

A QUARTERLY MAGAZINE FROM MCWANE DUCTILE

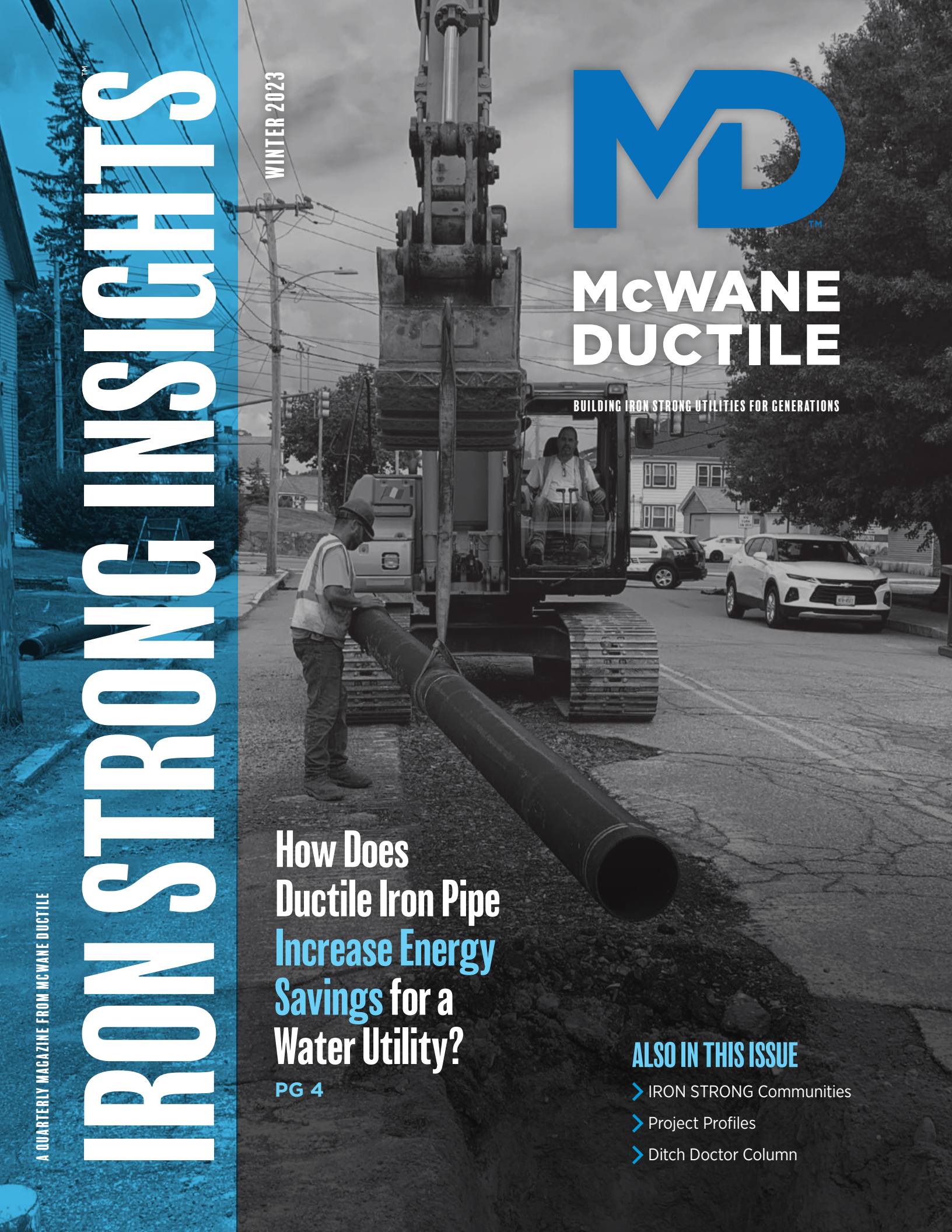
IRON STRONG INSIGHTS

WINTER 2023



McWANE DUCTILE

BUILDING IRON STRONG UTILITIES FOR GENERATIONS



How Does
Ductile Iron Pipe
Increase Energy
Savings for a
Water Utility?

PG 4

ALSO IN THIS ISSUE

- > IRON STRONG Communities
- > Project Profiles
- > Ditch Doctor Column



**McWANE
DUCTILE**

Contact Us: McWaneDuctile.com

Mike Dodge, VP Sales & Marketing
Stuart Liddell, Sales Operations Manager
Andrea Kubik, Marketing Manager

Inside

- 3 IRON STRONG Communities
- 8 DI Pipe Surviving the Storm in Fort Myers
- 10 Project Profiles
- 14 Ditch Doctor Column

IRON STRONG INSIGHTS™

McWane Ductile has been an industry leader in the manufacture of water distribution and infrastructure products since 1921. With three U.S. foundries, McWane Ductile offers superior service while supplying Ductile iron pipe across North America and beyond, all while maintaining an unwavering commitment to safety and quality. Through continued innovation, it is our goal to meet the customer needs and industry demands of the future in order to Build Iron Strong Utilities for Generations.



