decrease with time
12. Pipe wall impermeable to volatile hydrocarbons, minimizing the potential of water system contamination in the present or future
13. A very strong pipe able to handle residual bending stresses that could adversely affect future serviceability.
14. No significant "recoil" and minimal pipe movement due to thermal expansion.
15. Eliminates potential for shearing of tapped lateral outlets due to thermal expansion and contraction

FINAL PARAGRAPH:

With the increasing demand for water and wastewater infrastructure and a movement to reduce the social-economic impact on rate payers that is often associated with open-cut construction, trenchless installation will certainly play an increasing role. For these installations, public works personnel and contractors have the option of installing superior ductile iron pipe.

Source: Ductile Iron Pipe Research Association
Web: www.dipra.com

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dipra
Ductile Iron Pipe Research Association

HOW TO CHOOSE THE RIGHT WATER DISTRIBUTION PIPE

Drinking water distribution systems need to be resilient, sustainable and last for generations.

Installation of new Ductile iron pipe in a growing community.

Communities depend on reliable, sustainable, and resilient infrastructure to deliver safe drinking water every day. There is a multitude of reasons that can disrupt the flow of water from the source to the tap, including pipe failure from too much stress, too much pressure, or environmental hazards like hurricanes, wildfires, and floods. Today's utilities look for the most resilient, sustainable material that will withstand not only everyday stress, but demands that are difficult to plan for within, as well as around, the essential lifeline that is the water main.

Ductile iron pipe has a proven record for being a very resilient pipe material for areas that have extremely corrosive soil conditions, vastly fluctuating temperatures and weather conditions, and anticipate heavier traffic loads and stress from community growth.

Horizontal Directional Drilling (HDD) is one of the fastest-growing trenchless construction methods in use today for installation of pipelines transporting water, wastewater and other liquids. Successful HDD installations have firmly established flexible restrained joint Ductile iron pipe as a viable, even superior, trenchless pipe option.

Sustainability is not just a buzzword for today's environment, it is an important factor when considering which material to choose for the best value over the lifetime of a water distribution pipe that, more often than not, is buried underground and therefore, is "out of sight, out of mind."

Ductile iron pipe meets and exceeds sustainability considerations compared to other pipe materials. It is made with up to 90% recycled content and is 100% recyclable. Its design allows a larger inside diameter than other pipe materials, which means less head loss, and less energy consumption to pump water through a Ductile iron pipe. The result? Fewer dollars are spent on energy and less greenhouse gas emissions.

Lifelines that deliver water are essential, and the longer they can provide this service cost-effectively, the more beneficial they are to the communities they serve. Ductile iron pipe has an anticipated service life of 100+ years.

Learn more about the benefits of Ductile iron pipe at dipra.org.

Cement-mortar lined Ductile iron pipe.

CHOOSE WELL.

Choose Ductile Iron.

Today's Ductile iron pipe is the wise choice when planning water distribution systems to last for generations to come.

13x THE IMPACT STRENGTH =
Extreme stress resiliency

GREATER FLOW CAPACITY =
Energy efficiency

100+ YEAR ANTICIPATED SERVICE LIFE =
Reduced repair and replacement

Choose Ductile iron pipe to deliver water safely, reliably, affordably, and sustainably.

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Ductile Iron Pipe Research Association

dipra.org

Strength and **Durability** for **LiFe**®

FIBERGLASS REINFORCED PIPE

TRENCHLESS APPLICATIONS:

Pressure and gravity sliplining, microtunneling/jacking, tunnel lining casings, pipe bursting and directional drilling.

BEST SUITED FOR:

Potable water transmission, force main or gravity sewer systems and all applications where there is a corrosive carrier or external environment.

ILL SUITED FOR:

Gas transmission and other hydrocarbon transmission lines.

FIBERGLASS REINFORCED PIPE

HOW IS IT JOINED:

Unless otherwise specified, the pipe shall be field connected with fiberglass sleeve couplings that utilize elastomeric sealing gaskets to maintain joint water tightness. The joints must meet the performance requirements of ASTM D4161. Tie-ins, when needed, may utilize gasket-sealed mechanical couplings.

AVAILABLE DIAMETERS:

The pipe is available from 18 to 158 in. in diameter.

HOW IS IT DELIVERED:

The typical delivered length is 20 ft; however, both short sections (e.g. 5 ft and 10 ft) and longer lengths of up to 40 ft are available to minimize the number of joints.

