New bridge installed in Nuuk

Construction of a 62-metre-long bridge towed to Greenland and installed

In 2014 the Municipality of Nuuk agreed to construct a new bridge to link the town to its new container terminal – which is also built by the Aarsleff Group. In a trade contract and internally in a One Company collaboration, Aarsleff has produced, towed and installed the 62-metre-long bridge and handed it over to the client in the summer of 2019.

Challenging piling work

Owing to highly compressible deposits found on the south bridge location, the installation of the south concrete abutment was carried out as a cofferdam, consisting of driven sheet piles and a combined wall with both tubular steel piles and sheet piles. The north concrete abutment was installed directly on the rock. The installation of sheet piles and pipes took place from November 2017 to January 2018 in minus 20 degrees Celsius and frequent snowstorms. The extreme weather conditions led to several forced work stops, and the excavation work in the cofferdam took longer than expected due to the hard soil conditions, just as a high silt content in some places almost made the soil come alive and complicated the installation of sheet piles and piles.

After establishing the cofferdam, we excavated to level -14 and we installed inside walings across the cofferdam using GEWI bars. The cofferdam was eventually backfilled with blast stones.

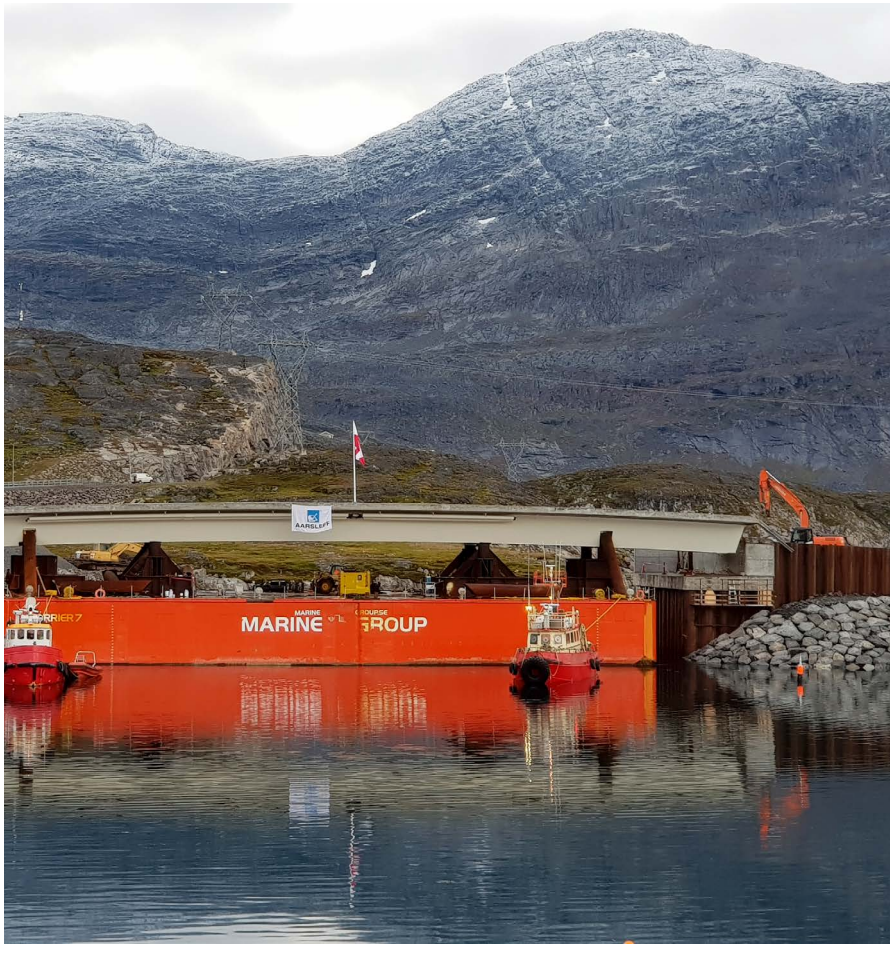
Cast in Poland and towed to Greenland

The 62-metre-long, 13-metre-wide, 2.6-metre-high and 1,250-ton-heavy bridge consists of eleven steel elements produced and welded together in three sections by a Polish subcontractor. On a hot day in July 2018, our Polish company Aarsleff Biz Sp. z o.o. concreted the bridge deck directly on a barge. After more than 13 hours of concreting – and with the assistance of additional staff, the bridge was ready for its more than 4,400-kilometre-long trip on the barge to Greenland.

With the help of the forces of nature

The bridge was positioned on the two concrete abutments using the four-metre tidal difference between the high tide and the low tide. It was the only option as no cranes in Greenland were able to handle the lifting operation, and we were unable to get a floating crane close enough due to the shallow water. While the tide was raising, we positioned the barge in between the two concrete abutments and placed the bridge onto four jacks as the water level fell again. Subsequently, the bridge was lowered into its final position using the jacks.

Finally, we installed guardrails, dehumidifier, lighting and membrane on the bridge deck.



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Data

- 27×15 m cofferdam with AZ26-70 sheet piles of up to 35 m, DN1016 mm pile profiles (450 lm in total and 600 tons of steel)
- 1,300 m² of asphalting of tubular steel pipes and sheet piles
- 13 CAPWAP tubular steel pipes analyses
- 6 anchor levels, a temporary bracing frame and interlocks in the pile profiles
- 4,700 m³ of soft bed replacement in the cofferdam and in the pile profiles
- 510 m³ of concrete for foundation (incl. 59 tons of reinforcement)
- 325 m³ of concrete for foundation (incl. 150 tons of reinforcement)
- 24,000 m³ of backfilling with blast stones.

Client

Kommuneqarfik Sermersooq

Contractor

Per Aarsleff Grønland ApS

Type of contract

Main contract

Consulting engineers

Inuplan A/S

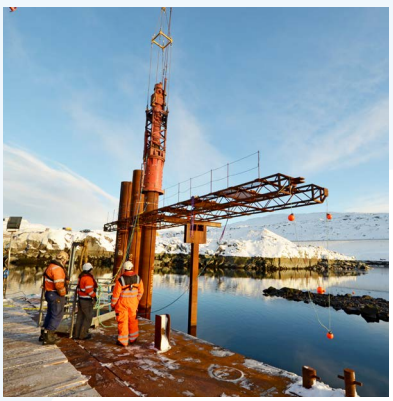
NIRAS Greenland A/S
(subconsultant)

Construction period

October 2016 -July 2019

Contract value

DKK 63.8 million



Contact

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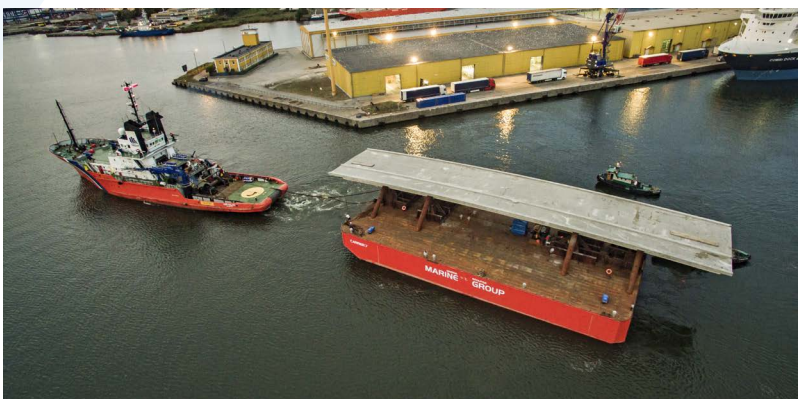

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