How Does Ductile Iron Pipe Increase Energy Savings for a Water Utility?

PG 4

Welcome to Iron Strong Insights™

Dear Readers,

Welcome to the winter edition of Iron Strong Insights. In many parts of the country, winter has hit hard with incredible amounts of snow, ice, rain, and very frigid temperatures. Unfortunately, one of the more significant storms hit right as we celebrated the holidays and disrupted travel plans for many of us to spend that time with family. We still have a few weeks of winter, so let's hope we don't see any more destructive storms this year.

Speaking of weather events, we have a very good feature in this issue from one of our Product Engineers, Jerry Regula, and our South Florida Sales Rep, Gary Gula, detailing the aftermath of Hurricane Ian as it impacted the Southwest Florida coast. Notable among all that was affected was the resiliency of the Ductile iron pipes that service that area, both buried and above ground. So as power was restored, those communities could rely on safe drinking water due to the ruggedness of the products used to deliver it.

As we move into a new year, McWane Ductile has many plans to continue to upgrade and enhance our manufacturing facilities. These upgrades may cause minor shutdowns at some of these locations. Still, the long-term benefit will be the ability to meet our customers' needs more effectively through greater capacities and efficiencies. If you have never been to a pipe foundry, reach out to our reps for an opportunity to do so. I am confident it will be worth your time.

We will also be moving quickly into the tradeshow season. Please keep up with us by checking our social media and website for the "Upcoming Events" our staff will participate in. If you cannot attend any of these events, please contact us directly, and we can bring our training opportunities to you. We offer several topics and welcome suggestions on keeping our communities Iron Strong for Generations.



Stuart Liddell
Sales Operations Manager
Sales Operations Department

Giving Back for **IRON STRONG** *Communities*

In the Fourth Quarter of 2022, McWane Ductile made charitable donations totaling \$41,682 to the following community groups:

COSHOCTON, OHIO REGION

Farmers & Hunters Feeding the Hungry, Coshocton County
Kids America, Inc.
Coshocton Rotary Club
Coshocton High School
The Veteran Narrative
River View Girls Basketball Boosters
Roscoe Village Foundation, Inc.
Coshocton County Sheriff's Office
United Way of Coshocton County, Inc.

PHILLIPSBURG, NEW JERSEY REGION

Church of the Nazarene Blessed Hope
NORWESCAP Food Bank
River of Life Presbyterian Church
Fellowship Church Food Pantry
Phillipsburg Old Towne Festival
The University of Tennessee
Saint Philip & Saint James Church
Winter Hats and Gloves
Phillipsburg Emergency Squad
Pohatcong History – Heritage Society
Phillipsburg Lodge #52 F&AM
School Supply Donations
Cheer Squad Donations
Phillipsburg High School Band Boosters

PROVO, UTAH REGION

Skyline Youth Skeet Shooting Team
Hobby Youth Stock Racing
Foundry Educational Fund
Building Youth Around the World –
Navajo Nation Humanitarian Project
Payson High School – Future Farmers of America
Payson Junior High School – Future Farmers of America

How Does Ductile Iron Pipe Increase Energy Savings for a Water Utility?

By John Simpson, P.E., ENV SP, NACE CT McWane Ductile Regional Engineer

Energy resources are a big concern within our society. It is hard to listen to the news without some mention of energy. There is a finite amount available, and how we use our energy will have lasting effects on future generations. Since water and sewer infrastructure plays such a significant role in the total energy consumption of municipalities, more emphasis should be placed on energy savings when selecting pipe materials.

Engineers and utilities I interact with are familiar with designing pumps to maximum pumping efficiency, thus lowering pumping electrical costs, but they are typically unaware of the potential energy savings over the design life of piping materials. Many



For water utilities, emphasis should be placed on energy savings when selecting pipe materials. Image Source: iStock

overlook the proper flow rate/hydraulic comparisons and focus mainly on the price per foot on the bid form. They ultimately pay more in the long run.

INSIDE DIAMETER - BIGGER IS BETTER

Regarding the inside diameter of water pipelines, Ductile iron has a significant advantage over other materials mainly because of its inherent strength. The natural strength of Ductile iron pipe (DI pipe) allows the wall thickness to be smaller compared to other materials giving DI pipe a larger inside diameter.

