FALL 2019

MODERN MCWANE

ANOTHER RIVER TO CROSS

Milo, Maine — The Town of Three Rivers Pg. 4

McWane Ductile

INSIDE

IRON STRONG

WELCOME TO MODERN McWANE

Dear Readers,

Welcome to another edition of Modern McWane. It's hard to believe summer has passed, the leaves are falling, football season is in full swing and the winter holidays are just around the corner!

Fall also brings National First Responders Day on October 28, a day to celebrate the heroic deeds of public servants who work every day to keep our communities safe. But what happens when the first responders need assistance with making a scene safe or after the critical first response work is finished? In this issue, Aaron Loosli, McWane Ductile Sales Representative, provides his insight on the utility workers who see less of the limelight. He calls these folks the "Hidden Responders," those who are on the scene immediately following a disaster, and even working tirelessly over the many days, weeks and several months to focus on disaster recovery. Read more on page 6.

During this time of year, we often see a rush from our consumers to complete construction projects and prepare for the colder months ahead. This often requires an intensified focus on production, safety and ingenuity. Speaking of ingenuity, our feature article by McWane Ductile Product Engineer Ken Rickvalsky tells of the clever method used by general contractor Lou Silver Company to complete a challenging 300-foot river crossing with 12-inch Ductile iron pipe in the town of Milo, Maine.

As always, we have our Project Profile section filled with various entries from across the U.S. In this issue, we have dedicated some space to acknowledge two great partners and dear friends in this industry who recently passed away: Mr. Jim Kissick, President of Kissick Construction, and Mr. Bill Finchum, founder of Finchum Construction Company. These two gentlemen were very valuable to the success of numerous projects involving McWane Ductile products. They were both hard-working, well-respected men who took care of their employees and generously served their communities. Their presence will be sorely missed.

Additionally, we have our Q&A column brought to you by the Ditch Doctor as part of our ongoing effort to share practical answers and solutions to your tough Ductile iron questions. We are also planning a new feature, "Ditch Doctor Live," on YouTube and social media this winter. Listen, watch and learn anytime, anywhere. Stay tuned!

We will be attending a few more conferences and trade shows this fall where our staff will provide presentations. You can check those out on page 13. And please be sure stop by our booth. If you're unable to attend these events, be sure to engage with us on our website, YouTube, LinkedIn, Facebook and Twitter, where we post numerous educational blogs, videos and updates for water professionals. Let us know how we can improve our service or assist in Building Iron Strong Utilities for Generations. As we move into the winter months, we wish everyone happiness and safety in the upcoming holiday season.

Stuart Liddell
Sales Operations Manager
Sales Operations Department

McWANE SAYS GOODBYE AND REMEMBERS

CARTER RETIRES FROM MCWANE DUCTILE

After a long career, Plant Manager Joe Carter announced his retirement from McWane Ductile – Utah at the end of October 2019. Joe Carter started at Pacific States Pipe in August of 1978 as a laborer. Joe has worked in various positions throughout the plant, in so many different departments that it is difficult to list them all.

From 2000 to 2016, Joe served as the Plant Manager at the McWane Ductile – Ohio facility. He was asked to return to the Provo, Utah facility as the Plant Manager in 2016. After 42 years of dedicated service, Joe and his wife Kim are going to travel the country in a motor home and "see how much trouble they can get into." McWane Ductile wishes Joe and Kim the best.

REMEMBERING A PARTNER AND A FRIEND

McWane Ductile lost a dear friend when Jim Kissick, President of Kissick Construction, passed away last December. Kissick and his nephew, Pete Browne, founded Kissick Construction in 1994 and grew the company into a $100 M+ firm. McWane's business relationship with Kissick developed because Kissick was a loyal customer of Kansas City (KC) Winwater and a very close friend to KC Winwater President Scott Wilson.

Scott Wilson recalls, "Jim was a friend, mentor and father to all of us at KC Winwater and McWane. Jim always wanted his partners in business to succeed, and he took stock in helping everyone become a better person. Jim was a pillar of the community and he often gave to Kansas City because he loved the city where he lived and helped to build. He felt that it was our responsibility to give back in any way we could, to help others in need and ask nothing in return."

