

Groundwater lowering, Copenhagen Central Station

Pumping wells, observation wells, re-infiltration wells and monitoring wells



AARSLEFF

Per Aarsleff A/S has executed groundwater lowering for the construction of a new transfer tunnel between Copenhagen Central Station and the new metro station, which is a part of the newly established Metro Cityring.

The groundwater lowering comprised pumping wells, observation wells, monitoring wells, re-infiltration wells together with water treatment and installation of an alarm and emergency power system.

Work in track closure

Main parts of our work were carried out under the railway terrain, making track closures and logistic planning necessary with both night and weekend work. To be able to carry out the work the re-infiltration wells were established during the track closures. The drilling rig was partially placed on the platform and on the track on a railway wagon. The drillings took place with two teams, so the drilling rig was in operation night and day over a weekend.

Limited space

The new transfer tunnel was constructed partly under the existing Central Station. Initially, parts of the Central Station were taken down stone by stone in order to be reconstructed after the tunnel completion.

The retaining walls of the construction pit were built with jet grout piles, and two-thirds of the pit were constructed inside the existing Central Station with limited headroom, and beneath the old luggage centre and the bicycle basement. We excavated the construction pit to the upper waling level alongside of the Central Station, and then under the Central Station. Due to the limited headroom of about 4.5 metres, the filter wells had to be performed with a mini drilling rig that was craned into the pit. In order to operate in the small construction pit, it was necessary to lay the leader down in between the establishment of each filter well.

Outside the construction site, the pumped-up groundwater was re-infiltrated in public areas. The wells were placed in parking areas and roads and were connected to an elevated pipeline system in accordance with the municipality and the police.

No impacts outside the construction pit

The purpose of the groundwater lowering was to depressurized and dewater the construction pit for the new transfer tunnel between the Central Station and the new metro station. Subsequently, the water was re-infiltrated to ensure that the Central Station's existing foundation, which consists mainly of old oakwood piles, was not damaged by the dewatering.



Data

- 3 pumping wells
- 1 observation well
- 7 re-infiltration wells
- 3 monitoring wells
- Water treatment plant for 30 m³/h
- Alarm and emergency power system 24 hours a day.

Client

Metroselskabet I/S

Type of contract

Subcontract

Consulting engineer

Cowi Arup Systra JV

Construction period

October 2018-September 2019

Contract value

DKK 2.4 million

Aarsleff Ground Engineering is one of Europe's leading piling contractors, and we undertake a wide variety of piling, drilling and foundation projects in Denmark and abroad. We have offices in Poland, Sweden, Germany and the UK.

Our fleet covers fully hydraulic piling and drilling rigs as well as cranes and vibrators.

Contact

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