Bigger is better, especially when a utility looks at reducing the monthly electric bills it pays for pumping water throughout the system. As an illustration,



Just like drinking straws, it takes more energy to move liquid through pipe with a smaller inside diameter. Image Source: iStock

imagine drinking your favorite beverage with a normal size straw; it is easy to get your beverage from the cup.

Now imagine trying to take a drink of your favorite beverage with a smaller diameter coffee or stirring straw.

It will take much more effort to get the beverage from the cup. Municipal pumps have similar issues when pumping through a smaller diameter. It just takes more energy to move liquid through a smaller area.

4 FACTORS THAT AFFECT WATER RESISTANCE THROUGH A PIPELINE

When water flows through a pipeline, four factors affect the resistance to that flow:

1. The velocity of the water flow.
2. The roughness of the interior surface of the pipe.
3. The length of the pipeline.
4. The internal diameter of the pipe.

When all these variables are identified, they can be placed into the well-known Hazen-Williams Formula, listed below, to determine the head loss occurring in the pipeline. Ductile iron pipe has hydraulic advantages. Because of its larger inside diameter, there is less head loss in DI pipe compared to other materials.

Hazen-Williams Formula

$$H_L = 1,000 \left[\frac{V}{0.115C(d)^{0.63}} \right]^{1.852}$$

where:

H_L = Head loss (ft./1,000 ft.)
 V = Velocity of flow (fps)
 C = Flow coefficient (C factor)
 d = Actual inside diameter (in.)

Flow Equation

$$Q = AV$$

where:

Q = flow, (cfs)
 A = area, (ft²)
 V = velocity, (fps)

SO, WHAT IS THE PRACTICAL SIDE OF THIS EVALUATION FOR THE WATER UTILITY?

In order to get water to customers at adequate pressure, head losses must be overcome by using pumps. The energy for pumping is a cost to the water utility in the form of their electric bill. The less energy required, the lower the electric bill to the utility.

These annual energy cost savings can easily be calculated using the head loss value and inserting that value into a pumping cost equation such as that used in the University of Michigan Study, *A Framework to Evaluate the Life Cycle Costs and Environmental Impacts of Water Pipelines*. (ASCE Conference Proceedings, Pipelines 2016). It can be further extended by evaluating pumping cost savings over many years using a present-worth approach.

All of these calculations can be conveniently performed on the Energy Savings calculator on the McWane Pocket Engineer, where inside diameters of different pipeline materials are evaluated against that of Ductile iron.



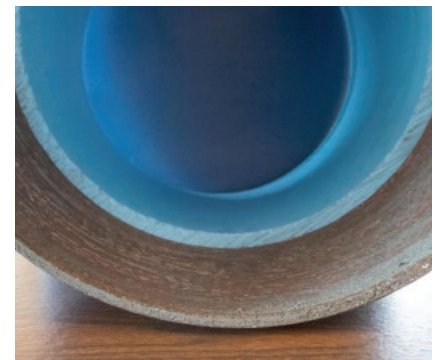
Download McWane's handy Pocket Engineer App at pe.mcwane.com.

Due to its larger inside diameter, Ductile iron outperforms other competing pipe materials regarding flow rates in the pipeline. I mentioned earlier that the roughness on the pipe's interior surface is a factor in calculating head loss. This is commonly known as the "C" factor of the pipe.

It should be noted that some pipe materials have a slightly higher "C" factor. However, running through the head calculations shows this component does not affect pipeline flows nearly to the degree of a larger inside pipe diameter. Furthermore, it has been found by research that the "C" factor of DI pipe remains consistent throughout many years of service. See the Ductile Iron Pipe Research Association's report on Cement-Mortar Linings for Ductile Iron Pipe (dipra.org, keywords: cement linings).



DI pipe (foreground) vs. HDPE (background) internal diameter.



DI pipe (foreground) vs. PVC (background) internal diameter.

Now let's look at an example wherein a utility will install a mile of 8-inch pipeline in a subdivision, a constant pump rate is required due to an adjacent industrial park, and the materials being considered are Ductile iron pipe and PVC (polyvinyl chloride). In determining the energy costs to the utility of each respective material, the project model, as noted in the information below, has been established: Please note that the price per kWh will vary per region of the country. Areas with a higher \$/kWh will experience higher overall energy savings.

