Tensar walls support massive ramps for bulk minerals receiving station

Dibba Bulk Handling Terminal

Fujairah, United Arab Emirates

Bulk minerals exported from Dibba Port are delivered by a covered conveyor, hauling material from a large truck receiving station located over 4km from the port. Trucks, drive up a massive ramp, allowing them to dump directly into a hopper feeding the conveyor. Once emptied, they exit down a second ramp. The sides of these heavily loaded ramps are supported by TensarTech® Retaining Walls, tapering up 6m above ground level.

CLIENT'S CHALLENGE

Trucks need to be elevated on ramps to discharge directly into the conveyor feed system. The concrete surfaced ramps are a crucial part of the port infrastructure, ensuring the smooth, continual transfer of minerals for loading onto ships. Solid support for the sides of the ramps was essential.

TENSAR SOLUTION

Tensar proposed the TensarTech TW1ME Walls System for the construction of four retaining walls. The TensarTech reinforced soil structures could use on-site material as structural fill, reducing costs. The modular concrete block facing provided durability and simplicity of construction.

BENEFITS

- **Lower construction cost** compared to the original RC wall design.
- **Construction time reduced by 1 month** due to use of offsite fabricated facing blocks.
- **Transportation cost reduced** by using on-site material for structural fill.
- **Construction carbon reduced** compared to RC alternative.

Tensar®
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PROJECT DETAILS

Application
Earth Retaining Walls & Slopes | No. 562

Constructed in
2022

Client
Ports of Fujairah

Consultant
Jacobs

Contractor
PHB Weserhütte

Sub-contractor (walls)
Riddhi Siddhi Crushers and Land Transport LLC.

Tensar Distribution Partner & MSE Wall Installer:
Pioneers of the Middle East Tunneling & Bridge Maintenance (POME)

TensarTech TW1 ME System

PROJECT BACKGROUND

Recent expansion of the Port of Fujairah includes the new Dibba Bulk Handling Terminal. Among the bulk materials handled at this port are minerals extracted from nearby quarries. Gabbro, clinker, and limestone are exported from Dibba, most of which is destined for Indian subcontinent. When handling minerals, the bulk loaders at the port are fed from a long, covered conveyor carrying material from a truck receiving station over 4km from the port.

To feed material into the conveyor trucks must dump directly into an above ground hopper. The arriving trucks drive up a wide ramp to a discharge point above the hopper.

The surface of the ramps is concrete, supported on a soil embankment. To reduce the construction footprint, the edge of each ramp is vertical, supported by a retaining wall. Each wall is triangular in elevation, rising from ground level up to the discharge height, 6m above ground level. The original design used RC retaining walls. This was subsequently changed to a Tensar reinforced soil retaining wall system, TensarTech TW1 ME.

The Tensar solution required no structural foundation, was faster to construct and lower in cost compared to the original RC wall design. The wall structures were designed by Tensar and constructed by Pioneers Of The Middle East Tunneling & Bridge Maintenance. The total 1300m_2 of wall was completed in 2.5 months, one month less than the estimated time for RC wall construction.

"MSE wall construction is timesaving, budget-friendly, and requires less precise manpower-oriented work compared to the RCC retaining wall".

Sarbajit Ghosh
Senior Engineer – Projects
Riddhi Siddhi Crushers and Land Transport LLC

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