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CIPP Relining of a DN 300 steel water pipe anchored under the ancient Bridge of the Academy in the historic center of Venice

ABSTRACT

At the end of 2017, the renovation works of the “Accademia” Bridge in Venice were started, coordinated directly by the Maintenance and Viability office of the Venice Historic Center – Public Works Directorate of the Municipality.

The restoration jobsite of the second main bridge built on the Grand Canal after the Rialto Bridge, necessarily implied the construction of important temporary works in order to ensure pedestrian accessibility and access to the work site, minimizing the impact of site on the delicate urban fabric of Venice. At the Accademia Bridge, Veritas SpA (Veneziana Energia Risorse Idriche Territorio Ambiente Servizi) operates a pipeline serving the city center, with a diameter of 323.9 mm in steel laid in 1964 . The pipeline had been installed to replace a pre-existing sub-basin siphon with a diameter of 400 mm at the beginning of the 20th century and then abandoned. The state of conservation of the pipeline has been preliminarily verified, with a precise measurement of the thickness of the tube with an ultrasound system; further observations were made: with a specialized method based on the acoustic propagation data of an induced sound wave and using patented algorithms, it was possible to convert the data, in a measure of the minimum wall thickness, calculated as the average residual thickness of the pipe segment inspected. The resulting data showed a significant reduction in tube thickness.

Given the results of the investigations conducted and the extraordinary maintenance work being carried out by the Municipality of Venice, on the Accademia bridge, the opportunity to plan the replacement of the pipeline or to ensure its safety was evaluated. Considering that the replacement of the pipe would have involved long times and particularly heavy costs, it was opted for internal rehabilitation with the "relining" technique.