

New bridge across Masned Sund

Establishment of new 200-metre-long and 14-metre-wide railway bridge

Working in a design & build contract, Per Aarsleff A/S has constructed the new Masned Sund Bridge designed as a double-track railway bridge. The project also included a widening of the railway embankment from single to double tracks across a section of 1,400 metres in total, noise barriers on parts of the rail section as well as a small but highly complicated bridge near a very important access road in Vordingborg.

Challenges in the soil

Since before the project began, it was clear that the geotechnical conditions would be very challenging. Additional geotechnical investigations indicated much softer soil conditions than anticipated. This complicated the design work that was already progressing well. Also, there were several challenges connected with the existing pipes in the ground. In particular one existing wastewater pipeline was a challenge, requiring us, at some pipe sections, to use cut-off sheet piles to protect the pipe or to relocate the pipe.

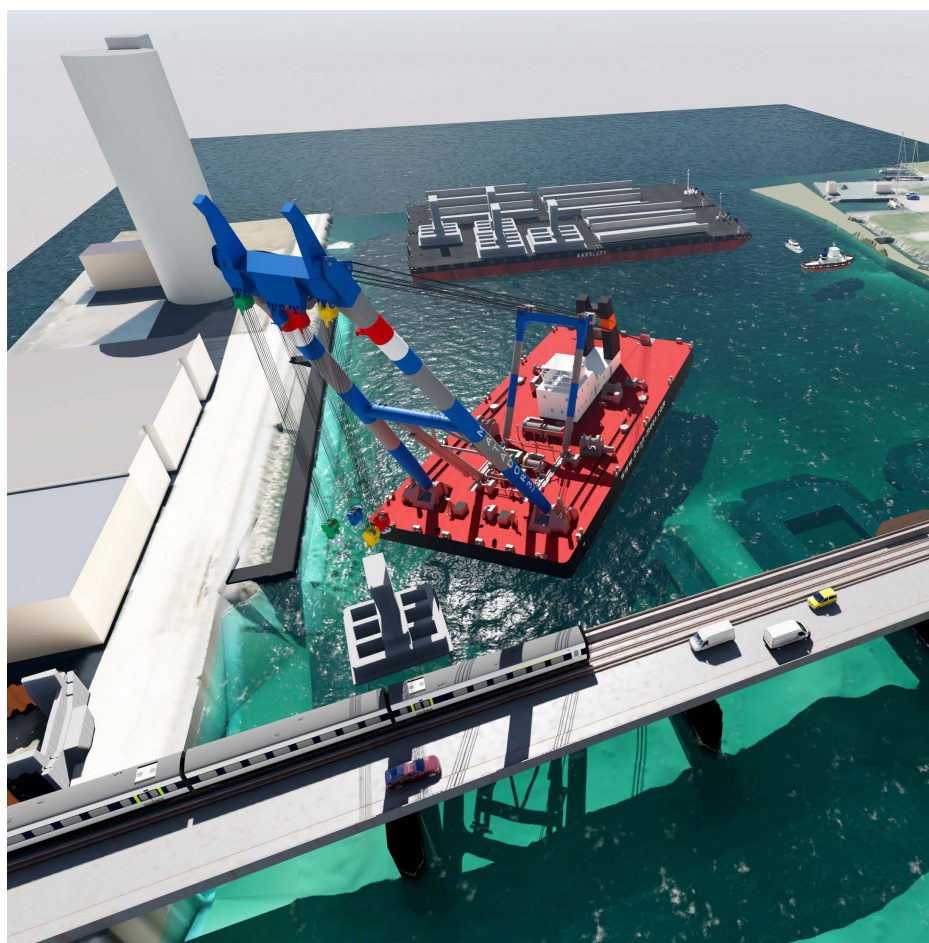
Thorough planning using VDC

The design & build contract required a lot of planning due to very tight working space with a long and narrow construction site, not leaving much space for machinery or storage and handling of materials. Using Aarsleff's VDC skills in the planning phase allowed us to visualise the construction site, machines and materials and helped us to determine if and how the many logistic challenges involved could be solved.

Moreover, specific safety measures were involved, as some of our work took place alongside an operational railway. We continuously monitored the settling of the existing railway embankment, and during the piling work we inspected the position of the existing track whenever a train passed. To accomplish this, we used a brand new track monitoring program, and Aarsleff Rail A/S assisted us with their specialist expertise.

High degree of own production

The DKK 200 million project was completed in June 2020. The new bridge consists of six concrete bridge decks and five concrete bridge abutments prefabricated at our production facilities in Swinoujście in Poland. The concrete bridge structures were shipped to Masned Sund on two barges and installed with a barge crane. The project was delivered in a One Company collaboration combining many of the Aarsleff Group's specialist skills. In addition to prefabrication in Poland and the subsequent installation work, we also carried out the remaining work as in-house production, including earthwork, concrete, marine construction, ground engineering work and railway work.



Data

- 60,000 m³ of embankment
- 6,500 m³ of ballast stone
- 3 km of drainage
- 6,500 m³ excavation offshore
- 2,900 m³ of cover stones offshore
- 7,400 m³ of filter stones offshore
- 13,000 m piles (up to 22 m segmental piles)
- 6.5 km of sheet piles
- 150 soil anchors
- 2 bridge abutments
- 3,000 m³ of in situ concrete
- 360 tons of reinforcement for in situ concrete
- 4,500 m³ of prefabricated concrete (5 bridge abutments and 6 bridge decks)
- 800 tons of reinforcement for precast concrete elements
- 3.7 km of tension cables for precast concrete elements.

Client

Banedanmark

Contractor

Per Aarsleff A/S

Cooperation partner

Aarsleff Rail A/S

Type of contract

Design & build

Consultant/Architect

COWI A/S

Construction period

May 2016-June 2020

Contract value

DKK 200 million

Contact

Per Aarsleff A/S
Construction
Tender & Estimation
info@arsleff.com
Tel +45 8744 2222

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