"Jim was an avid sports fan — both youth and professional," said Wilson. "Whether is was the KC Royals, KC Chiefs, Sporting KC or youth sports, he knew the positive impact sports can have on a young person's growth in life and later in business. His advice to me during my rise to President of KC Winwater was, 'you never want to reach the top because that's when people are going to catch you.'"

Scott Frank, McWane Ductile Sales Manager–Midwest, also spoke highly of Kissick, "We met Jim for the first time at Scott Wilson's annual invite-only Hilton Head Island golf outing. Jim said he had always heard how much fun the trip was but figured it was just 'hyped up.' Once he went, he knew it was true and after the first trip, he never missed another. Jim was a passionate golfer, a great advocate for the KC Chapter of National Utility Contractors Association (NUCA) and an avid KC sports fan. Jim treated all people with respect. He valued his relationships, not only with his employees, but also with his vendors, suppliers and the engineering community. Jim always gave back to his church and his favorite charities. He is sadly missed."

Be sure to read the Midwest Project Profile on page 9 of this edition where Kissick Construction is featured along with KC Winwater and Kansas City Water Services. McWane Ductile wishes Kissick Construction continued success. #KissickProud #IronStrong

ANOTHER RIVER TO CROSS

MILO, MAINE — THE TOWN OF THREE RIVERS BY KEN RICKVALSKY, MCWANE DUCTILE PRODUCT ENGINEER

HISTORY

Forty miles north of Bangor, Maine, at the confluence of the Piscataquis, Pleasant and Sebec Rivers, is the Town of Milo, a charming enclave founded in 1802. The early history of Milo was dominated by iron works and railroads where it soon became home to the second largest railroad car and repair facility in the New England territory at that time.

SYSTEMS

Milo's primary treatment facility draws water from the Sebec River, subsequently supplying 160,000 gallons per day (GPD) on average to 700 of the current 2,200 residents who are connected to the 8 miles of cast and Ductile iron pipes comprising the Milo Water District system.

Comparatively, Manhattan, New York, at 23 square miles is 33 percent smaller than Milo in land area, yet has 7,000 miles of pipe beneath its streets to provide nearly 200 million gallons of water per day (MGD) to 1.7 million people. Despite the immense structural differences of the systems, Chris Knowles, Superintendent of the Milo Water District, was clear in stating, "We take great pride in providing clean and healthy water to every person we serve. Size doesn't make a system great; consistent attention to detail does."

NEEDS

A 10-inch cast iron pipeline on supports across the Sebec River adjacent to the Main Street bridge has been the largest water supply line in town since it was installed more than 100 years ago. The remainder of the system is constructed of cast and Ductile iron pipes ranging in size from 2-inch to 8-inch diameters. With replacement of this 1920's era bridge looming, it was decided by the Milo Water District to continue their ongoing system upgrades with the installation of a 12-inch Ductile iron pipe section across the Sebec River. This would improve flow efficiency overall, provide a second loop within their system and ensure adequate fire-fighting capacity at each of the 94 hydrants in town.

PLANNING & PERSERVERACE

Dirigo Engineering, based in Fairfield, Maine, was tasked with designing the system improvements by introducing 12-inch Ductile iron pipe into Milo's water system. Just over 2,100 feet of new Ductile iron pipe, including 300 feet of 12-inch ball and socket river crossing pipe would be the backbone of these upgrades. According to Jim Lord, PE, a Project Manager at Dirigo Engineering, "The reliability of Ductile iron pipe overall, plus the strength and versatility of ball and socket pipe in uncertain marine environments made it the perfect choice for this project." Several locations for the Sebec River crossing were scouted, with the final location decided by several key factors, including but not limited to the river profile at each considered location. Consistent with the iron works and railroad history of Milo, and Dirigio Engineering's strong belief in the American Iron & Steel Act, the State Revolving Funds involved in financing this project invoked the Buy American Clause toward the manufacture and supply of items used to construct it. This created a unique opportunity for a local waterworks distributor.

