The modernisation of Giurgiu port

Giurgiu | Romania

Overview

Situated in Romania on the eastern bank of the Danube River, the Port of Giurgiu has historically been a major hub for regional and international trade. Throughout the centuries, it has adapted to the evolving transportation and logistics demands. Today, as part of the Pan-European Corridors VII (Danube waterway) and IX (road and rail), the port ensures connectivity between the Black Sea, the Mediterranean, and Central Europe, reinforcing its strategic relevance.

For this reason, CN Administrația Porturilor Dunării Fluviale SA Giurgiu (the local port authority) authorised a significant intervention to modernise and increase operational capacity. This project was executed by PORR Construct SRL, responsible for managing and coordinating the entire construction process.

Scope of the modernisation works

The ambitious project, scheduled for completion by mid-2025, introduces several new berths, including three along the Ramadan Quay (the main operations port) and two along the Veriga Basin Quay (the queue quay), adding a total of 15,000 m^2 of new port area reclaimed from water.
This expansion is expected to significantly improve the cargo volume, the handling efficiency and multimodal integration.

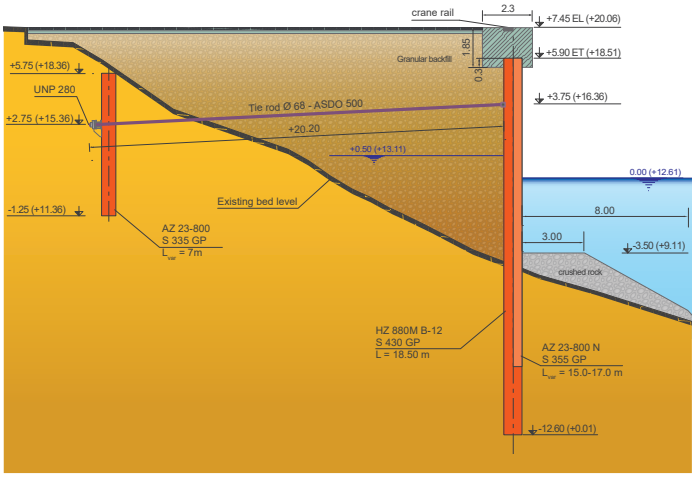
Quay wall design, structural solutions and testing

For both these quay walls, the ArcelorMittal HZ®-M/AZ® combined wall system was implemented, with secondary anchoring steel sheet pile walls. This solution facilitates the construction and enhances productivity. It allows for a T-connection which significantly reduces structural complexity. On the other hand, the combiwall's higher bearing capacity allows also for partial backfilling, which in turn facilitates the installation of the tie rods.

This design choice was further motivated by the presence of crane rails, with one of them positioned on the head of the main wall and the other between the main and the anchoring wall. In this configuration, the HZ-M (King Piles) provide support for the elevated vertical crane rail loads installed on top of the main wall, while ensuring compatibility with the wall system configuration.

Moreover, Pile Driving Analyzer (PDA) tests were performed on the HZ-M piles, under the joint supervision of the piling contractor Dewatering & Piling SRL and the general contractor PORR Construction SRL. The results provided realtime information on pile behaviour, driving performance and work control. They contributed to the overall quality assurance of the implemented solution and supported the verification of installation parameters adopted on site.

Ramadan quay cross-section



Finally, due to the location (an area with significant seismic activity) and strategic relevance, seismic resistance provisions were considered in compliance with EN 1998-5. Additionally, corrosion resistance for the entire 50-year lifetime of the structure is achieved by adjusting the thickness and the steel grade of the SSP system.

Materials supply, installation process and project completion

ArcelorMittal Sheet Piling supplied 3,019 tons of steel sheet piles. These included king piles HZ 880M B-12 and HZ 880M A-12 in S 430 GP steel grade, with lengths varying from 17 to 18.5 m with infill piles AZ 23-800 in S 355 GP, of lengths 14.5 to 17 m.

The secondary anchoring walls were built with AZ 23-800 in S 355 GP steel grade, in lengths of 6 to 7 m. Moreover, 237 tons of Anker Schroeder (ASDO 500) tie rods of various lengths were supplied, completed with 75 tons of waling beams and bolts.

The installation of the steel sheet piles was overseen and executed by the piling contractor Dewatering & Piling SRL. Works were carried out through a floating platform on the water side, from where a guiding rig was used to ensure accurate positioning and alignment of the steel sheet piles.

