

CASE STUDY: CONCRETE MATTRESS BERTH SCOUR PROTECTION | SAUDI ARABIA | 2011

Mattress Engineering: Proserve Contractor: Saudi Archirodon Consultant: Technital
Checking Engineers: Mouchel



The newest of three container terminals at Jeddah Port, Saudi Arabia, is undergoing a major expansion project increasing its capacity from 1.8 million TEU to 2.5 million TEU.

The quay comprises 330 m of existing construction, previously protected with traditional rock armour, and 45 m of new construction. Deepening of the berth will now open up the feeder quay to visits from new Panamax class vessels with drafts up to 14.0m

The feeder quay scour protection design was undertaken by Proserve, with supply including concrete mattress scour protection with an average thickness of 300 mm to prevent underscour of a precast block wall quay structure and a flexible falling rock edge apron to protect the toe.

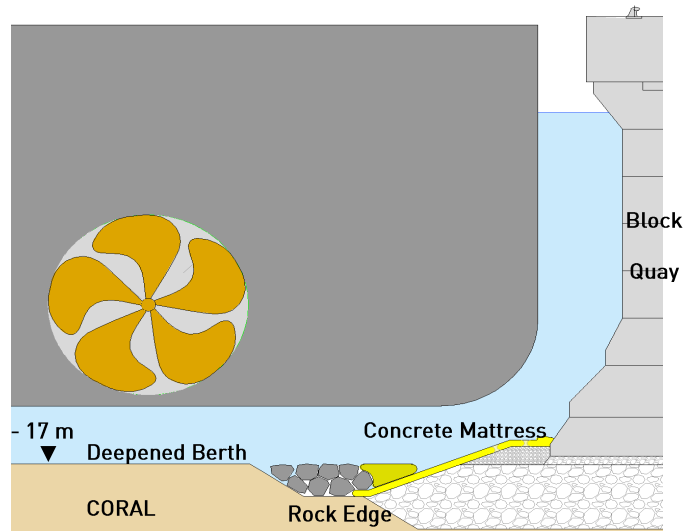
The total length of constant thickness concrete mattress scour protection is 269 m, consisting 62 N° 4.4 m wide panels, each zipped together and filled in-situ to form reliable ball & socket joints. The scour apron provides robust and reliable protection to the quay wall structure from scour due to the powerful vessel propeller action and bow thrusters.

Concrete mattress has the advantage of providing a sealed and reliable protection that is significantly thinner than a typical multi-layer rock armour solution. This is particularly important when vessel

The existing coral bed material has recorded scour erosion. The mattress toe is protected from edge underscour by a flexible rock edge that acts as a falling edge apron to manage any coral scour.

The unfilled fabric formwork panels are easily handled by divers underwater and pump-filled with micro concrete through hoses from the surface.

Insitu concrete mattress offers a scour protection solution for the berth deepening that forms robust and reliable protection, particularly where vessel clearance is critical.



Typical section (Panamax Vessel Shown)