



Challenging construction pit near the Rhine NRW.Bank

Data and facts

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| Company | PORR Spezialtiefbau GmbH |
| Type | Turnkey construction pits |
| Runtime | 11.2024 - 12.2027 |
| Principal | Bau- und Liegenschaftsbetrieb NRW, Düsseldorf |

[Project report online](#)

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Technisch anspruchsvolle Baugrube in Rheinnähe

The special civil engineering package includes the construction of 18,650 square metres of diaphragm walls. These will be anchored up to five times and will be 42 metres deep with a wall thickness of 1 metre. In addition, measures will be taken to control the groundwater. The water table will be lowered below the level of the construction pit floor and the collected groundwater will be discharged into the Rhine via an elevated purification plant.

In the north of the construction pit, the existing outer wall of an underground car park will be used as construction pit shoring. To this end, it was planned to reinforce the existing outer wall with a back-anchored in-situ concrete facing. With the support of Porr special civil engineering planning, a special proposal was implemented to secure the underground car park using a back-anchored steel frame construction, which leads to considerable savings in resources and also has financial benefits. At depth, below the outer wall of the underground car park, the construction pit is sealed using a freezing device. The ground freezing method – a state-of-the-art and minimally invasive process – temporarily stabilises the subsoil by artificially freezing the pore water. This method reduces vibrations, protects existing buildings and allows for natural regression after completion of the construction work.

A striking feature of the construction pit is the height difference of around 7.2 metres at the bottom of the pit, which results from the different foundation levels of the future building sections. The difference in level is compensated for by an overlapping group of bored pile walls, which divides the construction pit into two levels and provides structural stability. In the lower area, the existing underground car park wall is additionally underpinned and reinforced with a tangential, back-anchored group of bored pile walls.

The construction pit walls are monitored by surveying techniques during all construction phases.

Impressions



Image notes

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The complex excavation pit shoring forms the basis for a new administrative centre for the state government of North Rhine-Westphalia – in close proximity to the Rhine.

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Do you have questions about the project or would you like to learn more? Feel free to contact us for further information.

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