DCT2 Terminal North Port

Gdańsk

As part of the extension of the container terminal, a crane beam had to be piled up on stilts and the ground had to be reinforced on an area of about 20 ha for storage yards.

The project

The expansion of DCT Gdansk, Poland's largest container terminal with a new quay (656 m long and up to 17 m deep) and storage yards was realized by Besix N.V. & NDI S.A. JV, which commissioned Keller to carry out piling work and strengthening the ground for the storage yards.

The challenge

The challenge was to optimally design and carry out geotechnical works in difficult ground conditions and under great time pressure from the General Contractor, as well as to adapt the design solutions to the varied and non-standard requirements of the Investor. It was necessary to ensure that the subsidence of the crane foundations was limited to 10 mm and storage yards to values from 40 mm to 220 mm, depending on the storage area.

The solution

For the crane beam foundation, innovative, diagonal CFA piles up to 29 m long and micropiles up to 38 m long were manufactured. In total, more than 1,000 reinforced CFA piles with a diameter of Ø650 mm and a total length of more than 22 km and 290 Ø300 micropiles with a total length of about 10 km were made under the crane beam and lighting masts.

To strengthen the ground for storage yards for containers, approx. 8,300 KSS gravel columns with a total length of approx. 95 km and approx. 750 FSS/CFA concrete columns with a total length of over 12 km were made. On an area of approx. 20 ha, the soil was reinforced with the RIC impulse compaction method. On an area of approx. 2 ha m², loose soil was compacted using the vibroflotation technique. Keller's work was carried out between May 2015 and January 2016.

Project facts

Owner(s)
DCT

Keller business unit(s)
Keller Polska

Main contractor(s)
Besix NV/ NDI SA

Engineer(s)
Keller Polska

Solutions
Bearing capacity / settlement control
Heavy foundations

Markets
Infrastructure
Industrial

Techniques
Vibro stone and concrete columns
Rapid impact compaction (RIC)
Micropiles
CFA piles (auger cast)