Andy Dube, an Account Manager with the F.W. Webb Company had been pursuing a chance to work with Lou Silver Inc., a general contractor from Veazie, Maine. While F.W. Webb has been a domestic wholesale commercial supplier since 1866, they had not previously established a strong physical footprint in the north-central Maine area, making the contractor hesitant to use them. Determined to use this project as "an opportunity to demonstrate F.W. Webb's mission to be a mainstay in this market," Dube had convinced Lou Silver, Inc., owned and operated by Barney Silver, to "test" Dube and F.W. Webb with two very small unrelated projects. Success on those, and the emergent inability of the original pipe provider to fully meet the American Iron & Steel Act requirements, Dube received a last-minute call of challenge from Mr. Silver in late March, asking, "Hey Andy, you got a miracle in your pocket?"

By mid-April, Dube and F.W. Webb had secured the purchase order, and with cooperation from McWane Ductile, all the pipe and fittings needed, including the specialty-fabricated ball and socket river crossing pipe, were on site in Maine in June, 2019.

CONSTRUCTION & CONCERNS

Lou Silver began Lou Silver, Inc. in the late 1940s. Lou's son, Barney Silver, took over in the early 1970s and has served as the Owner and President of Operations to this date. His son, Jake, is currently a Superintendent with the company, and the next generation of the company.

Most 16-inch wall classes of Ductile iron pipe, and all Ductile iron pipe diameters smaller than 16-inches, will sink when placed into a waterway. 20-inch and larger Ductile iron pipes, by their own mass to empty volume ratio, are buoyant. Given this project involved 12-inch Ductile iron pipe, flotation and control of the pipeline during construction would be crucial to avoid undesired conflicts or additional drag forces created through "pulling a sunken pipeline." According to Barney Silver, "proper planning of constructing this project and having the right people in place" were the most important factors in its success. Citing lessons learned on previous river crossing installations led to improvements in their flotation, guidance and final placement of the river crossing segment of this project.

During a 16-inch river crossing installation across the Stillwater River in Old Town, Maine, the styrofoam and plywood flotation planks they originally designed were damaged when the pipeline was "released" from it. This led them to develop a sturdier version using 2x4s as longitudinal bracing on each flotation plank. Subsequently, they installed 900 feet of 12-inch river-crossing pipe in the Penobscot River without damaging a single plank, thereby allowing them to easily recycle all the planks for this

300-foot Sebec River project. From a riverside trailer they easily fed and attached these improved flotation planks with nylon strapping onto the river crossing pipe as it was assembled piece by piece off one shore of the river. A support and guidance structure made of steel allowed full control and easy assembly of each push-on ball and socket joint. An excavator on the opposite bank of the river, via a guide-wire attached to the leading end of the river crossing pipeline being constructed, escorted it across the river as it grew in assembled length. Once fully assembled, the river-current-induced curvature of the pipeline was easily removed with minor tension applied from each side of the river, securing the pipeline into its straightened and preferred alignment.

Cutting the flotation planks away in an organized manner ensured the pipeline came to rest exactly as designed. The flotation planks were then loaded back onto the same trailer on the completion side of the river. A diver confirmed the location of, and contact with, the existing river bottom as the pipeline relaxed into place. Given the extensive pre-construction planning, this entire 300-foot crossing was completed in less than five hours.

ONE LAST THING

After allowing the pipeline to settle in place overnight, the contractor returned the next morning and dutifully excavated under and alongside portions of the pipeline at each river bank to achieve more than 3 feet of cover on the pipeline through each river bank so that ice or flows of ice would never contact the pipeline. The open-cut trench installations through the rest of Milo were installed with 6 to 8 feet of cover to avoid frost loads in the winters. The use of strong and flexible Ductile iron pipe on this project has prepared Milo for, as Chris Knowles of the Milo Water District put, “the return of railroad work has Milo on the rise, and a greater water supply is now in place to serve its needs.”

