

**METROPOLITAN UTILITIES DISTRICT**  
*Inter-Department Communication*

August 24, 2021

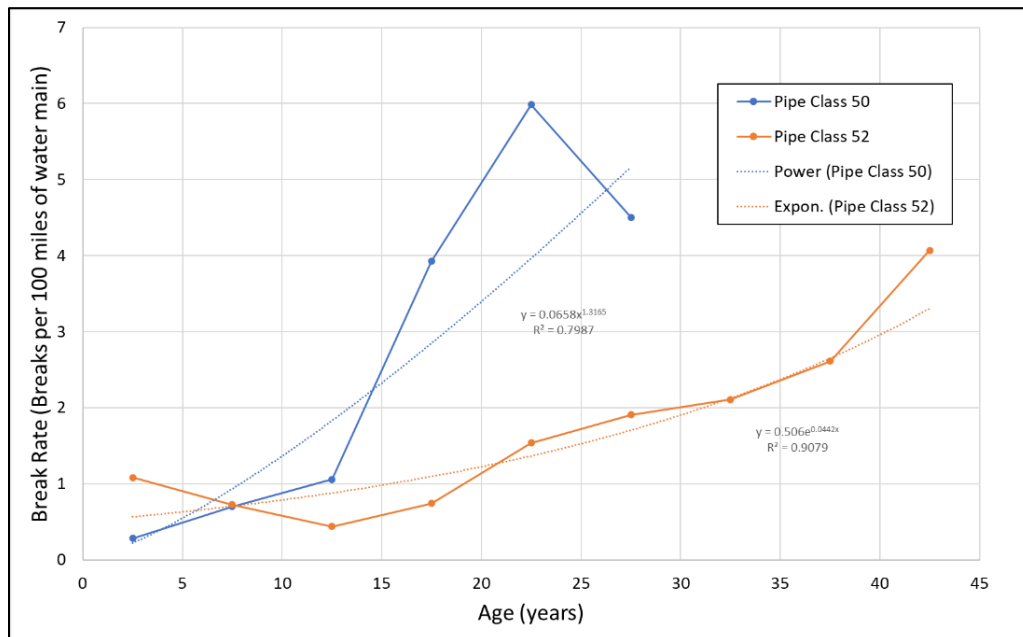
**Subject:** STANDARDIZE DUCTILE IRON PIPE TO CLASS 52  
**To:** Gina Langel, Sr. Vice President, Chief Operations Officer  
**From:** Masa Niiya, Director, Infrastructure Integrity

Infrastructure Integrity in collaboration with engineering and operations has reviewed standardizing ductile iron pipe thickness from Pressure Class 350 (which has the same thickness as Class 50) to a thicker Class 52.

The District has been installing ductile iron water mains since the 1960's starting with bare ductile iron water mains. Polywrap became a standard in the 1980's as a form of cathodic protection. In the early 1990's a change was made to use a thinner wall ductile iron pipe, (Class 50) as a new standard, as it met the design criteria of the District's water distribution system.

In early 2019 the District upgraded our standard ductile iron water pipe to include zinc coating and changed the polywrap to an enhanced polywrap (called v-Bio) to further improve the corrosion protection. At that time the use of a thicker pipe was discussed but the District didn't have sufficient data to support a change and the lower cost alternatives of zinc coating and v-bio were implemented.

In 2021 the District updated the Linear (Water) Asset Management Plan ("plan") which was completed as part of the development of the risk model. A portion of the plan evaluated the historical performance and projected break rates between the District's Class 50 and 52 mains. The analysis indicated that Class 52 mains are expected to last 19 years or 33% longer than Class 50 at reaching 15 break/100 miles (the upper limit for an optimized system per AWWARF guidance) as seen in the chart below.



A workshop with Engineering Design, Plant Engineering, Field Services, Purchasing/Stores, Water Distribution and Construction was conducted last month to review the pros and cons of making a change to Class 52 pipe. Additional benefits were identified for making this change including:

- More strength and durability for handling, installation, and tapping during projects.
- Reduced inventory variation for improved material management efficiencies.
- Streamlined pipe thickness documentation on as-built and completion reports

The added material cost of the thicker Class 52 pipe which for a 6" water main is around an additional \$2 to \$4 per foot or about a 10% increase for the purchase of the pipe. This accounts for a relatively small increase to projects as labor makes up the majority of water main construction costs. The total construction costs would increase only 0.5% to 1% on replacement projects for this upgrade while adding substantially more life to the water main.

As a result of the recently available data and collaboration within the affected departments the District will standardize to Class 52 pipe. This transition will be coordinated between the affected parties. Please let me know if there are any questions.



Masa Niiya  
Director, Infrastructure Integrity

Cc: Cory O'Brien, Vice President, Engineering and Construction  
Jeff Schovanec, Director Engineering Design