- ▶ 8-inch DI pipe vs. 8-inch PVC pipe
- ▶ Pipeline Length: 5,280 ft.
- ▶ C Factor: 140
- ▶ Flow Rate: 695 GPM (Tech Park Demand)
- ▶ Unit Power Cost: 0.06 \$/kWh (Adjust accordingly per region)
- ▶ Pump Rate: 24 hr/day
- ▶ Pump Efficiency: 70%
- ▶ Design Life: 100 years
- ▶ Rate of Return: 5%
- ▶ Inflation Rate of Power Cost: 4%

By going through the steps of first determining the respective head loss that must be overcome in each pipeline, then converting that into pumping costs the utility will incur based on the assumptions listed, one finds that using Ductile iron pipe will result in present

worth cost savings to the utility of over \$80,000 per mile during the 100-year estimated service life of the DI pipe.

Remember, these calculations are just for one mile of pipe. If a utility has two hundred miles of 8-inch pipe within its system, the savings over a 100-year service life jumps to approximately \$16,000,000 over the same period. The reason for this cost savings to the utility is that the 8-inch Ductile iron pipe (Class 350) has approximately 9.76% larger inside diameter compared to 8-inch PVC pipe (DR-14), and this larger area creates less head loss within the pipe.

CALCULATING SAVINGS

The cost savings to a water utility will be more significant when looking at larger diameter pipelines that carry larger flows in a system. Let's look at an example using 24-inch pipe using the information listed below.

- ▶ Pipeline Length: 30,000 ft.
- ▶ Flow Rate: 6,000 gpm
- ▶ Unit Power Cost: \$0.10/kwh
- ▶ Pump Efficiency: 70%
- ▶ Pump Rate: 24 hrs/day
- ▶ Design Life: 100 years
- ▶ Rate of Return: 5%
- ▶ Inflation Rate of Power Cost: 3%

Using the previous approach in calculating the energy cost savings to the utility, you find that Ductile iron pipe will result in approximately \$1,200,000 present worth of savings over PVC pipe during the pipe's service life.

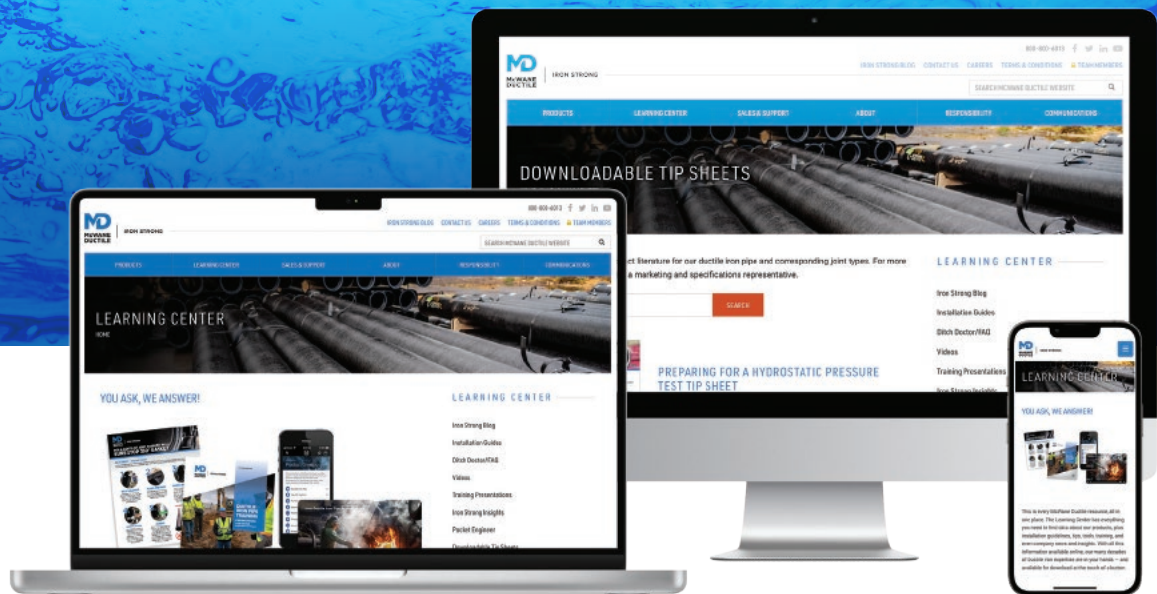
Let me clarify that the savings we are talking about in this article represent just the energy savings from lower electrical costs. It does not take into consideration replacement or rehabilitation costs of pipe materials that have a lower service/design life. See the American Water Works Association Report titled, *Buried No Longer*.

Approximately 85% of a utility's capital investment is underground. When planning for investment, energy should be an essential component of any municipal system. With rolling electric blackouts becoming increasingly common and the rising population within the U.S. putting higher demands on our energy system, energy savings should be one of the most important items to consider when evaluating pipe materials.

