

## ***Cape Fear Public Utility Authority Breaks New Ground by Pipe Bursting Replacement of Deteriorating 20-inch Ductile Iron Force Main***

Ductile Iron Pipe (DIP), once the pipe material of choice in southeastern North Carolina, has become an operating headache costing many local agencies millions of dollars to construct replacement pipelines over time. Exterior corrosion from the salty coastal environment and internal corrosion from hydrogen sulfide production in force mains are the primary culprits. Rather than replace in-kind, most area public utilities are transitioning to PVC pipe as a long term solution to corrosion problems. One recent example is the Cape Fear Public Utility Authority (CFPUA) Northeast Interceptor Rehabilitation Phase II Project, designed by Kimley-Horn & Associates. The project scope included replacing 5,039 LF of 20-inch DIP force main. The project was bid in 2014 and constructed late that year and into early 2015.

Phase I of the work was completed in 2008 using pressure cured-in-place (CIPP) rehabilitation. For Phase II, the utility and Kimley-Horn & Associates evaluated a variety of options before deciding to specify pipe bursting with 20-inch Fusible PVC<sup>®</sup> pipe as the base bid replacement pipe. Upsized 24-inch DIPS HDPE pipe was the bid alternate.

Craig Wilson, Senior Project Manager with CFPUA described the agency's reasoning: "With narrow right-of-ways and other utilities adjacent to the Northeast Interceptor, a trenchless solution was the most economical and least invasive project approach. CFPUA's previous experience with pipe bursting and prior use of 30-inch diameter Fusible PVC<sup>®</sup> pipe gave us confidence with the construction approach and pipe material."



State Utility Construction won the bid and hired KRG Utility to perform the pipe bursting. Underground Solutions, Inc. supplied and fused the 20-inch DR18 Fusible PVC<sup>®</sup> pipe. Mike Paluso, Project Manager for State Utility, commented on how he selected his team during the bid process: "Of the subcontractors that submitted proposals, KRG had the experience and equipment required by project specifications to perform the work. Our Wilmington Division Manager, Dustin Wagner, and Superintendent, Rob Goslee, liked the attributes of the fused PVC pipe for reconnecting the force main system. KRG and Fusible PVC<sup>®</sup> pipe helped make the project successful."

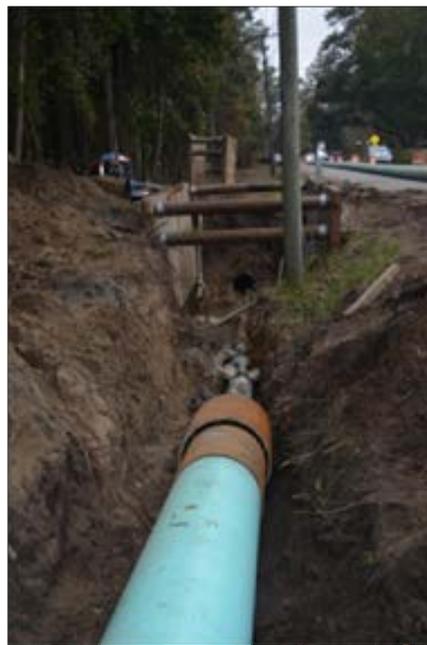
### **Pipeline Details and Project Summary**

Project:	Northeast Interceptor Rehabilitation, Phase II
Location:	Wilmington, NC
Length:	5,039 LF
Pipe Size:	20" DR18
Pressure Test:	150 psi
Installation:	Static Pipe Bursting
Owner:	Cape Fear Public Utility Authority
Engineer:	Kimley-Horn & Associates
Prime Contractor:	State Utility Contractors, Inc.
Pipe Bursting Sub:	KRG Utility, Inc.
Equipment Supplier:	TT Technologies, Inc.

During design, CFPUA's consultant, Kimley-Horn, took care to specify pipe wall thickness to meet both the pressure and depth requirements. Much consideration was given during design to the shallowness of the existing force main in some areas, raising concern over potential surface heave, as well as potential disruption to nearby utilities, including fiber optics lines. During construction, Project Manager Jeff Wing, PE worked with the contractor to adjust some of the pit locations based on the conditions of the existing pipe and constructability issues. Wing commented, "The 20-inch DR18 Fusible PVC® pipe met the project requirements and the pipe bursting installation resulted in much less impact to existing roads, utilities, landscaping, and the public compared to the open-cut alternative. In addition, the use of pipe bursting resulted in an expedited schedule that was beneficial to meeting deadlines."



20-inch Fusible PVC® Pipe in Position

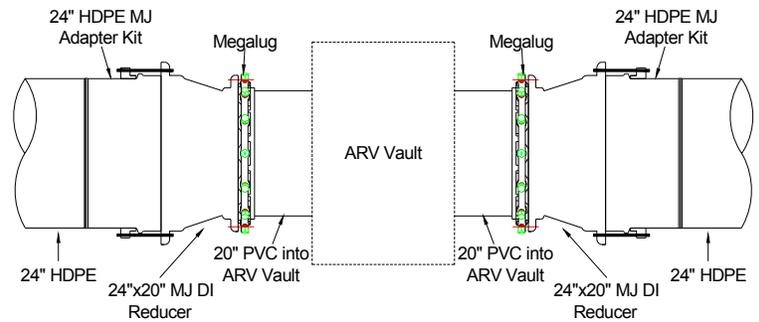
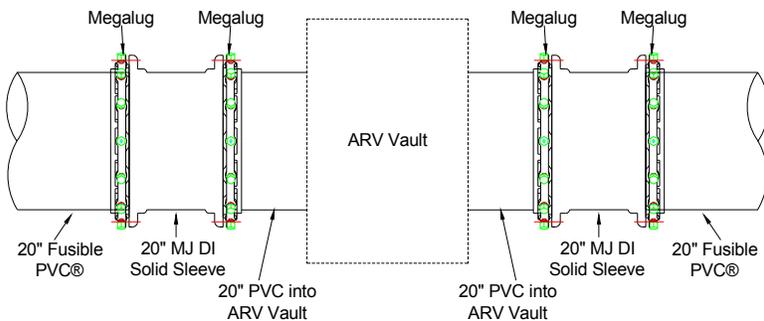


Host Pipe, Cutting Tool, Expander, Pipe



Example of First Cut of DIP

In addition to the obvious dimensional advantages of 20-inch Fusible PVC® pipe, connections in the pits clearly favored Fusible PVC® pipe versus 24-inch HDPE pipe.



The 20-inch Fusible PVC® Pipe option allowed for direct connections to ductile iron fittings

The 24-inch HDPE pipe option required fused adapters and reducers for the connections

Underground Solutions, Inc. (UGSI) provides infrastructure technologies for water, wastewater and power cable conduit applications. UGSI's **Fusible PVC®** pipe products, including **Fusible C-900®**, **Fusible C-905®** and **FPVC®**, utilize patented technology to produce a fused monolithic, fully-restrained, gasket-free, leak-free piping system ideal for trenchless (horizontal directional drilling, pipe bursting and sliplining) or conventional "open-cut" installations and are available in 4-inch to 36-inch diameters. The combination of standard fittings and lower weight with higher flow for a given pressure class versus other thermoplastic pipes ensures that Fusible PVC® pipe brings greater economy to most pipeline projects.