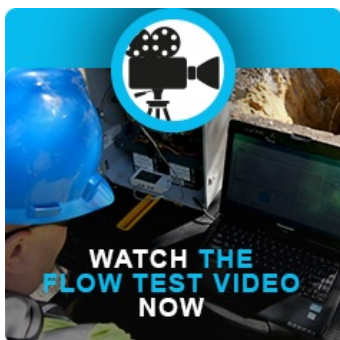
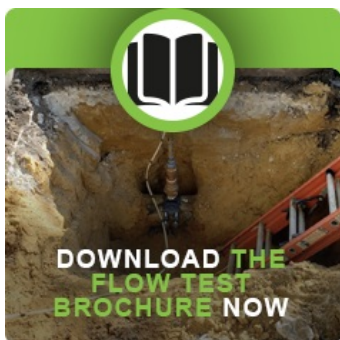


June 23, 2020

Flow Test Results From A 97-Year-Old Cement-Mortar Lined Iron Pipe - Charleston, South Carolina -

The Test

In November 2019, with the cooperation of Charleston Water System in Charleston, SC, DIPRA conducted the fourth hydraulic flow test on the first cement-mortar lined iron pipe in the U.S., installed in 1922. DIPRA contracted with M.E. Simpson Co. to conduct the tests on the 8-inch, 97-year-old pipe. Headloss was measured between two points on the pipeline and the Hazen-Williams equation was solved for the Flow Coefficient (C-factor), which indicates the flow efficiency of water moving through a pipe.



The Results

The average result of five flow tests resulted in a C-factor of 140.1 for this iconic pipeline. This very encouraging result indicates that the cement-mortar lining is still doing its job in protecting the inside of the pipe, while continuing to present a "smooth" surface after 97 years of service.

Five Test Average:	140.1		
Total Main Distance (ft):	300.5	300.5	ft
Measured Pipe Diameter (in):	7.625	0.6354	ft
Area of Pipe (sq. ft):	0.3171	sq.ft	
Hydraulic Radius (ft):	0.1589	ft	

These results demonstrate the longevity of the cement-mortar lining and validate DIPRA's recommendation that a C-factor of 140 be used to predict headloss in Ductile iron pipe. More details about the test procedure and results are provided in the [brochure](#) and [video](#).

The Bottom Line

After 97 years of service, the cement-mortar lining continues to do its job, providing effective, energy-efficient water service.

We're glad to know, after this testing, that the main is in good condition and we can still utilize it for an extended period of time.

Kanwal Oberoi, M Eng., P. Eng.
Director of Water Distribution
Charleston Water System



For more information about cement-mortar lining for iron pipe, click [here](#). We also have an extensive library of technical resources on the design and applications of Ductile iron pipe that can be accessed [here](#).

Thank you,
Patrick Hogan
President, DIPRA