

Antwerp, BELGIUM

Deurganckdock Container Terminal



Deurganckdock

To meet exponential growth of container traffic in the Port of Antwerp, an expansion programme was finalised in January 1998. It includes a new tidal container dock on the left bank of the river Scheldt some 60 km inland from the North Sea. Once finished, the new facility – Deurganckdock – will double the harbour’s container handling capacity.

Works at Deurganckdock are being carried out in three phases. Terminals with quay lengths of 1,250 m, 1,750 m and 2,200 m are planned. For the design of the quay wall, an extensive soil investigation programme was carried out, and indicated the presence of 8 different soil layers. The quay wall consists of an L-shaped reinforced concrete wall. The horizontal “footing” of the quay wall is up to 26 m wide. A sheet pile wall is driven behind and in front of the footing which supports the 23.5 m vertical wall.

Before the earthworks started, the groundwater level was lowered by means of dewatering pumps in order to execute the construction works in a dry excavation. The excavation proceeded in several steps to reach a depth of -18 m, with different slopes.

Steel sheet piles were driven on both sides of the foot of the quay to ensure the stability of the structure. By connecting them to the footing of the quay wall, erosion of soil from beneath the quay wall was prevented. After driving of the sheet piles, the excavation was deepened to -21 m. A 70 mm layer of dry concrete was placed to obtain a clean foundation surface. Different types of AZ sheet piles were used: some 5,300 metric tons of AZ 19, AZ 26 and AZ 36 for permanent applications and 700 metric tons of AZ 26 and AZ 36 profiles as temporary supporting piles.



Over 6,000 t of steel sheet piles were used for the foundation of the quay walls



The AZ sheet piles were installed with a diesel hammer

Once concreting of the footing of the quay wall was finished, works on the vertical part of wall started. The next step consisted in backfilling the excavation behind the quay wall with sand to +8.8 m. When the first 1,650 m of the quay wall were ready, the soil was then raised to the level of the future terminal sites with the help of cutter dredgers.

At the entrance of Deurganckdock, the terminal walls open towards the river Scheldt. In contrast to the L-shaped quay, this entrance wall is an anchored structure. MV piles were used to take

the horizontal loads of this retaining wall. MV piles consist of steel bearing piles wrapped with a grout envelope during installation enabling them to carry very high tensile forces. The steel pile displaces soil during the driving process. The volume created by the displaced soil

is progressively filled with grout that provides an excellent connection between displaced soil and the steel element. Arcelor offers a range of special wide-flange piles that are used throughout the world as HP piles for deep foundations of various structures. ■



Steel MV piles take the tensile forces of the entrance walls

Owner:

Ministry of the Flemish Community, LIN, AWZ, Maritieme Toegang

Contractor:

Consortium comprising Cordeel, Aertssen, CFE & Van Laere and Dredging Int'l

Driving company:

Soetaert

Permanent sheet piles:

440 t AZ 19; 2,300 t AZ 26; 2,600 t AZ 36

Temporary sheet piles:

540 t AZ 26; 200 t AZ 36