DESIGN LIFE:

In excess of 150 years.

APPLICABLE STANDARDS:

AWWA C950 for Fiberglass pressure pipe and ASTM D3754 for Fiberglass Sewer and Industrial Pressure pipe. ASTM D3262 for gravity systems. ASTM D4161coupling joints. ASTM D2412 External Loading Characteristics by Parallel-Plate loading. Fiberglass pipe can be utilized in a wide range of service conditions including extreme cold, which does not affect the material and operating temperatures up to 180 F, with pressures up to 500 psi. Each pipe is designed for soil burden, external water pressure and live loading conditions. The pipe is easily repairable and modify in the field should conditions warrant. Hydraulic analysis shows superb flow characteristics, Manning's of n=0.009 and Hazen Williams of C=155. In addition, the pipe surface is extremely abrasion resistant.

LATEST DEVELOPMENT OVER THE LAST FIVE YEARS:

The United States increased application of sliplining and pipe jacking that enables public utilities to maintain their sewage system operation requires a corrosion resistant pipe that can accomplish high push-loading. In addition, there is an increased application of microtunneling, pipe bursting and directional drilling where fiberglass pipe and manway manufacturers are providing a corrosion resistant alternative to traditional pipe materials. The Fiberglass Tank & Pipe Institute represents manufacturers of pipe and manways such as NOV Fiber Glass Systems and Hobas Pipe USA.

WHAT IS NOTABLE ABOUT YOUR PIPE:

"Fiberglass pipe and manways are gaining in market presence due to its many benefits. When leak-free joints, inherent corrosion resistance, superior hydraulic characteristics and long life service are taken into account, fiberglass is a clear winner. There are cost-savings that accrue over the lifetime of the product due to lower maintenance and extended life expectance over traditional materials. However, cost-savings begin at installation with reduced onsite handling costs (i.e., high strength/weight ratio material) and reduced labor and installation time (e.g. longer pipe with fewer joints/manways). Fiberglass pipe is an engineered product that may be custom manufactured with fiberglass manways and fittings to meet the most difficult jobsite applications." said Sully Curran, P.E., executive director, Fiberglass Tank & Pipe Institute.

Source: Fiberglass Tank & Pipe Institute
Web: www.fiberglasstankandpipe.com

HIGH DENSITY POLYETHYLENE (HDPE, PE4710)

APPLICABLE STANDARDS (MAJOR)

- ANSI/AWWA C901, ANSI/AWWA C906 – municipal
- ASTM D3035, F714 Transmission and Industrial
- Factory Mutual FM 1613 Fire Water Protection
- Joining: ASTM: F2620, F1055, F1290
- Installation: ANSI/AWWA M55; Plastics Pipe Institute Handbook of PE Pipe, ASTM D2321, D2774, F585, F1962, F2164, F2206, F3190
- NSF-14 and NSF-61

TRENCHLESS APPLICATIONS:

Horizontal directional drilling, static and pneumatic pipe bursting, sliplining and compression-fit using solid wall HDPE (PE4710) piping systems.

BEST SUITED FOR:

Potable water (service, distribution, and transmission), reclaimed water, force main, gravity, and storm sewer, industrial, Factory Mutual fire water protection, methane/leachate collection, nuclear, conduit (electrical and communication) and natural gas distribution. This summary will focus on HDPE solid wall for water and sewer.

ILL SUITED FOR:

Refer to applicable standards and requirements. Also, pressure applications with annual average temperature exceeding 140 F and Pressure Class exceeding 335 psi.

HIGH DENSITY POLYETHYLENE (HDPE, PE4710)

HOW IS IT JOINED:

Butt-fusion and electrofusion are preferred methods for joining HDPE per ASTM F2620, MAB-1, and MAB-2; both joining systems create monolithic and self-restrained joints. However, HDPE can also be joined by mechanical fittings that are properly designed for HDPE pipe.

AVAILABLE DIAMETERS:

¾ in. to 65 in. per ASTM and AWWA standards

HOW IS IT DELIVERED:

HDPE pipe is produced in straight lengths up to 50 ft and coiled in diameters up to 6 inches. Depending on pipe size, coiled length can exceed 1,000 ft.