1

Piece of 12-inch ball and socket pipe on its way from supply pile to assembly.

2

Attaching two flotation planks to each pipe with nylon strapping.

3

The pipeline makes a controlled float across the river as it's assembled.

4

Moving the dead weight of the pipe is enough force to assemble the joint.

5

Clipping and collecting flotation planks.

6

Recovered flotation planks were easily stacked and stored for future use.

ACKNOWLEDGING OUR HIDDEN RESPONDERS

BY AARON LOOSLI, MCWANE DUCTILE SALES REPRESENTATIVE

The days of summer have past, and fall is now upon us. Unfortunately, the summer brought numerous wildfires, lashing storms and threatening hurricanes. Luckily, we have an extraordinary group of emergency professionals who respond to these various disasters referred to as "first responders."

First responders have been a prominent topic in the news lately. There has been quite a bit of coverage relating to the 9/11 first responders that has brought their sacrifice to the forefront of our screens and minds. With wildfire and hurricane season in full swing, our country's first responders are sure to get their fair share of action. These professionals keep us safe and protected, and in a very real way, they keep us alive.

The praise, gratitude and admiration they receive is certainly well-deserved. But I want to bring attention to another group of responders who also provide safety and comfort and who literally keep us alive. I call these professionals "the hidden responders."

A NETWORK OF UNSEEN YET VITAL UTILITIES

When I first started in the waterworks industry, my boss used a term that I had never heard before to describe the vast network of utilities that operate underground and behind the scene. He called this network "the hidden city."

This network of waterworks, gas, electric, fiber optic and other utilities operates with mind-boggling efficiency and consistency. For the most part, it operates without a passing thought from the average person about the incredible system in place to allow the kitchen faucet to flow, the toilet to flush, the heat to kick on or our cell phones to charge. The term "out of sight, out of mind" is certainly applicable to this vast, largely unseen network.

This extensive infrastructure of underground utilities also needs attention and maintenance. The installation, maintenanc and repairs are done by a mostly unnoticed group of professionals. If a watermain breaks on Christmas eve, the hidden responders are there to fix it in short order and get your shower running again.

If a hydrant needs a repair or an upgrade, the hidden responders are there to make sure the water will flow when the first responders turn it on to fight a fire. If a massive storm knocks out power and communications to thousands, the hidden responders are there to restore power to hospitals, police stations and emergency management headquarters.

ALWAYS ON CALL

The hidden responders are called to serve at all hours of the day or night, in all seasons, rain or shine. And then there's the safety aspect of the job. Many times, such as after an earthquake, severe storm or man-made disaster, these folks must enter the danger zone long before first responders in order to make the scene safe. They are often faced with the hazards of gushing water, hissing gas and sparking power lines.

When making repairs, you may have them knock on your door or leave a note to tell you the water, gas or electric will be shut off while they work. Trenches and holes will need to be dug. Parts and machinery will need to be obtained. It may take a little while. Don't be frustrated or annoyed. Be grateful that they are there to make sure you have the life-sustaining necessities that you don't even have to think about.

Did you know 525 McWane Poles' ductile iron utility poles withstood winds of 180 mph and were used for Hurricane Irma power restoration?

CALL BEFORE YOU DIG

Are you planning a project around your home or business that requires you to dig underground? Remember the millions of miles of utilities that lay just under your feet. Whether you are installing a mailbox, planting a tree or building a deck, be sure to call 811.

Your call alerts utilities of your plans to dig and lets utilities mark approximate locations of underground utility lines. This can protect you from serious injury/death or property damage and prevents interruption of your utility service.

811
Know what's **below.**
Call before you dig.

When you wash the clothes or bathe your kids with warm water, when you water your prize-winning tomatoes, when you settle down to watch your favorite sitcom or catch up on your computer, remember the system that allows you to do those things so conveniently. It's there underground. Hidden.

