

PROJECT SHEET

PORT OF PETERHEAD, UNITED KINGDOM

DREDGING AND RECLAMATION

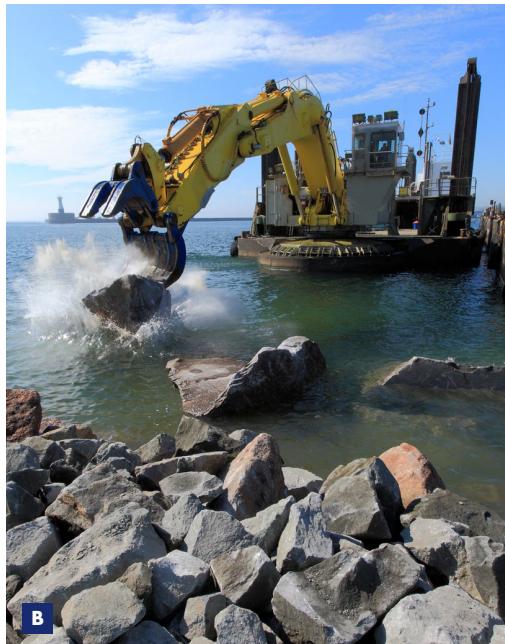
PROJECT DESCRIPTION

The project consisted of capital dredging, reclamation, quay construction and breakwater extension works for Peterhead Smith Embankment Development, in order to develop the area in the north of the harbor at Smith Embankment to provide sheltered berths for vessels ranging from 20 to 160m in length.

The project was awarded to a Joint Venture between Westminster Dredging and R J McLeod, a well known Scottish Civil Engineering contractor, responsible for the piling and associated civil works involved with the new quay. Westminster Dredging carried out the dredging and reclamation following on from Rockfall, who -together with Terramare - pre treated rock within the dredge area by drilling and blasting

QUAY CONSTRUCTION

The R J McLeod works comprised the construction of a 120m long by 25.5m wide suspended deck quay; including fenders, services and deck furniture and mooring dolphin 40m west of the quay with linking tubular steel catwalk. The new quay is an open piled structure over a rock armour revetment. Tubular steel piles 25m long and 1.4m diameter were cored 10m into the rock substructure. The main deck is of composite steel and concrete construction with 24m long by 1.2m square steel box beam girders supporting pre-stressed concrete TY beams tied together with a reinforced concrete topping.



FEATURES

Client	Peterhead Port Authority
Period	April 2009 – September 2010
Location	Peterhead, Aberdeenshire, U.K.
Contractor	Joint Venture between Westminster Dredging Co. Ltd. and R J McLeod (Contractors) Ltd



- A** Location map
- B** Bulk rock placing
- C** Backhoe Manu Pekka dredging pre treated rock



RECLAMATION AND PROTECTION WORKS

The majority of the dredged material was placed onshore to reclaim an area of Smith Embankment, protected by rock.

To protect the new quay, a 100m long rubble mound extension to the existing Albert Quay breakwater was constructed, for which a total of 130,000 tons of rock were used, including 60,000 tons of core rock, 4,500 ton of 3/5 ton and 25,000 tons of 1/3 ton; the remainder armorstone with individual weights of 10 to 16 tons.

Rock placement was carried out by Manu Pekka fitted with a special rock grapple. Subsequently, the 120m long, open piled quay was built along the inside of the extension to the breakwater. The orientation of the breakwater extension has been determined to minimize the reflection of waves on to the oil tanker jetty and the Princess Royal jetty on the south side of the bay. Westminster Dredging have dredged some 100,000 cubic meters of sand, silt, clay weathered and pre-treated rock. This work was carried out by backhoe Manu Pekka, together with split hoppers Long Sand and Cork Sand. Other associated Works included the demolition of the western end of the existing Albert Quay before the new extension was constructed.

CHALLENGES IN PLANNING

Peterhead is a busy fishing port which meant that a number of challenging factors had to be taken into consideration in the planning of the works

- The main road to Peterhead is the A90 which is a busy single carriageway road. Road access to Smith Embankment is via the residential Bath Street which is used by local and harbor traffic. Access to the South Breakwater is via an out of town road, and so bringing construction materials to site this way reduced construction traffic through the town.
- West Quay, Merchants Quay and Albert Quay are in constant use by fishing vessels. The quays are busiest in terms of road traffic in the morning when the Fish Market is open.
- The South Breakwater and Princess Royal Jetty are used by the ASCO, who use the harbor as a supply base for the oil and gas industries in the North Sea.
- There is also a Marina on the south west side of the harbor, used by pleasure craft. There are constant vessel movements within the harbor relating to all these users.

All these factors were successfully taken into account in developing the method of work.

PRINCIPAL PROJECT QUANTITIES

Deck area	3060m ²
Tubular steel piles	19 no. 25m long x 1.4m dia
Structural steelwork	840 ton
Prestressed beams	800m ³
Concrete	5200m ³
Reinforcement	800 ton



D Panoramic view of the new breakwater
E Backhoe Manu Pekka trimming toe of slope