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Tube pile walls Amsterdam CS

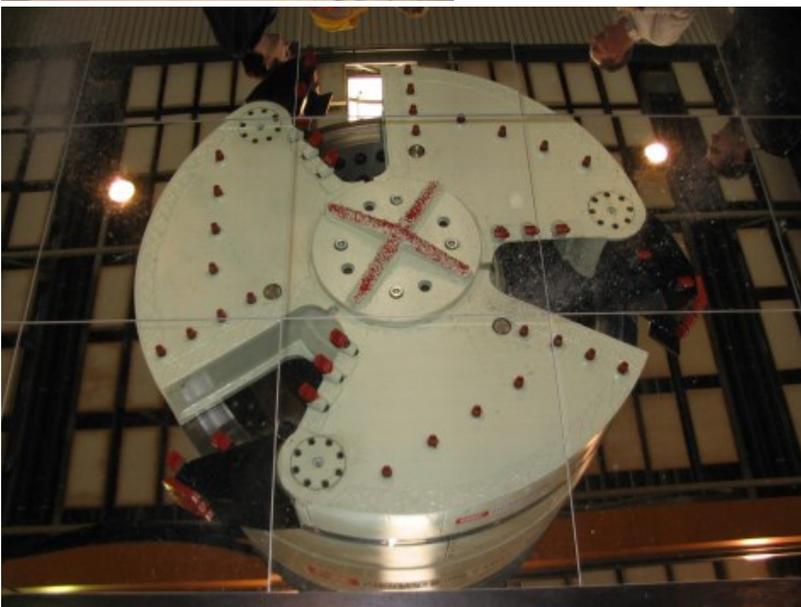
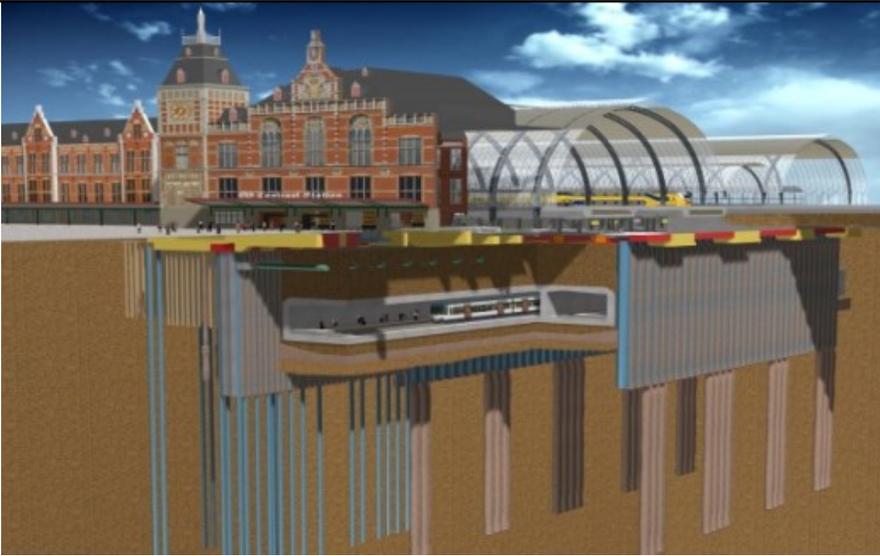
A new metro link is being realised in Amsterdam, called the North/South line. The North/South line intersects with Amsterdam's main rail station, Amsterdam Central Station. Directly under the station yard and the listed station building, concrete tanking was built with tube pile walls and then excavated. A prefabricated tunnel element was immersed in the concrete tanking. The tube pile walls have an earth-retaining, water-restraining and bearing function.

Client:

Combinatie Strukton - van Oord

Location:

Amsterdam



Project

The tube piles, connected to each other by means of a locking structure, vary in length from 31.5 to 67 metres. Their diameter is 1,820 mm and they were fitted vibration-free from the passenger tunnel under the station yard. This tunnel has a working height of just 3.1 metres.

During the design stage of this important intersection on the North/South line, there was no standard solution available for the vibration-free fitting of these types of large tube piles in a very restricted space.

In the spring of 2002, it was decided to use micro-tunnelling technology to bore the tubes vertically. This technology had been used for years to bore tubes horizontally. Practical trials were conducted in 2002 and 2003 to find out whether this method was feasible for this project. The effects on the surroundings were closely monitored during the trials.

The results were very positive and led to detailed elaboration of the Vertical Micro-tunnelling technology. In 2004, it was ultimately decided to design and construct the necessary machines. Because of the lack of previous experience with this construction method, the contractor worked closely with the client and its advisers during the procedure, which was given the project name 'Shared Domain'.

The system uses a micro-tunnelling drilling machine located in the bottom tube segment, which digs up the soil. This takes place while the steel tube pile is being pressed downward hydraulically. Because of the restricted working height, the pile is divided into segments connected to each other with bolts. After reaching the required depth, the drilling machine is moved away from the pile and the pile is filled in.