DESIGN LIFE:

Properly designed, installed, and operated HDPE piping systems have a design life exceeding 100 years based on internal pressure, cyclic fatigue, and degradation/oxidation.

LATEST DEVELOPMENT OVER THE LAST FIVE YEARS:

High performance PE4710 is the 4th has been implemented in United States and Canadian standard, manuals and software. New documents and resources were published (or updated) as listed below:

Documents

- AWWA C901, C906 and M55 (2020/2021)
- ASTM F1962 on HDD (2022)
- Seismic Response of HDPE Laterals (2021)
- MAB-1 on electrofusion (2022)
- MAB-3 Model Specifications (2020)
- MAB-4 on Repairs (2019)
- MAB-5 on pipe bursting (2019)
- MAB-6 on inspection (2020)
- MAB-7 on mini-HDD (2020)
- MAB-8 on cold weather fusion (2022)

Software:

- PPIPACE for water hammer and fatigue design life forecast
- PPIBoreaid for horizontal directional drilling
- HDPEapp for multiple design and installation calculations

WHAT IS NOTABLE ABOUT YOUR PIPE:

Properly designed and installed HDPE piping systems have the lowest failure rate, zero allowable leakage for heat fused joints, fully restrained joints, lowest initial and life cycle costs, inherent corrosion resistance, longest design life, longest fatigue life and is the preferred material for trenchless installations.

Also, due to high ductility, HDPE water piping systems had zero failures in the last five earthquakes in Japan, Chile and New Zealand. Also provides system integrity during soil movement events such as drought and flood.

Per AWWA C906-21 standard, PE4710 pressure class includes a safety factor greater than 2 for the allowed operating stress and for surge pressures (recurring and occasional).

Per AWWA C906-21 standard, matching the ID of other pipe materials to the ID of HDPE for flow and PC will yield incorrect results. Use PPIPACE.com to evaluate flow capacity and PC of HDPE to other materials.

Source: Plastics Pipe Institute
Web: www.plasticpipe.org/MABpubs

EXPLORE HDPE FOR A SOLUTION THAT'S STRONG, DURABLE, AND FLEXIBLE

EnviroCon Systems, supplies and installs high-density polyethylene (HDPE) piping systems for a variety of applications. Saving both time and money on maintenance and repair, pipe made from HDPE is strong, durable, flexible and offers a cost-effective solution for a broad range of projects.

Not only do we have the skill, experience, and certified technicians to install HDPE piping solutions, but we are also a stocking distributor for HDPE pipe, fittings, and pipe electrofusion products.

HDPE is a great choice for many projects because of its versatility and features:

- Corrosion resistant
- Lightweight
- Hydraulically smooth
- Flexible and coilable
- Fatigue and surge resistant
- Heat fused
- Longevity
- Mechanically joined (as needed)
- Tappable
- Strong and ductile
- Scratch resistant
- Weather resistant
- Readily installed
- Impact resistant
- Small to large diameter
- Freeze resistant
- Non-toxic
- Durable
- Abrasion resistant
- Reliable

Pipe Options

- •IPS and DIPS
- 1' – 24" SDR 17, 11, 9,7
- Sticks and coils
- FM and Non-FM

HDPE Pipe Types

- Corrugated pipe
- Perforated
- In-house custom
- Dual containment

Equipment Sales & Rentals

EnviroCon Systems offers a wide selection of fusion welding machines that are available from ½" CTS through 36" IPS in diameter for rent or sale. These machines include butt fusion, socket fusion, sidewall, extrusion welder, wedge welder, and electrofusion equipment. Larger equipment up to 65" is available upon request.

Our rental contracts range from one day to multi-month periods, and all rental equipment is well-maintained and ready to use.

EnviroCon Systems offers daily, weekly, and monthly rates for pipe welding technicians for turn-key applications.

Certified McElroy Fusion Training

We also offer certified McElroy fusion training at our Houston facility. Our instructors can travel on-site to the customer's location if preferred. Training includes both small diameter and mid-range diameter. Small diameter ranging from ½" CTS to 6" DIPS (16mm¬ – 180mm), including socket fusion. Mid-range covers sizes ranging from 2" IPS to 20" OD (63mm – 500mm).

Pipe Fusion Fabrication

Our pipe fusion fabrication shop provides a wide variety of in-house services. We have the expertise to create custom designs in HDPE pipe fusion fabrication and our technicians hold McElroy certifications.

