

SENTANI NATIONAL ROAD ROCKFALL PROTECTION

SENTANI, PAPUA, INDONESIA

Soil Nailing

Problem

The road connecting Sentani Airport to the downtown of Jayapura province in Papua is prone to rockfall hazard due to the weathered conditions of the rock slopes surrounding the infrastructure. Several incidents occurred in the past years which involved vehicles and people using the national road. Shotcrete, as a passive protection system, has already been applied in some locations. However, shotcrete resulted in being too and easily damaged due to its poor draining properties and flexibility. The total length of the slope that needs to be protected during this first project stage is approximately 32 m, while the total height of the slope reaches 75 metres with an inclination on the horizontal up to 57°.

Solution

The solution chosen by the Ministry of Public Works was to substitute the expensive and rigid shotcrete protection with a more flexible and permeable secured drapery system in order to minimize the rockfall risk and also reduce the maintenance previously needed. The designer conducted the analysis of the drapery system using MACRO 1 software. As a result, SteelGrid® HR 30 combined with 2.5 metres of anchors (2x2 m of spacing) was selected as suitable for this case. Thanks to this successful experience, the public works department is preparing to use the same method for other locations along the Sentani national road.

Client: MINISTRY OF PUBLIC WORKS

Designer / Consultant: PT. SAEKAN GEOTEKNIK

Contractor: PT. SAKTI PERKASA NUSA PERMAI

Products used (Qty.)

- Steelgrid HR 2,040 sqm

Date of construction: 01/2018 - 12/2018



Installation process of Steelgrid® HR 30 + MacMat® EM as netting



The vegetation has grown on Steelgrid® HR 30 + MacMat® EM

Results

Bar design check Mesh design check Servicability check

1.35	Satisfied
3.79	Satisfied
1.21	Satisfied

Nails Design

Instability Model

Input Wizard

Horizontal spacing	2.00
Vertical spacing	2.00
Slope inclination [°]	57

Mesh type

- DT 5x7 Ø 2.0
- DT 6x8 Ø 2.7
- DT 8x10 Ø 2.7
- DT 8x10 Ø 3.0
- DT 8x10 Ø 3.4

MacRo Software result

Overview of installed Steelgrid® HR 30 + MacMat® EM as netting