NEED ASSISTANCE WITH YOUR WATERWORKS PROJECT?

If you have any questions regarding your water or wastewater infrastructure project, be sure to reach out to your local McWane Ductile representative. We have team members who've managed small and large water utility systems, have served in engineering consulting firms, and bring decades of experience in solving field issues involving pipeline construction and operation. From design to submittal to installation, we strive to provide education and assistance to water professionals throughout the water and wastewater industry.

KNOWLEDGE ON TAP.



GET ANSWERS DIRECTLY FROM THE SOURCE.



**McWANE
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IRON STRONG

This is every McWane Ductile resource, all in one place. **The Learning Center** has everything you need to find data about our products, plus installation guidelines, tips, tools and training, and even company news and insights. With all this information available online, our many decades of Ductile iron expertise are in your hands — and available for download at the touch of a button.

Visit mcwaneductile.com/learning-center

McWaneDuctile.com



POCKET ENGINEER

Available for **iOS + Android**
or online at pe.mcwane.com

IN THE EYE OF THE STORM —

WHEN PIPELINE MATERIAL CHOICE AND INVESTMENT MATTER MOST

By McWane Ductile's Jerry Regula, ENV SP, NACE CT, National Product Engineer, and Gary Gula, Senior Sales Representative

Jerry, Sept 24, 2022; I'm sitting on the beach near the northern tip of Captiva Island, Florida. I'm on vacation with my wife, enjoying the warm sun, dolphins playing, and birds feeding as if there was no care in the world. Admittedly, most people in the area were already aware of the tropical storm developing in the Caribbean and wondered, will the storm become a hurricane?

With a storm brewing and having worked so closely with water utilities for more than 35 years, particularly within this area in recent years, it was hard not to show concern for the impending storm and potential danger. It made me recall the fable from my childhood, "The Three Little Pigs." Can this beautiful expanse of tranquility and this community withstand what Mother Nature may unleash? Did the local utilities take time and make investments in solid infrastructure? Did the utility make the right pipeline material choice? Will the water flow?

SO, WHAT HAPPENED NEXT?

As my wife and I hastily departed from our vacation, what started as a tropical depression intensely strengthened to a Category 4 hurricane, known as Hurricane Ian. On Sept. 28, Ian was the fifth strongest hurricane on record to hit land in the contiguous U.S. Its crushing blow left a massive path of destruction to the landscape and to structures, and left millions without utilities.



Hurricane Ian did not affect Ductile Iron piping on Sanibel Island. Notice the fitting cast in 1974!

Pine Island, the bridge to Pine Island, the Sanibel Causeway and Sanibel Island, were hardest hit by the storm surge; for more than two months, the causeway to Sanibel Island was shut off and only open to residents and persons with admittance to work (Source—Wikipedia).

STRAW, WOOD, BRICK, WHAT ABOUT IRON?

Gary Gula and I have worked together in the area for many years, helping to educate crews on the installation of Ductile iron water works systems. We returned to the area shortly after the storm. But neither of us was prepared for the devastation we witnessed following



Hurricane Ian. We realized immediately that some might never recoup what they have lost.

There was an empty feeling traveling along Bonita Beach on Hickory Boulevard when seeing the wreckage for the first time in person. Too often, specifiers look at inferior products thinking there will be cost savings to a project, and in this tragedy, it was apparent some unwise choices were made.

WHY DOES RESILIENCY MATTER?

We often hear about millions of people needing power after a massive storm, but we rarely hear "Where's the water?"



Hurricane Ian debris near Bonita Beach

Immediately following destructive storms, communities typically lack water due to the loss of electricity to pump it. Often, people assume that waterlines are buried and not affected by severe weather conditions.

The fact is, there are exposed water pipes in a vast number of applications, particularly in the state of Florida. As we saw, if the pipeline was lesser than Ductile iron pipe, it didn't withstand Mother Nature.

Certain manufacturers, most notably PVC and HPDE, have attempted to manipulate specifications through legislation to get their products listed based on price without considering what the engineer deems the right product for a specific project. McWane Ductile views projects from different angles with recommendations to complete the project correctly, not just based on price alone.



Hurricane Ian damage

WHY IS DUCTILE IRON PIPE SUPERIOR AGAINST DEVASTATING STORMS AND MORE?