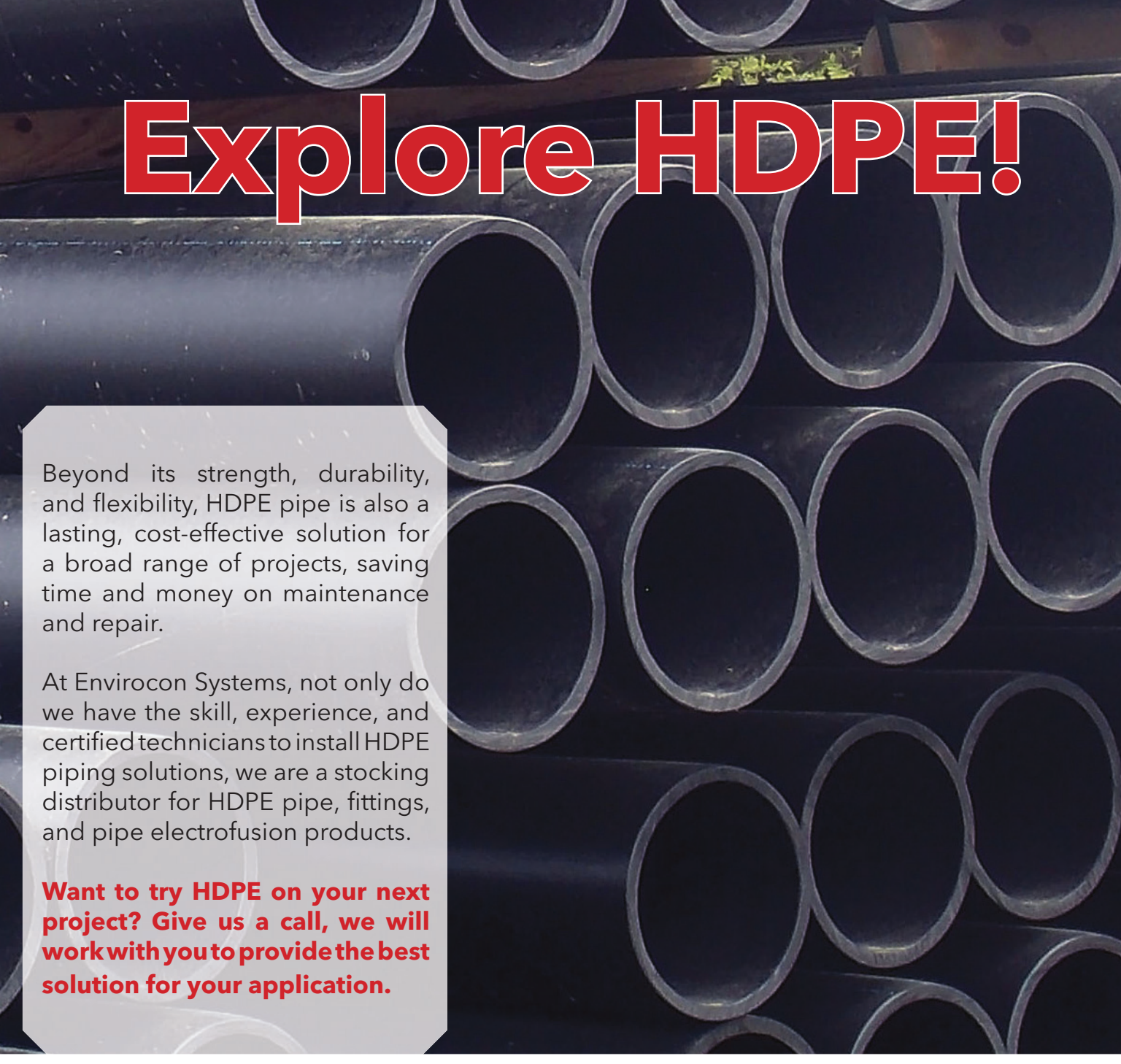
Some of our products include but are not limited to:

- Spool pieces
- Manifolds
- Headers
- Assemblies
- Sub-assemblies

We specialize in safety intensive and technical projects. Our three (3) years, zero (0) recordables safety record gives us access to elite opportunities in our industry – but no project is too small for our high safety standards.

Our work speaks for itself and that is just the way we like it.

