

June 2011

PipeLine

Contents

1 | Always a Winner with HOBAS® CC-GRP, FR

3 | Traffic Flows instead of Water, CZ

Always a Winner with HOBAS® CC-GRP Microtunneling HOBAS Jacking Pipes for a Combined Sewage Collector, FR

Only shortly after receiving the renowned international No-Dig Award from the ISTT (International Society for Trenchless Technology) at the No-Dig fair in Berlin for the best project 2010, HOBAS has come up trumps at the VST (Ville Sans Tranchée), No-Dig trade fair, in France for supplying pipes for the best construction site 2010. The project awarded by the FSTT (French Society for Trenchless Technology) comprised 1340 m of De (external diameter) 1940 mm pipes installed by microtunneling for a combined sewage collector with a total capacity of 3300 m³ and was implemented by the city Rennes in France.

In the face of an accelerated increase of sediments in the canal d'Ille-et-Rance and the river Vilaine in the heart of Rennes and the therefore significant impact on these waterways, the city adopted a perennial program in 2008 to improve the pipelines and hydraulic properties of its wastewater system. The aim was to reduce the amount of overflow into the river during periods of heavy rain by 50 %. A total of 8,000 cubic meters of storage capacity were to be added to the combined sewer system of which 3300 m³ have been implemented downtown, along the river Vilaine beneath a lane for public green transport.

For the latter part, the technical service department of the city Rennes designed a 1340 meter-long collector with a pumping station that controls the flow to the wastewater treatment plant. A combination of an average installation depth of 7 m and high groundwater levels that partly even reach the surface asked for trenchless installation – microtunneling. HOBAS GRP Pipe Systems were a firsthand choice, for their resistance to chemical attacks by hydrogen sulfide and the products' optimal hydraulic properties as well as internal and external leak tightness.

The pipes with their, in the trenchless sector much appreciated, smooth outer as well as inner walls and precise outer diameter were designed at 1940 mm De and a wall thickness of 77 mm. Despite their comparably light body (in this case 3 tons per 3 m pipe) they easily withstand the required 800 ton axial loads which are evenly distributed along the whole length of the pipe.



A protective resin rich layer on the inside of the pipe, the so-called liner, ensures resistance against aggressive urban sewage that may have a pH value up to 10 and contain hydrogen sulfide. Its low roughness coefficient of 0.01 mm offers optimal hydraulics, and abrasion resistance and a long product life up to 100 years add to the numerous benefits.

Two receiving pits were erected on each end of the 1340 m line and a jacking station was arranged intermediately dividing the drive lengths into 565 m and 775 m respectively. Conducting the drives on an even 0.2% slope and large horizontal curves with radii ranging from 1000 to 1200 m did not require a reduction in jacking force and was at the time the longest jacked drive with GRP in France. The designated contractors decided to conduct the job with 7 intermediate stations every approximately 150 m (3 on the short stretch, 4 on the long) each of which has a drive force equaling 1078 tons. These were usually put to service for initiating the drives.

Three manholes were installed 200 to 250 m apart from each other and 2 special chambers, one hosting a flushing and the other equipped with a vacuum system for deodorization, have been included along the collector. Preparing for their installation, the contractor neatly cut the soil and cast concrete to establish walls around a part of the pipe route without prior excavation works and before the boring machine had passed the section. After the concrete cured, the bore head drilled through the establish walls and the soil around the pipe in the concrete chamber was excavated; either completely as for the flushing and deodorizing chambers or down to the pipe in order to install the tangential manholes. The latter were erected by cutting and laminating a HOBAS DN 1000 GRP Pipe vertically onto the jacking pipe DN 1800 and the easy handling and manipulation of GRP on site considerably facilitated and sped up the process.

The construction of the complete project including the installation of supplementary equipment and the pumping stations has been finalized within 13.5 months. This was considerably short regarding the scope of the job and the difficult geological conditions - inhomogeneous, abrasive soils soaked with ground water. The remarkable idea, the design and smooth realization with HOBAS Pipe Systems not only satisfied the client but earned also the attention of the public, which was not least honored with the national No-Dig award.

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Year of construction

2010-2011

Installation time

13.5 months

Total length of pipeline

1340 m

Diameter

D_e 1940

Pressure class

PN 1

Stiffness class

SN 64000

Installation

Microtunneling

Application

SewerLine®

Client

Rennes Métropole

Contractors

SADE & SMCE Réha

Advantages

**Resistant to H₂S,
possibility to opt for
trenchless installation,
remarkable hydraulic
properties, long
product life**



Traffic Flows instead of Water

Sewer Net Extension with HOBAS® Pipes for Flood Protection, CZ

Flooded roads, damaged pavements, inundated cellars – the town Zatec in the northwest of the Czech Republic did not make a good impression during periods of heavy rain. It was high time to extend the sewer network with HOBAS Pipes and to make sure that traffic instead of water flows in the streets.

Problems that belong to the Past

The oval concrete sewer B counts among the most important beneath Zatec. Not only does it transport the city's wastewater to a retention tank at the water treatment plant where it is subsequently clarified, it is also intersects with drainage pipelines from the areas on the opposite embankment of the river Ohre. The network therefore lacked the necessary capacity to cope with the heavy rain falls that occur during summer. Flooded roads, loose road stones, ruined paving and inundated cellars were the result.

Project Planning

It was clear that capacity extension would prevent these problems and improve the drainage of the area. Should the first enlargement of the network prove insufficient, additional extensions could be taken into account. In the course of the works, parts of the existing pipeline were also to be renovated.

Concrete plans were made to enlarge the sewage pipe in Adolf-Hejduk-Street, starting from the crossing with Pod-Střelnici-Steet up to the wastewater treatment plant. These also included the erection of an additional relief basin at the plant. The implementation was envisaged with HOBAS GRP Pipes DN 200 to DN 2000.

Advantages of HOBAS Pipe Systems

The project managers opted for HOBAS Products due to several reasons: Their outstanding hydraulic properties impressed as much as their mechanical resistance to polluted water, the comparably light yet sturdy pipe walls, and the static properties of the pipes, which were important in the given terrain. According to calculations, which took the local influences as well as the longterm performance into account, the pipes were designed with a nominal stiffness of 10000 N/m².

The pipes were easily connected to the concrete shafts and since the traffic around the construction site was light, pipe laying proceeded swiftly in the open trench and could be finalized on time. – Very much to the delight of the investor SVS, a.s. Teplice, in charge of the wastewater network of the town Zatec.

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Year of construction

2010

Total length of pipeline

577 m

Diameter

DN 200 - DN 2000

Pressure class

PN 1

Stiffness class

SN 10000

Installation

Open trench

Application

SewerLine®

Client

Severočeská vodárenská společnost a. s. (SVS)

Contractor

Severočeská stavební a.s.

Advantages

Excellent hydraulic properties, abrasion resistance, static loadability, comparably light walls, easy connection to concrete shafts, technical support during the complete project.