The installation sequence began with the King Piles (HZ-M profiles), which were initially driven using a vibro-hammer (ICE 28RF) until refusal. The final driving to the design depth was achieved through diesel impact hammer (D62) operating at approximately 224 kJ energy, 6,200 kg ram weight and 35 to 50 blows per minute.

Once the HZ-M piles were positioned, the infill piles were installed using vibro-hammer without the need to employ additional hard-driving measures. Construction works began in early 2024. Thanks to the rapid installation of the steel sheet piles quay walls, the project was completed on time and commissioned in the mid-2025.

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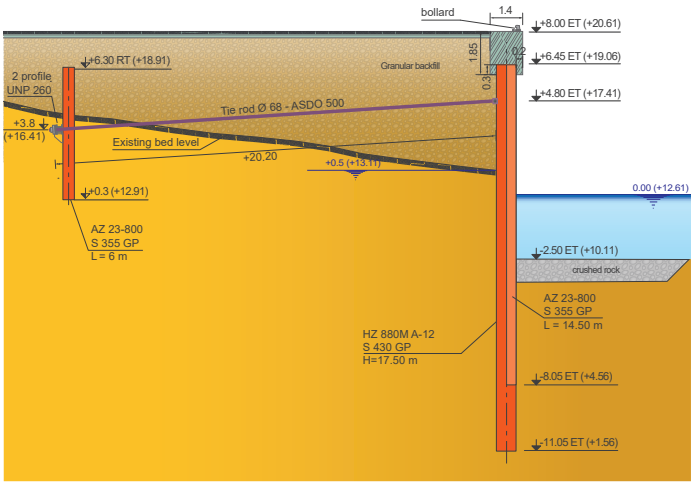
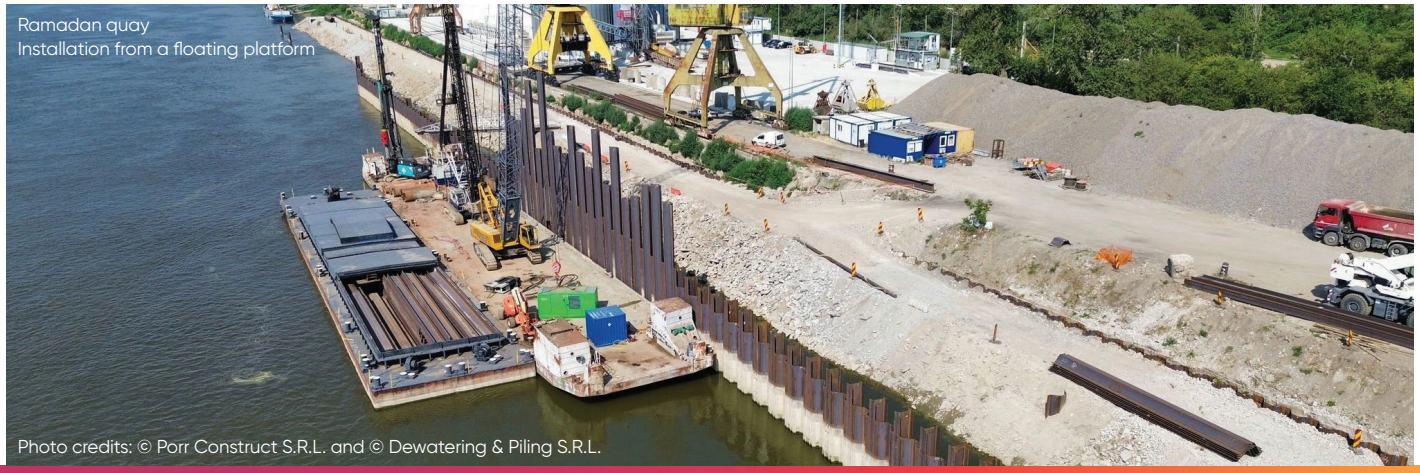
Project owner	CN Administrația Porturilor Dunării Fluviale SA Giurgiu
Designer	Danema Design SRL
General contractor	PORR Construct SRL
Piling contractor	Dewatering & Piling SRRL
Project type	Quay wall on the Danube River
Product delivered	**Sheet piles** **3,019 t** HZ 880M A-12 S 430 GP HZ 880M B-12 S 430 GP AZ 23-800 S 355 GP **Tie rods and wailing** Tie bars 237 t Waling beams and bolts 75 t
Execution period	From February 2024 to June 2025

Veriga basin cross-section





Ramadan quay
Installation from a floating platform

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