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FEATURES

Client	Port of Naantali, Finland
Project	RoRo jetty No. 26/27 extension
Location	Naantali, Finland
Period	September 2017 – March 2018
Contractor	Terramare Oy

SCOPE

Extension of Port of Naantali jetty No. 26/27 by 94 metres, including steel pipe piling, deck structures, public utility services and full jetty equipment.

QUANTITIES | JETTY EXTENSION

Extension, length/width	94 m/10 m
Jetty after extension, length	228 m, total

QUANTITIES | TUBULAR STEEL PILING WORK

Piles (Ø/pcs/length total)	Ø 813 mm/18 pcs/793 m
	Ø 1,016 mm/21 pcs/ 896 m
Pile wall thickness	16 mm

QUANTITIES | EXTENSION DECK STRUCTURES

Concrete structures, total	3,500 m ³
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QUANTITIES | REINFORCEMENT STEEL

Reinforcement steel, total	280 tonnes
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MAIN PLANT

Pile-Driving Unit	Meri-Pekka
Crane	Liebherr HS 895 HD
Hydraulic Piling Hammer	Junttan HHK 12/16S
Work Pontoons	Bolle VIII (70.4 x 20.0 x 4.0 m)
	Niina 2 (50.0 x 18.8 x 3.0 m)
Tug	Ali (Rauma Cata Oy)
Other plant	Excavators on land

A View of the worksite at Port of Naantali.



INTRODUCTION

Port of Naantali increased its quay capacity by extending to 228 metres its RoRo jetty, which is equipped with driving ramps. Terramare implemented the jetty extension in exceptionally deep water.

With the extension of the jetty, the Port of Naantali prepared to accommodate larger RoRo and RoPax vessels at the port. The project supported, in particular, the Finlines shipping company's plans to develop and expand its traffic between Finland, the Åland Islands and Sweden.

SEAWARD PILING

Terramare launched the Naantali jetty extension project at the beginning of September 2017. The jetty's fixed 94-metre extension was founded on 39 concreted steel pipe piles, of which the longest were 54 metres, due to the deep water and a thick bottom layer of clay. The piling was carried out using Terramare's modernised Meri-Pekka vessel. The vessel's new piling unit consists of a Liebherr HS 895 HD crane, a 38 metres high piling mast and a Junttan HHK 16S hydraulic 16-tonne piling hammer. No corresponding assembly for challenging piling projects can be found elsewhere in Finland.

DECK CONCRETE STRUCTURES

The concrete structures of the jetty extension were implemented in three stages. Strong footings supporting the jetty structure were cast by slipform casting on top of the piles. On top of the footings were installed 16 prefabricated 50-tonne beam elements, after which pile caps were cast at the level of the upper surface of the beams. On top of the beams were installed steel corrugated sheets, over which, ultimately, the deck slab was cast. Approximately 32.5 tonnes of concrete reinforcement and 3,500 cubic metres of concrete were used in the concreting work.

JETTY EQUIPMENT

Terramare delivered the jetty fully equipped, including fenders, bollards, ladders and edge barriers as well as preparations for electrical installations to be implemented later. Public utility services including water and wastewater piping were also installed in the jetty. The contract was completed in March 2018.

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PORT OF NAANTALI, FINLAND RORO JETTY NO. 26/27 EXTENSION



- B** Pictured, the Port of Naantali's jetty at its earlier length.
- C** Terramare's Meri-Pekka with its powerful piling assembly.
- D** The massive tubular steel piles, equipped with rock shoes.