LET'S GIVE THANKS

Our nation has slowly begun to recognize the hidden responders who keep our massive utility system running safely, smoothly and efficiently. Special days have been set aside to acknowledge their efforts such as Water Professionals Appreciation Day in early May or National Lineman's Appreciation Day in mid-April. But you don't have to wait to show your gratitude. Take a quick moment to send a note to your local utility or even give thumbs up to these folks in the field because even a fire fighter needs a hero!

McWANE DUCTILE PROJECT PROFILES

WEST

Sales Region: West
Sales Representative: Carolyn Lopez
Project Location: Ontario, CA
Project Owner/Utility: City of Ontario
Project Engineer: N/A
Project Contractor: Boudreau Pipeline
Project Distributor: Orange County Winwater

Types of Ductile iron pipe used on the project:

Diameter	Joint	Class	Footage
18"	Tyton®	350	4,536
30"	Tyton®	350	3,834

With the mountains to the north and the airport to the south, QVC and Audi have taken space in the Meredith International Centre in Ontario, California. This is the first west coast distribution center for QVC, creating 1,000 new jobs by 2020. This is a great contribution to the Inland Empire, a metropolitan area and region in Southern California, inland of and adjacent to Los Angeles.

The plan amendment was adopted by the City of Ontario's city council. The specific plan authorized development of over 3,000,000 square foot of LEED-certified industrial warehouse space in seven buildings and 800 high-density residential units.

The overall construction of the pipeline system went very smoothly. All facilities are in place, operational and functioning well. McWane Ductile is pleased to have been a part of this project to benefit the economic growth of the Ontario community. Together, we're building iron strong utilities for generations.

MIDWEST

Sales Region: Midwest
Sales Representative: Robin Hazlett
Project Location: Kansas City, Missouri
Project Owner/Utility: Kansas City Water Services
Project Engineer: HNTB
Project Contractor: Kissick Construction Company
Project Distributor: Kansas City Winwater

Types of Ductile iron pipe used on the project:

Diameter	Joint	Class	Footage
36"	TR Flex®	54	6,644

The purpose of this project was two-fold: increase system reliability and increase capacity for the northern portion of the system. This required replacement of an existing 20- and 24-inch PCCP water main with 36-inch Ductile iron pipe in order to increase hydraulic capacity of the transmission main and provide water to an enhanced Shoal Creek Pump Station, a booster pump station at Shoal Creek Parkway and M 152.

This project involved the construction of approximately 6,644 linear feet of 36-inch diameter water transmission main from N.E. 64th Street and N Brighton Avenue east in a permanent water easement and then through a city park adjacent to the Pleasant Valley Road Athletic Complex, crossing Shoal Creek and connecting to an existing 36-inch transmission main along N.E. Pleasant Valley Road near Searcy Creek Parkway. The 36-inch diameter pipe installed by Kissick Construction Company was McWane Ductile iron pipe with zinc coating and polywrap, thickness class 54, TR Flex® restrained joints. The new pipeline includes five 36-inch butterfly valves and six fire hydrants with park restoration and tree plantings.

The water main work required the installation of several vertical and horizontal bends due to natural grade changes through the park. Construction involved significant rock excavation and removal. Further, the construction limits were significantly constrained to preserve trees along the alignment with several large trees noted on the drawings for special protective measures.

This project was coordinated with the Public Works Department's reconstruction of N. Brighton Avenue from N.E. 58th Street to N.E. Pleasant Valley Road. The proposed 36-inch water transmission main must be in service prior to the removal of the existing 24-inch transmission main along N. Brighton Avenue, north of N.E. 58th Street, which will occur with the road reconstruction. The new 36-inch pipeline was put into service on June 14, 2019.

Again, McWane Ductile is proud to have worked closely with Kissick Construction Company and Kansas City Water Services to provide extended water supply for the future development and growth of Kansas City.

