MACCAFERRI

CASE HISTORY

Ref: Al / CH / EP00 — Rev:00, May 15

ROCKFALL PROTECTION

MOGLICA, ALBANIA

SLOPE PROTECTION—MACRO SYSTEMS

Product: SteelgridHR®50, Steelgrid HR®100, Steelgrid MO®300 Mesh - Anchors 500/550 Φ25mm

Problem

A series of minor failures, including sliding failures and detachments of individual rock blocks, posed a very high risk to the access road and especially the working staff during works on the big project of Devoll Hydropower in Moglica, Albania.
Maccaferri Balkans give its help with its solutions and its products.
Most suitable solution for this problem was to use a secured drapery mesh. The designer contacted Maccaferri Balkans, which gives its full support covering all the project supplying with all products needed.

STEELGRID HR® 100 after installation

Solution

Maccaferri Balkans worked closely with the contractor Trema Engineering shpk, in order to establish the most suitable product for the stabilization.

Steelgrid® HR 50, Steelgrid® HR 100, Steelgrid® MO 300 were chosen to be the most appropriate material as **Steelgrid®** is a mesh of high strength and high stiffness (low displacement) suitable for a broad range of applications from high strength rockfall protection draperies to low-deflection pinned drapery installations and soil slope stabilization. In this case the application was a secured drapery.

So in the beginning of 2015 Steelgrid® HR 50, Steelgrid® HR 100, Steelgrid® MO 300 were applied in Moglica, Albania.

The mesh was installed with anchors, whith length 3m, 6m and 9m. **Steelgrid® HR** and **Steelgrid® MO** benefits include:

- No requirement for overlapping of mesh rolls
- No need of “pretension” mesh

These advantages made **Steelgrid® HR** and **Steelgrid® MO** quick to install, a simple and cost effective option for this project.

STEELGRID HR® 100 after installation

Designer:

Devoll Hydropower Sh.A.

Products used:

STEELGRID HR 50, STEELGRID HR 100,
STEELGRID MO 100, —ANCHORS 500/550 Φ 25

Date of construction

SPRING 2015

Results

Mesh capacity check	Crest Rope check	Intermediate anchor check	Lateral anchor check
1.40 Satisfied	1.16 Satisfied	1.91 Satisfied	1.04 Satisfied

Mesh design

Design total stress [kN/m]	28.59
Admissible tensile resistance [kN/m]	40.00
Ratio strength stress	1.40

Debris total load [kN/m]	18.91
Snow total load [kN/m]	0.00
Mesh total load [kN/m]	0.18
Resultant stress on the drapery [kN/m]	19.09

Mesh maximum debris weight [kN/m]	26.65

Cable design

Maximum tensile force in the cable [kN]	117.39
Cable working load (nominal) [kN]	136.00
Cable load force ratio	1.16

Maximum force on the intermediate anchorages [kN]	63.80
Maximum force on the lateral anchorages [kN]	117.39
Maximum admitted distance between anchorages [m]	3.30
Length of the rope (total) between anchorages [m]	3.34
Maximum sag between adjacent anchorages [m]	0.23

Cable maximum debris weight [kN/m]	22.04

Top anchorages

Intermediate anchorages design

Maximum force on the intermediate anchorages [kN]	63.80
Working shear resistance [kN]	122.16
Shear resistance ratio	1.91

Lateral anchorages design

Maximum force on the lateral anchorages [kN]	117.39
Working shear resistance [kN]	122.16
Shear resistance ratio	1.04

Working section of steel [mm²]	490.87
Working tensile resistance of the anchorages [kN]	211.58
Minimum required tensile strength of cable anchors [kN]	117.39
Minimum drilling diameter [mm]	40.00
Minimum total bar length [m]	2.87

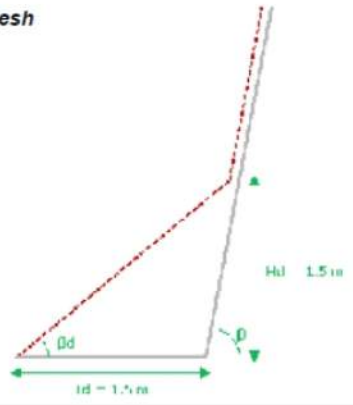
Anchors maximum debris weight [kN/m]	19.78

Maximum admissible debris load

Maximum admissible debris load [kN/m]	19.78
Maximum admissible debris volume [m³]	1.04

Geometry

Rock Slope | Mesh



Top Cable + Top Anchorages

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