Ductile Iron pipe is one of the most resilient pipe materials available today. The strength of the 60-42-10 grade Ductile iron makes it a prime material to hold up to severe conditions and in

this case, hurricanes. Other scenarios include deep burial, trench through rock or high-pressure applications. The 60,000-psi tensile strength and the flexibility of the 10% elongation properties make DI pipe an ideal material for these adverse environments. DI is not affected by ultraviolet light, making it safe to use above ground. This durability is why DI is commonly used beneath multi-million-dollar structures such as the bridge-crossing to Sanibel Island.

Bridge crossings are found in warm or cold climates. They are often not viewed as crucial as buried pipe, but above-ground valve clusters are a common sight, particularly in Florida. Following the aftermath of Ian, DI valves, fittings and piping remained Iron Strong.



Resilient Ductile Iron Water Products

Above-ground piping at Bonita Beach, Florida, survived Hurricane Ian.



SUMMARY



Like the story of "The Three Little Pigs," whether an engineer, a product specialist or an installer... in critical times, Ductile iron prevailed. This was proved by the performance of DI pipe from Bonita Beach, north through Fort Myers, Sanibel Island and Captiva Island.

DI pipe in underground and above-ground applications withstood the massive winds

and 10-15-foot storm surge that ensued. Infrastructure that was flooded held-up against the strong current and debris flow. Let's talk about making your utility more resilient with Ductile iron pipe.

Some may ask, "Why do some continue to live in hurricane-prone areas?" After having worked on utility projects and vacationed in this beautiful area, it's

easy to see the draw. Even with massive destruction, the vibe in the community is that of perseverance and resiliency, what we call Iron Strong. With the return of basic human needs such as water and electricity, people have begun to restore their lives, and businesses are coming back online. We wish the Southwest Florida region and other areas affected by Hurricane Ian a safe and speedy recovery.



PROJECT PROFILES

West PROJECT PROFILE

Crown and Virtue is an amenity-filled gated community at Tournament Hills in Beaumont, California. It is conveniently located near schools, shopping and dining. It has easy access to Palm Springs and Los Angeles, close to the 10 and 60 freeways. Residents can also enjoy parks, a community pool and picnic areas within the community.

At the beginning of the Crown and Virtue Communities project at

Tournament Hills, McWane Ductile took an opportunity to meet with the water district, contractor and distributor to review best practices for product installation. McWane Ductile was on-site to answer any questions and provide training if needed.

While on-site at the start of the Crown and Virtue project with the installation of side-by-side 18 inch and 24 inch restrained lines, we saw good installation

procedures and practices by the construction crew. The crew utilized proper safety equipment, including a brush to clean the bell and spigot. The manufacturer supplied pipe lube with a brush, tape measurer and a McWane Ductile feeler gauge for the consistent assembly of each joint.



Sales Region: West
Sales Representative: Carolyn Lopez
Project Location: Beaumont, CA
Project Name: Crown and Virtue Communities
Project Developer: Tri Pointe
Project Contractor: Legacy Excavating, Inc.
Project Distributor: Core and Main, Perris Branch

Types of Ductile iron pipe used on the project:

DIAMETER	JOINT	CLASS	FOOTAGE
4"	Tyton®	51 & 52	72
6"	Tyton®	350	182
18"	Tyton® & Sure Stop Gaskets™	250	3,680
24"	Tyton® & Sure Stop Gaskets™	250	3,289

Sales Region: Midwest

Sales Representative: Scott Frank

Project Location: LaPorte County, IN

Project Owner/Utility: LaPorte County
Redevelopment Commission

Project Engineer: LaPorte County Engineer

Project Contractor: D & M Excavating

Project Distributor: Ferguson, South Bend, IN

Types of Ductile iron pipe used on the project:

DIAMETER	JOINT	CLASS	FOOTAGE
12"	TR Flex®	52	220
12"	Tyton®	52	2,750
20"	TR Flex®	350	950
20"	Tyton®	350	8,258



When a Loves Travel Center agrees to build at an I-94 off-ramp in northern Indiana, it only makes sense that the county funds the utility expansion to provide them with sewer and water. Laporte County Redevelopment commission did just that, and you get the US 421 & CR 300 Water and Sewer expansion. A \$5 million water and sewer extension project with over 8,000 feet of 20 inch Tyton Joint® and almost 1,000 feet of 20 inch TR Flex® along with 2,700 feet of 12 inch Tyton and 220 feet of 12 inch TR Flex Ductile iron. The contractor, D & M Excavating from Michigan City, Indiana, had to

overcome two challenging bores and jacks, one under I-94, a major highway in northern Indiana, and another under a large diameter oil transmission main. They also had three separate horizontal directional drillings across a creek. Michigan City, Indiana, will provide this expansion's water and sewer service.

