HOBAS® Bridging Old and New Zagreb

The approximately 1 million inhabitants of Croatia's capital Zagreb can count themselves lucky to have high quality drinking water that is drawn from wells around the city area. It is hence the city council's utmost concern to retain the quality and to therefore preserve the river Sava and the groundwater reservoirs with a new Zagreb Wastewater Treatment Plant (ZWWTP). A 5.9 km HOBAS SewerLine® DN 1000 now transports all wastewater from New Zagreb (200,000 inhabitants) in the south across the river Sava to the treatment plant in the north-east of Zagreb. The facility including all supporting structures was constructed by Zagrebacke Otpadne Vode (Zagreb Wastewaters).

The complete pipeline consists of three major sections. MCP Culinecka is the first running from the treatment plant to the so-called Homeland Bridge. This part was accomplished by open cut installation with well compacted gravel sized 0 – 16 mm. The utilized HOBAS Manholes are T-Pieces DN 1000/800 covered with stainless steel blank flanges. Flexibility regarding Mayntenance or repair works is given with mechanical couplings that join the manholes to the pipeline so that they can be easily disconnected and taken out of their concrete housing any time if necessary.

The second section is the 900 m long Homeland Bridge that carries a road and tramway and furthermore holds 5 parallel pipelines DN 1000 inside the construction. Four of the pipelines are for potable water and one is a HOBAS CC-GRP Sewer Main for New Zagreb's wastewater. The 1 km long HOBAS SewerLine® is installed on stainless steel supports with 5.85 m clearance. Since the only fixed point lies in the center of the bridge, thermal dilatations are carried out to both sides with the bridge moving up to 50 cm. KRESTA compensators are utilized here to absorb these movements – a demanding task considering the relatively large diameter, the pressure and line movement.

An important fact for the right material choice was the magnetic field created by the tramway rails which can influence close paralleling lines such as the sewer main. HOBAS CC-GRP Pipe Systems are non-conductive, corrosion resistant, show hardly any thermal expansion and

Year of Construction
2005-2007
Length of Pipe
5.9 km
Pressure Class
PN 6
Stiffness Class
SN 5000, SN 10000
Diameter
DN 1000
Installation Method
Open trench, on supports in bridge, in concrete casing
Application
SewerLine®; BridgeLine®
Client
Zagrebacke Otpadne Vode
Constructor
Monter Strojarske Montaze, Hidrocommerce, Vodotehnika, Hidrocommerce
Hobas Sales Rep.
Eduard Hesky
Advantages
long lifetime, corrosion resistance, light weight, hardly any thermal expansion, excellent longitudinal stiffness, System solution for different applications

have a long service lifetime. Apart from this, the products' low weight put less load onto the bridge and facilitated pipe handling inside the construction. These are advantages that convinced the client to choose HOBAS CC-GRP from other available materials.

Another 4 km of HOBAS CC-GRP BridgeLine® DN 300 – 400 as well as Fittings were installed for drainage of the Homeland Bridge.

The third and ultimate section of the line leads from New Zagreb to the Homeland Bridge. This 3 km long section runs through a water protection area with Zagreb's springs so that the high quality pipes needed to be placed into a watertight concrete channel.

Concrete supports hold the line every 5.8 m where it is fixed with stainless steel straps. An 8 mm thin EPDM layer was applied between support, strap and pipe to allow small longitudinal movement due to temperature variations and to evenly distribute the pipe weight on the supporting areas.

The longitudinal stiffness of HOBAS CC-GRP Pipes was a time and money saving property

for it minimizes the number of necessary supports. Easily jointed push-to-fit couplings contributed to the savings since no welding is required for HOBAS Products.

All sections of the pipeline were tested with up to 9 bar pressure. This was quite demanding for the manholes because the DN 800 blank flanges fixed on the tees without additional support had to withstand a force of 477 kN (equivalent to 48 tons).

Pressure tests on the pipeline inside the bridge were also hard to conduct because the bridge temperature kept changing causing the length of bridge to constantly vary. With a reduction in length the pressure inside the closed pipe increased.

The project was highly demanding for all parties involved. However, HOBAS Specialists were present during all stages consulting the design engineers on a number of details. HOBAS Site Advisors helped the contractor during pipe installation, deliveries were made in time and flexibility was proven when changes on site occurred so that the project could be successfully finalized. The outstanding properties of CC-GRP Pipe Systems certainly gave HOBAS a head start but the 50 years experience and the expertise of the HOBAS Site Advisors holds the greatest advantage of all.

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