NORTHEAST

Sales Region: Northeast
Sales Representative: Mike Palermo
Project Location: Lockport, New York
Project Owner/Utility: City of Lockport
Project Engineer: GHD
Project Contractor: Kandey Company Incorporated
Project Distributor: Lock City Supply

Types of Ductile iron pipe used on the project:

Diameter	Joint	Class	Footage
30"	TR Flex®	250	5,262
30"	Tyton®	250	5,029
24"	TR Flex®	250	2,233
24"	Tyton®	250	90

Polyethylene Encasement

The City of Lockport needed to replace more than 12,000 feet of a 30-inch rivetted steel raw water line that was installed in 1907. The line brings water from the Niagara River to a pump station in Lockport, New York. The city chose Kandey Company. In evaluating the pipe material options for the project, the choice was clear that McWane Ductile iron pipe was the way to go.

Richard Szucs, Jr. is the Project Manager for Kandey Company. Kandey Company, owned by Joe Kandefer, has been in business for more than 35 years. Lock City Supply provided distribution services for the project. We at McWane Ductile are appreciative to be partners on this project.

This is a unique project. The 24" TR Flex® pipe will be installed above ground so it can be used as temporary bypass piping. It will then be disassembled and taken to another location to be installed as new pipe.

THANK YOU BILL AND NADINE

By Terry Lynch, McWane Ductile General Sales Manager, Southern States

In this edition of Modern McWane, our South sales team would like to pay tribute to Finchum Construction Company and its founder, Mr. Bill Finchum. Bill and his wife, Nadine, became partners with McWane Ductile in 1998, and as partners, we were able to provide several utility districts in east Tennessee with iron strong utilities for generations. Unfortunately, Bill passed away recently and Nadine made the tough call to close their business.

Bill and Nadine always put their employees first. They provided the employees who lived out of town with a place to stay close to the office. If they needed help with their families, Bill and Nadine were there with a helping hand. They were both very active in their church and local community as well.

Bill was a U.S. Army veteran and proudly served in Vietnam. He was very involved in the local Boys and Girls Club of Blount Co., Tennessee. So much so, they honored him several years ago for his hours spent helping raise money for the club.

Even though we sold Bill over 500,000 feet of different size Ductile iron pipe through the years, the biggest job we sold him was a 36-inch line to a new treatment plant in South Blount Utility District in 1998, our first year as partners. The project included approximately three miles of 36-inch Fastite pipe (our joint back then) and approximately 480 feet of 36-inch ball and socket pipe for a dual river crossing (two separate crossing of 240 feet). They installed two crossings. Just in case one went down, they could switch to the other crossing without missing a beat.

On the day of the first pull, Bill was chomping on his cigar and pacing around nervously. I thought he was going to make himself sick. I remember him telling me he figured three or four days to get both crossings completed. When the dozer started to pull the first 240 feet across, it was straining to get it started. But within 30 minutes, the pipe

was floating across the river and being tied off on the other end. The second crossing went quicker than the first. Bill couldn't believe it was just that easy to get the pipe across the river. If I remember correctly, he celebrated by buying new cars for himself and his wife when the job was completed.

This was only the start of our great relationship with Finchum Construction Co. Over the years, we provided Bill with pipe for several jobs in South Blount Utility District, City of Maryville, City of Alcoa, Knox Chapman Utility District and West Knox Utility District. He really enjoyed working with these latter two utilities. And they enjoyed having Bill work with them.

Bainey Mason, Assistant Manager of Knox Chapman Utility District, told me, "I am very lucky to call Bill and his family dear friends. He was always welcome to work for us."

Bill was also very well thought of by his competitors in the market. Rance Merkel, President/Owner of Merkel Bros. Construction Co., stated, "Bill was always a mentor to me in every aspect of life. You could always count on him and his advice. I miss him dearly."

Ricky Barger of Barger & Sons always thought of Bill as his brother more so than his competitor. David Hurst of Hurst Construction Co. would do anything for Bill if he ever asked.

So, for this edition, we salute Bill, Nadine and Finchum Construction Company for not only being great partners with McWane for 21 years, but for also being dear friends of McWane. We will miss you!