For more information on our HDPE piping products and services, please visit www.enviroconsystems.com.



Explore HDPE!

Beyond its strength, durability, and flexibility, HDPE pipe is also a lasting, cost-effective solution for a broad range of projects, saving time and money on maintenance and repair.

At Envirocon Systems, not only do we have the skill, experience, and certified technicians to install HDPE piping solutions, we are a stocking distributor for HDPE pipe, fittings, and pipe electrofusion products.

Want to try HDPE on your next project? Give us a call, we will work with you to provide the best solution for your application.

For more information on our HDPE piping solutions, or our other products and services, scan the QR code to visit our website,
call 281.443.2592 Ext 312
or
email us at sales@enviroconsystems.com

ENVIROCON SYSTEMS, INC.®

SAFETY MINDED.
QUALITY FOCUSED.
CUSTOMER DRIVEN.

POLYMER CONCRETE

TRENCHLESS APPLICATIONS:

Microtunneling, pipe jacking, one-pass tunnel segments. Structures and shafts for tunnel construction.

BEST SUITED FOR:

For sanitary sewer or industrial sewer service where conditions require corrosion protection.

ILL SUITED FOR:

Currently, polymer concrete pipe is not designed for or approved for pressure of potable water applications.

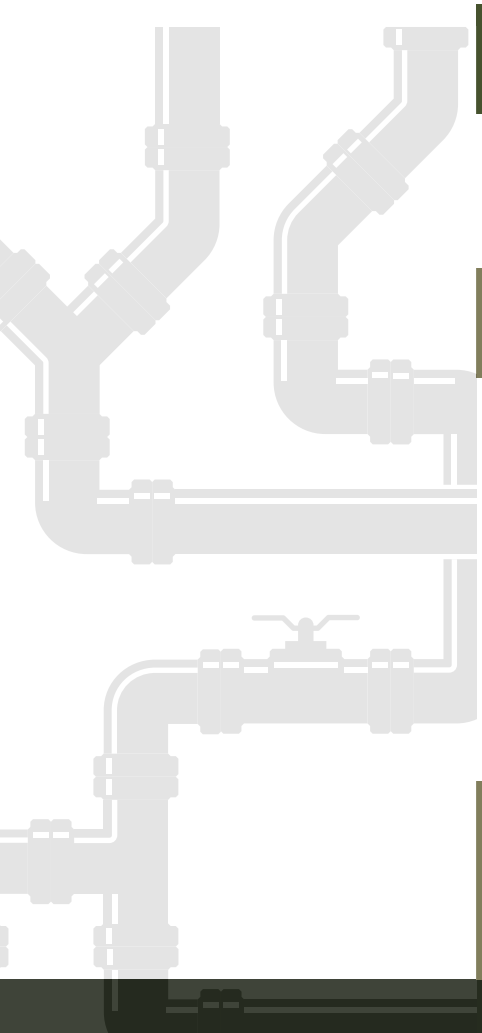
POLYMER CONCRETE

HOW IS IT DELIVERED:

Pipe is typically delivered in 8- or 10-ft lengths by means of truck, closed container for ocean freight or rail. For pilot tube installation methods, 1 m lengths are available.

DESIGN LIFE:

Polymer concrete pipe has a projected 100-year plus service life.



HOW IS IT JOINED:

Standard joint for jacking installations incorporates a double spigot joint joined by a flush compression fit fiberglass or stainless steel collar. The collar mates against the gasket firmly joined to the pipe wall. The joint meets the requirements of several ASTM standards.

AVAILABLE DIAMETERS:

Polymer concrete pipe is available in diameters ranging from 8 to 144 in.

APPLICABLE STANDARDS:

ASTM D6783. Other standards including ASTM C-76 and AWWA design methods can be used.

LATEST DEVELOPMENT OVER THE LAST FIVE YEARS:

Production capacity of polymer concrete pipe and products has increased significantly in recent years. Product availability in several geographic locations will translate into freight savings for owners.

WHAT IS NOTABLE ABOUT YOUR PIPE:

"In choosing a pipe material, owners have found that polymer concrete pipe, with its unique physical properties, combines the best attributes of the leading pipe materials- inherent corrosion resistance of FRP pipe along with the rigid properties of reinforced concrete pipe. Years back when we first introduced the reinforced polymer concrete pipe to the market we often described polymer concrete pipe as a hybrid to those unfamiliar with the product. Nowadays, everyone is much more familiar with polymer concrete and our product availability has increased significantly even in the last couple years with added production capacity in North America," Mike Olson, Interpipe Polymer/PolymerCrete.

