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FEATURES

Client	Port of Kalajoki
Project	West Quay extension and new ro-ro ramp
Location	Kalajoki, Finland
Period 1	June 2018 – June 2019
Contractor	Terramare Oy

SCOPE

Extension of Port of Kalajoki West Quay by 123 metres, including a 19 metres long transverse quay with a ro-ro ramp. Extension of quay project also includes public utility services, surfacing work, asphaltting and quay accessories.

Expansion of harbour basin of the West Quay. The site was dredged to a minimum depth of -9.5 metres.

A View of the worksite at Port of Kalajoki.

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QUANTITIES | EXTENSION OF WEST QUAY

West Quay extension, length	123 m
Depth/height	-9.5 m/ $+2.0$ m (from 0-level)
Transverse quay, length Including ro-ro ramp	19 m
Retaining quay wall elements, cast in situ	29 pcs (K and S elements)
Quay wall elements, height	10.2 m
Concrete structures, total	1,198 m ³
Reinforcement steel, total	525 tonnes
Erosion protection slabs	398 m ³

QUANTITIES | EXPANSION OF HARBOUR BASIN

Dredging, total	73,000 m ³
Underwater drilling and blasting	600 m ³

MAIN PLANT

Backhoe dredger	Attila (Hitachi EX 1900-5)
Drill Platform	Rockbuster
Towable barges	SCG 3 & 4 (500 m ³ each)
Floating crane	Nosto-Pekka (max. 200 tonnes)



INTRODUCTION

The Port of Kalajoki has increased its ship's berths by extending the length of the West Quay by 123 metres. The quay extension also comprises a 19 metres long transverse quay, equipped with a ro-ro ramp. The quay extension enables the port to

accommodate two handysize cargo vessels simultaneously or provide a free berth for line and container traffic.

EXTENSION OF WEST QUAY & HARBOUR BASIN

Terramare implemented the extension of the Port of Kalajoki's West Quay, complete with a ro-ro ramp. The contract began at the beginning of June 2018 with dredging and levelling work carried out at the quay extension site. The site was dredged to a minimum depth of -9.5 metres. The dredging masses amounted to 73,000 m³. Dredging was the responsibility of the backhoe dredger Attila. In the project, underwater drilling and blasting, in which 600m³ of blasted rock was removed, was also implemented at the outer edge of the quay. The drill platform Rockbuster carried out the underwater drilling and blasting.

RETAINING QUAY WALL ELEMENT

Alongside the dredging, in-situ casting of the retaining quay wall elements of the 123-metre long quay extension and 19-metre transverse quay was launched. A total of twenty-nine 10.2 metres high quay elements, comprising retaining quay wall and intermediate elements, were produced with in-situ casting. The elements were installed on the levelled sea bottom of the quay line by the floating crane Nosto-Pekka. In connection with the installation, backfilling work on the quay extension also began.

QUAY EQUIPMENT

After element installation, a coping beam was cast on the upper edge of the quay line and an erosion slab cast on the sea bottom in front of the quay. The contract also included the quay's public utility services, surfacing work, asphaltting and accessories. The extended West Quay was handed over to the client in June 2019.

Following the extension of the West Quay, the Port of Kalajoki has quays totalling 550 metres for loading use.

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PORT OF KALAJOKI, FINLAND
WEST QUAY EXTENSION AND NEW RO-RO RAMP



- B** Aerial view of Port of Kalajoki and the location of the worksite.
- C** Pictured is the drill platform Rockbuster.
- D** The in situ casting site of the 10.2-metre high quay wall elements. Pictured is the floating crane Nosto-Pekka.
- E** Installing the quay wall's elements with the floating crane.