Job Report

Renovation of a DN 600 water main in the port of Antwerp running under the river Schelde

Client:
Water-link, Antwerp

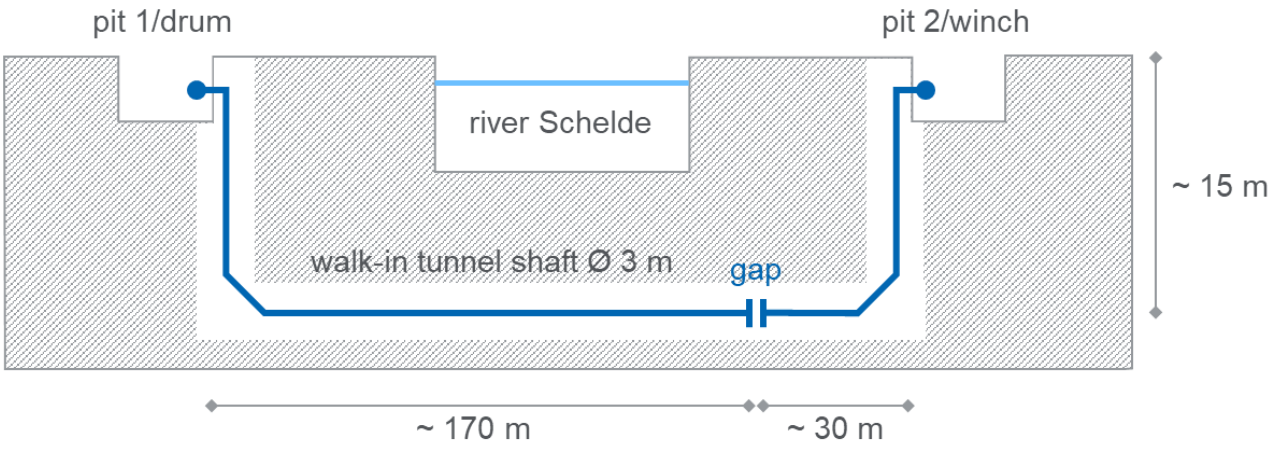
Year of Construction:
March 2020

Type of Construction Measure:
Rehabilitation of a culvert under the river Schelde in the port of Antwerp

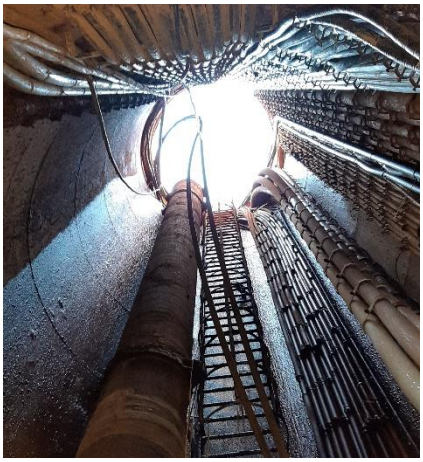
Our Services:

- Delivery of the Primus Line® system DN 500 PN 16 including two medium pressure connectors DN 500 with DIN flanges PN 16
- Supervising of the installation works

Situation:
One of the most important culverts, running approximately 17m under the river Schelde in the port of Antwerp, had several leakages due to faulty connections of the pipe. The DN 600 culvert is installed in a concrete siphon with a diameter of 3m. In order to maintain the water supply to the industrial estates in the port and because of the limited accessibility to the pipeline, the client decided to renovate the main using the Primus Line® system.







Technical Details:

Material of Host Pipe:	Butt-welded steel
Transported Fluid:	Potable water
Diameter of Host Pipe:	DN 600
Operating Pressure:	6 bar
Primus Line® System:	DN 500 PN 16
Total Length:	225 m
Number of Sections:	1
Bends:	6 bends of 45° and 90°
Installation Time:	5 working days including cleaning the pipe and welding on reducers

Rehabilitation System:

The Primus Line® system is referenced in EN ISO 11295:2017 – classification and information on design and applications of plastics piping systems used for renovation and replacement. The Primus Line® system also complies with the technical standard DVGW VP 643 – flexible textile-reinforced plastic inliner for pipe-relining of gas high pressure pipes. The system consists of a Kevlar®-reinforced liner and specifically developed end fittings. The liner accommodates the operating pressure of the pipe, due to the reinforcement layer and does not bond to the host pipe. An annulus space remains. The liner is seamlessly manufactured at an ISO 9001 certified production plant in Germany and transported on reels to the site. Due to the material's flexibility, the liner can traverse angles of up to 90 degrees, can be installed in lengths of more than 1,000 m in one pull, and has an installation speed of up to 600 m per hour. The Primus Line® system complies with numerous international hygienic standards for the safe transfer of potable water.

Project Description:

Due to the fact that the pipe is a butt-welded steel pipe, it had to be ensured that no welding seams are protruding the inner diameter of the host pipe. In order to evaluate the welding seams, the bends and the condition of the host pipe, two CCTV inspections were executed. No welding seams were protruding the inner diameter and therefore the pipe cleaning was started. The two 90° bends and four 45° bends in the pipe route required the use of a special scraper and rubber discs. In order to remove the debris out of the pipe, a gap between two pipe shots had been created at the low point of the pipe. After cleaning the pipe, two reducers DN 600 – DN 500 were installed at the start and destination pit. Before the lining activity was carried out, the gap needed for cleaning was closed by means of two half-shells. This was followed by the preparation and insertion of the Primus Liner DN 500 medium pressure. As a result of the six bends, high pulling forces were expected. Hence, a stronger winch with a capacity of 20 tons was used. Afterwards, two medium pressure connectors DN 500 with flanges PN 16 were installed.

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