D & M Excavating is owned and run by Ryan Miller, founded in 1976 by his father and mother. Ryan took over the business 15 years ago. They started as a residential contractor, primarily digging basements. Over the last 47 years, D & M has become one of northern

Indiana's most trusted and reliable contractors. With its 30 employees, D & M offers various services, including underground utilities, site work, demolition, hydro-excavating and trucking.

PROJECT PROFILE

Midwest





Northeast

PROJECT PROFILE

The City of Taunton, Massachusetts, has a water system dating back to 1876. The city serves 60,000+ customers with a water system containing approximately 274 miles (1,446,720 feet) of pipe varying in sizes from 6 inch to 30 inch. Existing piping material includes mainly cast iron pipe and some pre-stressed cylinder

pipe. As part of the city's capital improvement plan, aging infrastructure is identified for replacement on an annual basis.

Celco Construction of Pembroke, Massachusetts, was the successful bidder on the 2021 Water Main Improvement

Project, Contract #1, bid on June 24, 2021. The primary purpose of Contract #1 was to replace undersized, aging 6 inch cast iron pipe with new Ductile iron pipe, as well as replace fire hydrants with McWane's own Kennedy Hydrants. Celco installation crews have encountered many obstacles in installing replacement pipe in this aging community.



During my on-site visit, Celco crew owner Joe DiPietro (pictured) remarked, "We've been working for the City of Taunton on and off since 1998. All of our projects have involved upgrading deteriorating infrastructure. We hope to continue providing the city quality work in the future and will begin a new project this fall and into 2023."



Sales Region: Northeast
Sales Representative: Jeff Houser
Project Location: City of Taunton, MA
Project Name: 2021 Water Main Improvements, Contract No. 1
Project Owner/Utility: City of Taunton, MA
Project Engineer: Tighe & Bond, Westfield, MA
Project Contractor: Celco Construction, Pembroke, MA
Project Distributor: Direct Sale

Types of Ductile iron pipe used on the project:

DIAMETER	JOINT	CLASS	FOOTAGE
6"	Tyton®	52	200
8"	Tyton®	52	9,600
12"	Tyton®	52	36
16"	Tyton®	52	36

Sales Region: South

Sales Representative: Scott Rhorick

Project Location: New Braunfels, TX

Project Owner/Utility: New Braunfels Utilities

Project Contractor: Pesado Construction, San Antonio, TX

Project Engineer: Plummer Associates, Inc., San Antonio, TX

Project Distributor: ACT Pipe & Supply, San Antonio, TX

Types of Ductile iron pipe used on the project:

DIAMETER	JOINT	CLASS	FOOTAGE
24"	Tyton®	250	1,240
24"	TR Flex®	250	1,660
30"	Tyton®	250	5,260
30"	TR Flex®	250	4,340



The SWTP Discharge Waterline scope of work includes approximately 12,800 linear feet of 24 inch and 30 inch water main. This includes trenching/backfill, trench safety, curved micro-tunneling, jacking/boring, fittings, valves, connections and other appurtenances, generally from the Surface Water Treatment Plant located at 2356 Gruene Road to the 306 Pump Station located at 2320 East Common, along Rivercrest Drive, Gruene Road and Waterway Lane.

Before construction, McWane Ductile representatives held on-site job site training to share product knowledge and helpful installation tips.

New Braunfels Utilities started as an electric transmission and distribution system in 1942 when the City Commission purchased Guadalupe Electric Company. In 1959, New Braunfels Utilities took over operations of the water and wastewater systems from the City of New Braunfels.

Pesado Construction Company was founded in 1991, specializing in underground utilities and heavy civil construction, with construction projects in the water and wastewater industry and industrial facilities ranging in different sizes and values up to \$35 million.

ACT Pipe & Supply was founded in 1976, supplying fire protection and fabrication

in Texas. In 1993, ACT expanded into the waterworks industry. They have over 14 locations throughout Texas.

Pesado Construction, in conjunction with ACT Pipe & Supply – San Antonio, partnered with McWane Ductile to provide New Braunfels Utilities with a high-quality water line that will serve the community for decades.

PROJECT PROFILE
South





DEAR DITCH DOCTOR,

In upstate New York, we deal with all kinds of crazy and changing weather conditions, especially in the winter months. For reasons unknown to us, the local authorities have recently imposed new restrictions on when we can or cannot install pipe. It's become quite frustrating in terms of meaningful production being accomplished! I keep trying to tell them, "This is Ductile iron. It's not bothered by any temperature or weather that we humans live through every day, year-round!" Am I wrong here?

