



Rabat river cliff

Cliff reinforcement: study and works follow-up

2016



MOROCCO - Rabat

Client

RABAT REGION
AMÉNAGEMENT

Joint contractors
Ingeab

Owner

Rabat Région
Aménagement

Highlights

Average height of the cliff:
20 m



The Project

As part of the works to reinforce the river cliff in Rabat, the consortium formed by the consultants TERRASOL/SEMARTEC and INGEAB was commissioned by the owner RABAT RÉGION AMÉNAGEMENT (RRA) to conduct a study of phase 1 of the cliff reinforcement.

With an average height of 20 m, the cliff fits into a lithological framework formed by gravelly clays in the uppermost part underlain by a sandstone slab supported by a friable calcarenite (shell sandstone sand) subject to pronounced erosion.

Situated alongside the mouth of the Bouregreg river, the cliff presents several signs of instability, including a network of cracks forming unstable wedges and metre-scale undercuts of the sandstone slab.

Our Services

Because of the owner's requirement for maximum preservation of the historical charm of the cliff and consequent avoidance of systematic use of shotcrete for its reinforcement, the selected treatment consisted in building a soil-nailed wall to reinforce the loose and uppermost part of the cliff, using shotcrete the same colour as the cliff, then reinforcement by nails 8 to 12 m long associated with a plastic coated galvanised mesh laid to secure the cracked rock blocks and the potentially unstable wedges.

It should be noted that the reinforcement and grid-laying operations necessitated acrobatic works and lightweight drilling equipment for work on the cliff face.

Regular site visits were conducted by TERRASOL/SEMARTEC's Moroccan representative. They covered the follow-up of the remedial operations, the follow-up and validation of the nails pull-out tests, and technical advices on specific adjustments.

Key features

- Study of phase 1 of the cliff reinforcement
- Securitisation of the rock blocks and wedges
- Regular site visits
- Follow-up and validation of the nails pull-out tests

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