CANADA

Sales Region: Canada
Sales Manager: Marc Giguere
Project Location: Quebec City, Quebec
Project Owner/Utility: Quebec City
Project Engineer: Pluritech Thetford Mines
Project Contractor: Excavation Lafontaine
Project Distributor: J. U. Houle

Types of Ductile iron pipe used on the project:

=

Diameter	Joint	Class	Tons
24"	TR Flex®	350	38

The installation of the pipe on this project was intended to secure the water supply for 75,000 people in Quebec City. With the help of our National Product Engineer, Martin Phinney, Canada Pipe was able to convince the design engineers that Ductile iron pipe with a TR Flex® restrained joint was the ideal pipe material for this unique project.

This project is designed for a 250 psi operating pressure, and the pipe is installed on a steep slope (1:1). Because there are several changes of direction on this project, the installation of the TR Flex® pipe would be easier than that of concrete pressure pipe. TR Flex® installation is faster than any other type of restrained joint. The pipeline was installed and tested to 250 psi successfully by the contractor.

With two major snowstorms during the project, along with sub-zero temperatures, the project stayed on task with minimal difficulties. Congratulations to all involved for bringing this project to fruition.

From estimating to design, from production to installation, we take great pride in providing education to water professsionals. Check out our presentations offered at these upcoming events.

CONFERENCE & PRESENTATION SCHEDULE FALL 2019

CONFERENCE	PRESENTER	DATE	LOCATION	TOPIC
ORWA Fall EXPO	Roy Mundy	10/16/19	Wilmington, OH	Intro to DI Utilized in Both Water/Waste Water Applications
AWWA Intermountain Section	John Johnson	10/9/19	Sun Valley, ID	Improve Pipeline Corrosion Protection by Utilizing the DDM
AWWA Conference Florida Section	John Simpson	12/11/19	Orlando, FL	Sustainability of Lower Energy Cost by Utilization of Proper Pipeline Materials

Dear Ditch Doctor,

We have a unique situation. A subdivision was recently added to our water system. The piping to the new homes is PVC. Our city officials are concerned about having a backup emergency water plan in the case of a power outage, which entails pumping water from a Ductile line installed in the late '60s/early '70s through the PVC line to the fire hydrants. My boss is worried that the Ductile line may collapse from a potential vacuum. I have never heard of such a thing, but how do I tell him the Ductile will be okay?

Sincerely,

Unique in Uhrichsville

Dear Unique,

Your situation is not as uncommon as you may think. Fires are a problem from coast to coast. Fortunately, you have Ductile iron in your system. Unfortunately, you also have PVC in your system.

There are two big concerns with your situation. First, PVC will burn. Don't be misled and think the pipe is okay just because it is buried. PVC pipe burns and melts, therefore, no water. Second problem is PVC is subject to surge pressures and cyclic loading.

Say the power does go out and you actually have to pump water from the 14-inch Ductile line to the 8-inch PVC line. Is someone going to run out there and make sure all the operators and fire fighters take their time and slowly open and close the valves or make sure there are no interruptions with the pumping truck? Let's face it, these folks need to trust the equipment they use so they can focus on putting out the fire. You have a potential problem all right, but it is not your 40- to 50-year-old Ductile iron pipe.

Sincerely,

The Ditch Doctor

COMING THIS WINTER
DITCH DOCTOR LIVE!

As part of McWane Ductile's ongoing effort to share practical answers and solutions to your tough Ductile iron pipe questions, we'll be bringing you Ditch Doctor Live on YouTube and social media. Listen, watch and learn anytime, anywhere! Stay tuned! #IronStrong

Dear Ditch Doctor,

The local utility authority is making me hydrotest a recently installed section of pipeline before I backfill it. I did as they asked and just before it reached 50 psi of water pressure inside, the joints began to move, as if they were going to separate. I immediately turned off the pump, and now I'm in a bad spot with this whole thing. Did I do something wrong? I thought these Ductile iron pipe joints were rated to a minimum of 350 psi? What should I do now?