Thanks,
Upset in Uptonville

DEAR UPSET,

You are NOT wrong, not at all. In fact, you nailed it with your succinct and sharp retort. Unlike most other alternate pipe materials in our industry, where their concerns probably developed, Ductile iron is NOT affected in any meaningful way by temperatures that we commonly encounter on earth.

Ductile iron remains stable and strong from minus 40°F to well beyond the boiling point of water, 212°F. Exceptions from standard cement-lined pipe to accommodate temperature limitations of the asphaltic paint (typically applied or specialized epoxy linings, both restricted to 125°F in-service) or other items such as rubber-compound gaskets that top out near 300°F. Other materials are often structurally weakened by temperatures far less extreme.

When I tell you that the melting point of Ductile iron is 2,100°F, suddenly, the desire to laugh begins about the concerns raised by others! A tremendous amount of helpful information is available online by searching "**Cold Weather**" on the McWane Ductile website at McWaneDuctile.com.

Sincerely,
The Ditch Doctor



DEAR DITCH DOCTOR,

As a design engineer for various utility systems, I have recently investigated all the restrained joint options involving Ductile iron pipe for a critical infrastructure project upcoming. Clearly, Ductile iron is a sturdy and reliable product suitable for a wide range of common to strenuous applications. I have one question, though ... Are there any conditions or installations where the steel-segmented locking gaskets should NOT be used, and why?

Sincerely,
Wondering Here in Wickenburg

DEAR WONDERING,

While regardless of brand, the locking gaskets you have inquired about are designed and proven to be a standard condition performative equal to their full-fledged integral cast restrained joint counterparts, such as TR Flex®. And while these gaskets serve wonderfully for the impressive internal pressure ratings and external load handling capabilities of Ductile iron pipe, there is one general caveat to heed. These steel-segmented locking gaskets should not be used in above-ground installations where excessive or repetitive vibrations are likely to occur over

time. While there is little, if any, evidence of joint separation ever occurring, the theory is that such oscillation forces could adversely affect the engagement of the locking segments into the pipe surface.

These gaskets are also not recommended for areas of unseen potential adverse engagements, such as in horizontal directional drilling installations. Pulled through a relatively flat casing is fine, but not for severely deflected, relatively uncontrolled dragging through a radius.

As for the actual assembly of locking gaskets, I would suggest your on-site inspectors and the contractors themselves take a gander at the proper assembly techniques outlined in a recent **YouTube** video from a pipe manufacturer ... just search "**Install Sure Stop gaskets**" and follow along for success every time!

Sincerely,
The Ditch Doctor



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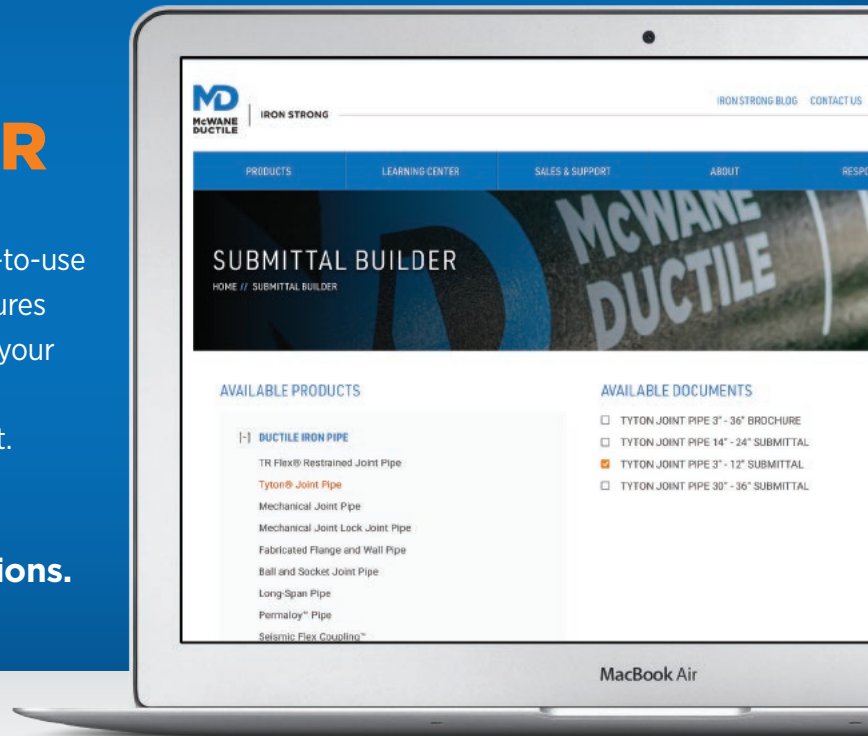
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