Source: Interpipe Polymer/ PolymerCrete
Web: polymerpipe.com

POLYVINYL CHLORIDE (PVC)

TRENCHLESS APPLICATIONS:

Horizontal directional drilling, pipe bursting, segmental sliplining, and close-fit pipe lining.

BEST SUITED FOR:

Potable water, reclaimed water, sewer force main gravity sanitary sewer, and storm sewer pipe and fittings.

ILL SUITED FOR:

Applications where fluid temperatures consistently exceed 140 F or high-pressure applications above 305 psi working pressure.

POLYVINYL CHLORIDE (PVC)

HOW IS IT DELIVERED:

Standard lengths are 20 or 22 ft for pressure pipe and 14 to 22 ft for sewer pipe. Alternative lengths are available on a limited basis.

DESIGN LIFE:

Multiple studies have confirmed that PVC pipe lasts in excess of 100 years.

AVAILABLE DIAMETERS:

Gasketed PVC pressure pipe is available in sizes from 4 to 60 in. Gasketed PVC gravity sewer pipe is available from 3 to 60 in.

HOW IS IT JOINED:

Trenchless applications can utilize spline-locked gasketed couplers or joints, bell-and-spigot joints locked together with either an internal gripper ring assembly or a ring-and-pin assembly, or butt-fusion joints.

APPLICABLE STANDARDS:

Pressure Pipe and Fittings: ASTM D2241, AWWA C900, AWWA C907, AWWA C909, CSA B137.3, CSA B137.3.1, UL 1285, and FM 1612.
Sewer Pipe and Fittings: ASTM D3034, ASTM F679, ASTM F794, ASTM F949, ASTM F1336, ASTM F1803, and CSA B182.2.

LATEST DEVELOPMENT OVER THE LAST FIVE YEARS:

- The Contractor's Installation Guide for Gasketed PVC Pipe has been recently published, providing installers and users with the most up-to-date information (also available in Spanish).
- A Life Cycle Assessment (LCA) in accordance with ISO 14040 series was published showing that PVC pipe has the lowest environmental impacts and life cycle costs as well as the lowest embodied energy and carbon footprint of all pipe materials.
- An ISO 14025 compliant Environmental Product Declaration (EPD) certified by NSF International was re-issued for PVC water and sewer pipe. The EPD transparently discloses the environmental impacts of PVC pipe.

WHAT IS NOTABLE ABOUT YOUR PIPE:

PVC water and sewer pipe has been in service in North American for 70 years, with more than 2 million miles installed. According to a 2018 Utah State University report, PVC pipe has the lowest break rate of all commonly used pipe materials in North America. PVC pipe's exceptional performance is due to its robust material strength and corrosion resistance.

Source: Uni-Bell PVC Pipe Association
Web: www.uni-bell.org

STEEL PIPE

TRENCHLESS APPLICATIONS:

Directional drilling, jack-and-bore and pipe ramming

BEST SUITED FOR:

Water and wastewater transmission, gas and oil transmission, water well casing, pile driving and caisson sleeves.

ILL SUITED FOR:

Chemical or corrosive service without internal or external protective coatings.

STEEL PIPE

HOW IS IT DELIVERED:

Steel pipe is generally supplied in laying lengths 20 to 60 ft. Some diameters of pipe can be manufactured in lengths up to 120 ft or longer without a girth mid-weld.

DESIGN LIFE:

The design life of steel pipe is based on the mechanical strength of steel which is fully elastic and not time dependent. If properly installed, with the appropriate lining and coating, steel pipe with the addition of electrical bonding and cathodic protection (if required) can last indefinitely

HOW IS IT JOINED:

The most common method of assembling steel pipe is by field welding or bell and spigot joints with rubber o-ring gaskets, other methods include threading-and-coupling or compression fittings.