Sincerely,

Miffed in Michigan

Dear Miffed,

First thing, take a nice relaxing deep breath, and gently exhale. You've done nothing wrong. All that's happened is what's expected to happen in such a scenario. Internal pressure creates a pushing force, even with "static" water. This force is equal to the product of the internal pressure in pounds per square inch (psi) times the available area (square inches) on the dead-end surface. For any diameter of Ductile iron pipe, the force required to home the joint during assembly is no more than what it takes to move the dead-weight of the pipe itself. The pipe barrel does all the work of compressing the gasket to make it watertight, simply by moving across it.

This should work the same in reverse then, right? And it does. To separate the joint requires no more than moving the dead weight of the pipe in the opposite direction of assembly. And for any diameter of Ductile iron pipe, the combined force on all the square inches of dead-end surface area will begin to "walk the joint apart" at or about 50 psi of internal water pressure.

So how is the Ductile iron pipe "rated" to 350 psi? Once assembled the compressed rubber gasket is designed and reliable to 1,000 psi of internal water pressure, 430 psi of external (groundwater) pressure and/or a negative 14 psi vacuum. Pretty sturdy to say the least. But as you've seen, and as we're talking about here, the "grip" of the rubber gasket itself is nowhere near as great.

So, to keep the joints together past 50 psi requires the combined efforts of the weight of the pipe, the weight of the backfill upon it, and the frictional grip of the pipe with the soil around it. Any "remaining" push force needs to be zeroed out through the use of strategically located restrained joints, such as TR Flex® pipe or restraining gaskets in standard Ductile iron pipe,"rubber gaskets with stainless steel teeth inserts," such as Sure Stop 350 gaskets from McWane. There are easy-to-use Ductile iron pipe restrained joint calculators available online, and experienced professionals available to consult with at each Ductile iron pipe manufacturer to help you along.

But for now, it remains a requirement to hydrotest the pipe before burying it. I would suggest you replace the standard rubber gasket in any Ductile iron pipe joint that "walks" with a restraining gasket. Or install external restraining harness assemblies across each joint first before re-pressurizing the pipeline. Why? Because if you're testing to even just 150 psi water pressure, that same 12-inch pipe we discussed earlier would now generate 18,000 pounds of push force on that same dead-end ... that's nearly 10 tons! And that'll move a bunch of pipes, for sure.

Here for You Always,

The Ditch Doctor

MIKE DODGE, VP SALES & MARKETING

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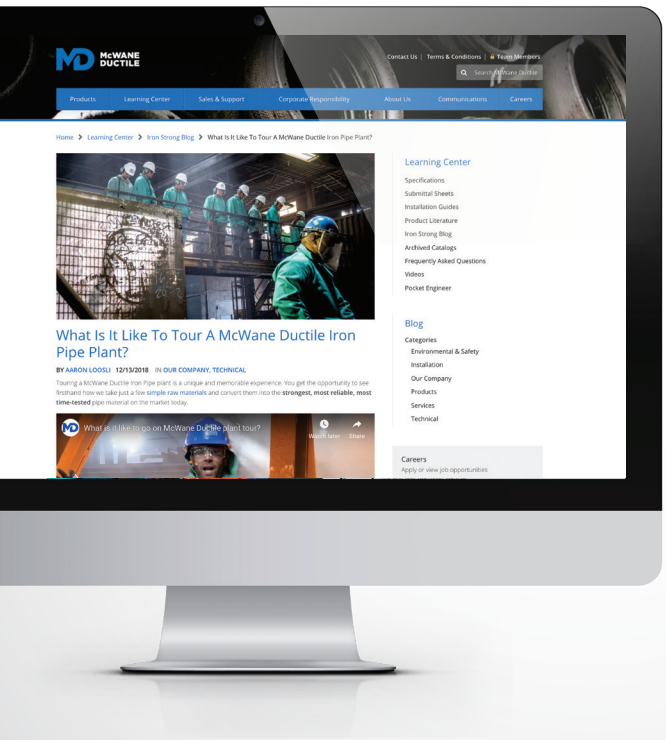

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