

RSMLI Slopes Reinforced with Tensar

Red Sea Marine Life Institute (RSMLI), Saudi Arabia

The Red Sea Marine Institute (RSMLI) project utilised Tensar geogrid-reinforced soil slopes to provide a structurally efficient and sustainable solution, overcoming challenging site conditions while ensuring long-term stability, constructability, and reduced dependence on traditional retaining structures.

CLIENT'S CHALLENGE

The primary challenge was to adopt an ideal flexible retaining solution capable of accommodating complex and irregular geometries, varying slope angles, and variable height ranges. Additionally, the design needed to integrate tree pits at random locations and accommodate existing and proposed utilities, including LV chambers, HVAC ducts, and manholes, without compromising structural integrity or constructability.

TENSAR SOLUTION

Tensar proposed two geogrid-reinforced slope systems tailored to the project requirements. For slopes less than 45°, the TensarTech Natural Green Earth Retaining System was adopted, while steeper slopes (>45°) utilised the Tensar Bagwork Faced Wrap Around System. Both solutions provided the required flexibility to accommodate complex geometries, landscaping features, and utility constraints.

B E N E F I T S

- **Adaptive Tensar slope system** accommodated complex geometries and irregular slope profiles
- **Enabled integration of vegetation** and underground utility installation requirements.
- **Cost-effective alternative** compared to conventional reinforced concrete retaining structures.
- **Sustainable solution reduced carbon footprint** and overall material consumption

Tensar®

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PROJECT DETAILS

Application

Earth Retaining Slope | No. 568

Constructed in

2024

Developer:

AMAALA

Client Representative

Red Sea Global (RSG)

Lead Consultant:

Foster & Partners (F+S)

Sub Consultant

WSP Middle East (WSP)

Main Contractor:

Saudi Arabian Baytur Construction Co. (BAYTUR)



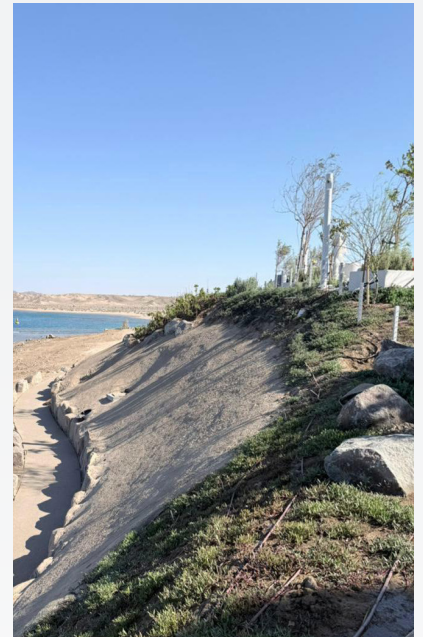
PROJECT BACKGROUND

The Red Sea Marine Institute (RSMLI) project forms part of the wider AMAALA development under Red Sea Global (RSG), a flagship initiative focused on delivering world-class, sustainable infrastructure along the Red Sea coastline. The project required the development of engineered slope retention systems to support complex terrain profiles while maintaining the architectural and environmental vision of the development.

Building on the proven success of the Tensar solutions® implemented at the AMAALA Rosewood Resort project—also developed under the same client—Tensar was identified as a reliable partner capable of designing and delivering technically robust and adaptable slope stabilisation systems. The RSMLI site presented significant challenges, including variable slope geometries, height transitions, and the need to integrate landscaping features and below-ground utilities within constrained footprints.

To address these requirements, Tensar introduced geogrid-reinforced soil slope systems tailored to the project-specific conditions with facing options that included both vegetated and sand-textured finishes. The adoption of Tensar solutions enabled efficient construction while ensuring long-term performance, structural integrity, and sustainability. The systems provided enhanced flexibility to accommodate irregular geometries and facilitated seamless integration with the project's environmental and aesthetic objectives.

The RSMLI project further reinforces Tensar's capability in delivering value-engineered, sustainable ground engineering solutions across complex, large-scale developments in the region.



Tensar reinforced soil slope combining long-term stability, sustainable vegetation establishment, and a sand-textured architectural finish.



First layer of Tensar uniaxial geogrids being placed over compacted foundation

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