

# Saint Paul Regional Water Services Upgrades to Corrosion-Resistant Zinc-Coated Ductile Iron Water Main

## Aging Drinking Water Infrastructure

It is no secret that a large portion of the drinking water infrastructure in the United States is near or past its intended design life. Our nation's water infrastructure needs an overhaul, and the cost of doing so is climbing rapidly. The American Society of Civil Engineering's 2017 Infrastructure Report Card graded the nation's drinking water infrastructure a D. According to the American Water Works Association, an estimated \$1 trillion is necessary to maintain and expand drinking water service to meet demands over the next 25 years.



**AMERICAN Ductile Iron Pipe with zinc coating being installed by Danner Inc. in Saint Paul, Minnesota.**

Saint Paul Regional Water Services (SPRWS) currently serves more than 430,000 customers spread over 122 square miles. It maintains over 1,200 miles of watermain, much of which was installed in the early-to-mid 20th century. In fact, some of Saint Paul's current system is more than 100 years old, making the system a member of the Cast Iron Pipe Century Club. Much like other urban areas in the United States, SPRWS is relying on a system built nearly five generations ago.

## Proactive Measures

SPRWS has taken proactive measures by upgrading its buried infrastructure through the replacement of approximately 8-10 miles of water main each year. It also has implemented new water distribution piping standards. Recent

upgrades to previous standards include the addition of zinc coating and enhanced polyethylene encasement (V-Bio) on ductile iron pipe. The specification improvements are meant to abate potential corrosion and to increase longevity of buried underground water system assets. By implementing these changes, SPRWS is investing in an asset that will provide a reliable and sustainable water system with a service life of well more than 100 years.

## Zinc Coatings and V-Bio Polyethylene Encasement

With a projected lifespan of well over 100 years, zinc-coated ductile iron pipe is the most effective and dependable way to further enhance the serviceability of an already rugged and durable product. V-Bio polyethylene encasement isolates the iron from a replenished supply of oxygen, thus halting or inhibiting the formation of a corrosion cell. V-Bio further prevents the formation of micro-biological cells that could deplete the zinc. In combination, V-Bio polyethylene encasement, which neutralizes the corrosion cell, and zinc, an anode to iron, will provide significant life extension. This ensures the proactive management of this key asset to SPRWS.

## Why is SPRWS upgrading to zinc-coated pipe?

SPRWS adopted zinc coating and V-Bio for ductile iron pipe into its standard specifications in 2017. All new construction and annual reconstruction projects within the service area will now add a zinc coating and V-Bio enhanced polyethylene encasement to ductile iron pipe, improving an already effective product. Engineering Division Manager David Wagner stated that SPRWS adopted the zinc coating "to gain longevity and to add a factor of safety in our water piping system." Wagner added, "We felt it was important to keep up with the latest technology."

SPRWS conducted a thorough review of the cost implications of adding zinc coating and V-Bio. Ultimately it came down to the life cycle cost benefits of zinc-coated ductile iron pipe

compared to the initial cost of the original project. Increased longevity and lower pumping and maintenance costs of ductile iron pipe translate to a sustainable, proactively managed asset. This will allow SPRWS to focus on other concerns while providing its customers with the most efficient pipeline system available. Wagner said, "So much of the cost of a water main construction project is attributed to installation, it only makes sense to provide the best materials. That includes providing a zinc coating on ductile iron pipe and adding an additional level of protection through the use of V-Bio polyethylene encasement."



**SGP Contracting Inc. prepares AMERICAN Ductile Iron Pipe with zinc coating and V-Bio polyethylene encasement for installation.**

#### About the Author



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