

Sewer Renewal Wilhelmstraße-North

- Section between Fallersleber Straße and Wendenstraße -



Short Description

The Stadtentwässerung Braunschweig GmbH (SE|BS) commissioned the Ingenieurbüro Dr.-Ing. Olaf Schulz to renew the sewer in the Wilhelmstraße between the Fallersleber Straße und "Am Wendentor". This was due to various leakages of wastewater into groundwater and vice versa. Additionally, the structural condition of the sewer could have failed in the coming years.

History of the old Drainage Canals

Both, the stormwater overflow sewer with the dimensions of DN 2250/1500 [DN = nominal width measured in the main axis of the pipe in mm] and the combined water sewer in the dimensions of DN 1000/1200, were built at the end of the 19th century. A precursor of the stormwater overflow sewer was the non-piped or open „Wendengraben“, which has been one of the main drainage canals in the city centre of Braunschweig since the middle ages.

Building Process

The new sewers were mostly all fitted into the old canals` route, which made it possible to completely remove the old sewers during the con-

struction. During the planning and the construction the altitude of the combined wastewater sewer remained unchanged, whereas the depth of the new stormwater overflow sewer was reduced significantly. During the construction, the property drainage systems were partly substituted or restored by using liners. Due to the narrow development with half-timbered houses before the second World War, the cadastral registration contained many property drainage systems. Therefore, various drainage systems have been inspected during the planning of this project, from which it was still not possible to differ between connections that are out of order or which have to be repaired. The inspections of the property drainage systems were performed from the excavation pit with the help of a camera.

Sewage Transfer over a wide Area

Before the start of the sewer construction the actual sewer passage systems of the combined water sewer DN 1000/1200 and the stormwater overflow sewer DN 2250/1500 were put up between the Fallersleber Straße in the south and the

Client

Stadtentwässerung
Braunschweig
GmbH

Time Period

Planning in 2011
Construction in 2012

Scope of Works

285 m sewer DN 1800 reinforced concrete
300 m sewer DN 1200 stoneware
6.740 m³ backfill soil
3.780 m² sheet piling
max. groundwater withdrawal of 1.240 m³/h
min./max. excavation depth: 2,2 m/5,4 m
Excavation width of SO-/CW-Kanal: 2,3 m/4,5 m

Costs

3 million € (net)

Wastewater
Treatment

Drainage

Area Development
Geo and Canal
Information Systems
Expert Opinions
Project Controlling
Health and Safety
Coordination
Road Construction
Transportation
Surveying
Visualization
Hydraulic Engineering



Wendenstraße in the north. For the diversion of the wastewater, two siphon systems made out of steel ("Hamburger Heber") were installed along the construction site of the combined wastewater sewer and connected to the existing sewer system. Apart from that, the accumulated wastewater within the construction site as well as the combined wastewater sewers coming from the Bockstwete or the Neuen Knochenhauerstraße have been collected

and diverted separately. Both siphon systems DN 1200 und DN 800 transported up to 1,500 l/s or 500 l/s each over a distance of 300 m. Overall the total energy consumption equaled less than 1kWh/d!

Traffic Guidance

Normally, the Wilhelmstraße is a multi-lane one-way street running from the south to the north and directing the motor traffic from the city centre to the northern outer part of the city. During the construction, only construction vehicles were able to cross and pass the construction site. Residents along the Wilhelmstraße were able to use rear parking spaces as well as the delivery entrances of the businesses.

Access for Fire and Rescue Services

The fire service provided the so-called "second escape route" for the adjacent buildings in the Wilhelmstraße. Therefore, the building trenches and the non-passable sections between the building trenches could only be as long as the fire service was able to reach the buildings by a turnable ladder.



Scope of Services

- planning and construction supervision of the entire project
- constructional engineering
- phases 2, 3 and 5-9 of the German Fees Scale for Architects and Engineers (HOAI)

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Drainage
Area Development
Geo and Canal Information Systems
Expert Opinions
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