AVAILABLE DIAMETERS:

Steel pipe is available in diameters 4 in. and larger with virtually an unlimited choice of fitting and special fabrications possible

APPLICABLE STANDARDS:

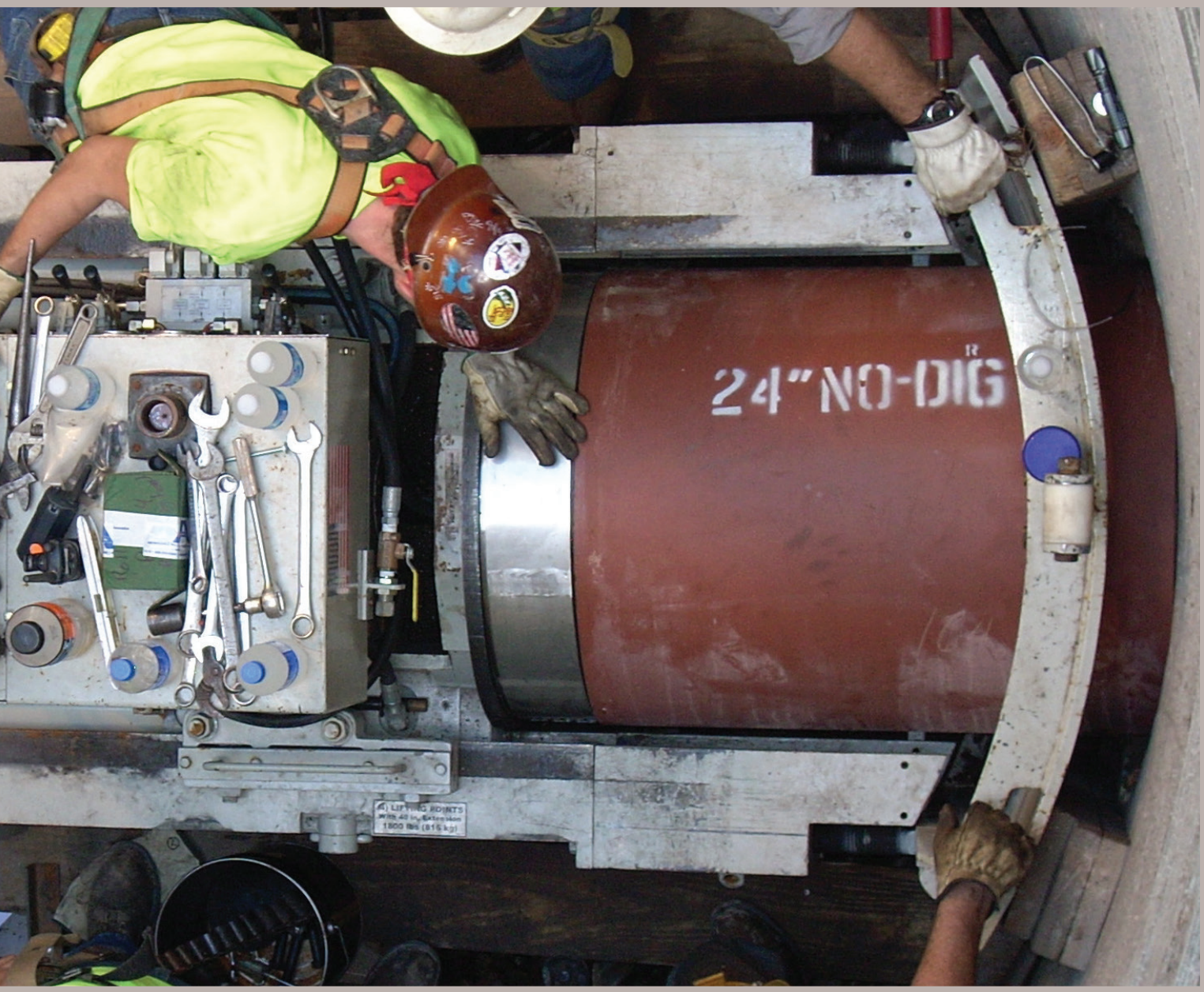
AWWA standards include C200 and Manual of Standard Practice for the Design and Installation of Steel Water Pipe M11, ASTM standards for steel pipe include A53, A106 A139, A252. The most common API standard for steel pipe is API 5L

WHAT IS NOTABLE ABOUT YOUR PIPE:

The performance resume for steel pipe dates back to the early 1850s. This experience in pressure applications for water, gas and petroleum fluids cannot be matched by any other pipe material, particularly those made from plastic materials that are visco-elastic, where the material strengths erodes overtime. Steel pipe, with its simple, straight-forward design procedure and pragmatic installation requirements, is finding its way into project specifications once dominated by pipes of composite construction. STI/SPFA member companies are certified for the SPFA Certification program by Lloyd's Register Quality Assurance. This provides owners and engineers with assurance that their steel pipe is manufactured in strict accordance with applicable AWWA, ASTM and other standards and industry accepted practices.

