

## Concrete Mattress Berth Scour Protection

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

**Installation start 2017**



**New Quay Extension - Installing Cranes**

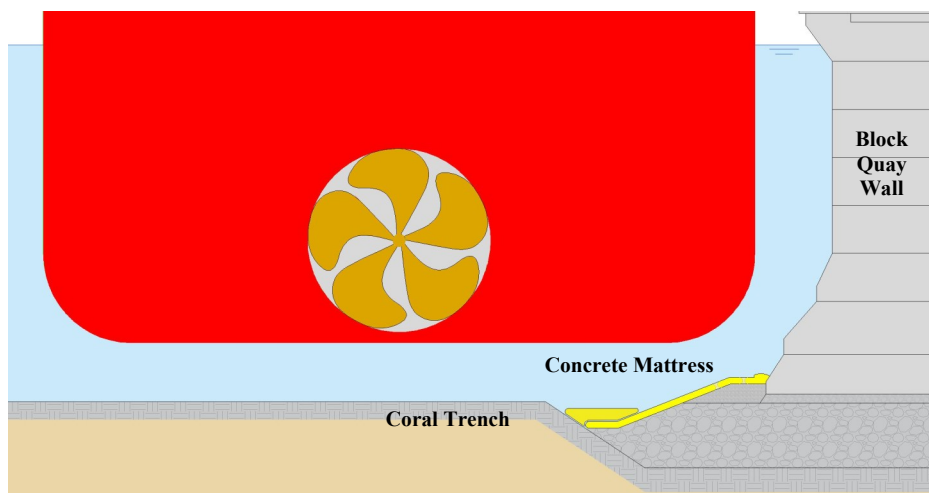
The newest of three container terminals at Jeddah Port, Saudi Arabia, is undergoing a major expansion project increasing its capacity from 1.8 million TEU to 2.5 million TEU.

The quay comprises 330m of existing construction, previously protected with traditional rock armour, and 45m 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.

Concrete mattress scour protection with an average thickness of 300mm is being used to prevent underscour of a precast block wall quay structure of the feeder berth. The total length of constant thickness concrete mattress scour protection is 269m, consisting 62 n° 4.4m 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.

The mattress toe is protected from edge underscour by embedding the toe into the existing coral bed and sealing it with a large concrete infill bolster. Open weepholes ready-fabricated into the mattress provide porosity to accommodate residual tidal flow behind the quay wall.

The unfilled fabric formwork panels are easily handled by divers and pump filled with microconcrete 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)**