Source: Steel Tank Institute/Steel Plate Fabricators Association (STI/SPFA)
Web: steeltank.com

VITRIFIED CLAY JACKING PIPE (VCP-J)



TRENCHLESS APPLICATIONS:

Pilot Tube Method (PTM) of Guided Boring, microtunneling, slurry microtunneling, static pipe bursting, sliplining existing pipe and casing.

BEST SUITED FOR:

Gravity flow sanitary sewers

ILL SUITED FOR:

Pressure applications

VITRIFIED CLAY JACKING PIPE (VCP-J)

HOW IT IS DELIVERED

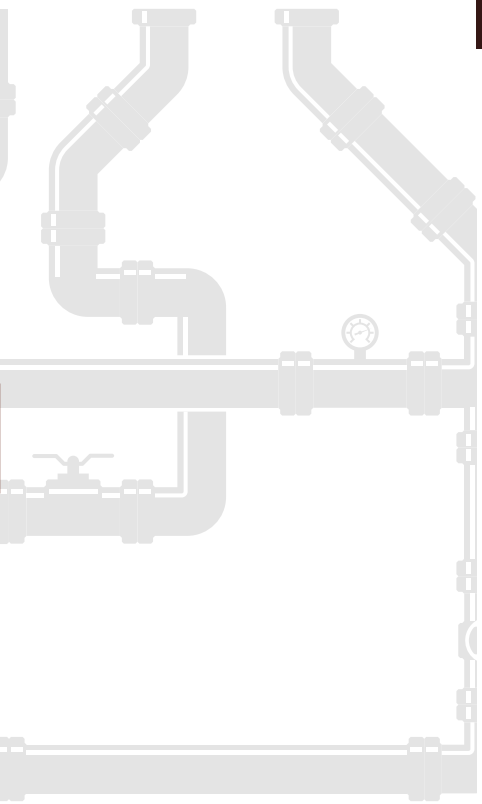
VCP is available in a variety of stock or custom lengths, depending on diameter, jacking frame and shaft size. Common lengths are 1 and 2 m.

APPLICABLE STANDARDS

ASTM C-1208, EN 295-7

DESIGN LIFE:

200-plus years



HOW IS IT JOINED:

Low-Profile Compression Joints utilizing 316 grade stainless steel collars

AVAILABLE DIAMETERS:

8 to 24 in. I.D.

LATEST DEVELOPMENT OVER THE LAST FIVE YEARS:

Guided boring/pilot-tube method techniques with VCP are achieving precision drives of more than 400 LF. ASCE/ UESI has released a Manual of Practice on the method entitled Pilot Tube and Other Guided Boring Methods (MOP No. 133; available at asce.org). VCP is currently being used as the replacement product in static pipe bursting methods resulting in a rigid, abrasion resistant, long-lasting, gravity flow conduit.

WHAT IS NOTABLE ABOUT YOUR PIPE:

VCP-J is the predominant small diameter direct-jacked product pipe material due to its unmatched compressive strength (18,000 psi average), low-profile, zero-leakage joint and proven unmatched service life. Vitrified clay is a fired ceramic with material properties unaffected by age, light or chemicals. It provides unmatched durability to aggressive cleaning tools and techniques. Today's vitrified clay jacking pipe coupled with trenchless installation methods allow municipalities to design, construct and maintain the most sustainable collection systems of this century.

Source: National Clay Pipe Institute
Web: ncpi.org

NO-DIG Pipe
for Pilot Tube Guided Boring

WHAT IF you could install a new sanitary sewer main without disrupting area businesses or traffic?

- Highly accurate line and grade
- Reduction or elimination of lift stations
- Shaft sizes as small as 8-12 feet
- Low-impact installations – Reducing or eliminating relocation of existing utilities

Contact us to find out more about Pilot Tube Guided Boring with NO-DIG Pipe.

LOGAN
Today's Clay Pipe

NO-DIG®

www.loganclaypipe.com • www.no-dig-pipe.com
800-848-2141