

SLOPE PROTECTION MEASURES AT GURAS KUTIR PANTHANG, SIKKIM

GURAS KUTIR PANGTHANG, GANGTOK,, SIKKIM, INDIA

Slope Protection

Problem

Ambuja Neotia boutique hotel is in development over a hill slope at Pangthang, which is a village in East District of Sikkim. It is located 100 Km south from District headquarters of Gangtok. The site predominantly comprises of natural slopes with some cut slopes at certain locations. Since the space availability is less, large depth cut sections need to be provided with steep cutting angles in cut slope stretches. The stratum is majorly comprising of weak soil and is observed to have high surface runoff. Hence suitable solutions need to be adopted to address the surface protection of the cut slope sections.

Solution

Maccaferri has developed a wide range of slope protection measures that are applicable after judicious assessment of the slope angle and extent of erosion. To address surficial instability, combination of steel reinforced synthetic geomat (MacMat R) and hydraulically applied erosion control measures (ie application of hydromulching (with MacFlex, MacGanics, soil amendments, seeds and water)) along with suitable surface anchors can be provided. The anchors are installed in stages following top-down sequence after which hydromulching is done. The quantities of various components are finalised before mixing in a hydroseeder along with seeds and water in a two step process. The mixed slurry has been sprayed over the slope surface and maintenance has been done by spraying water on the slope to avoid drying of the material. Soon after the application of erosion control measures at site, the applied systems started showing the performance with respect to erosion control of the embankment slope (ie, vegetation coverage). The system proposed provides surficial strengthening, reduces erosion and promotes the growth of vegetation on the exposed cut portions for long term protection. These solutions are conforming to MoRTH - Specifications for Road & Bridge Works (5th Revision) and IRC: 56. The successful germination has started within few weeks and grasses have been visible on the treated slope. Proper maintenance of the treated areas was mandatory to ensure the effectiveness of the system.

Client: AMBUJA NEOTIA

Designer / Consultant: -

Contractor: INNOVATIVE SOLUTIONS

Products used (Qty.)

- MacMat R	steel-6161 Sq.m + SDA-12942 RM
- BioMaterials	MacFlex, MacGanics-5665 Sq.m

Date of construction: 05/2022 - 10/2022

[Google Maps](#)

[Google Earth](#)



Figure 1-Initial site condition



Figure 2-Installation of nails



Figure 3-Application of MacFlex and MacGanics



Figure 4-Protected slope during installation of Macmat R



Figure 5-Slope after the installation

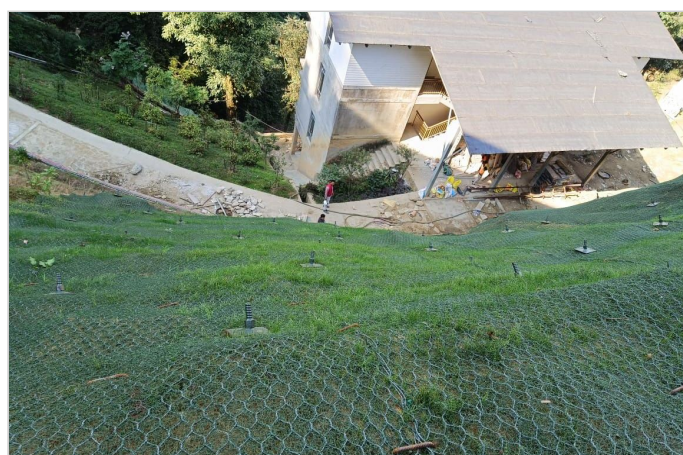
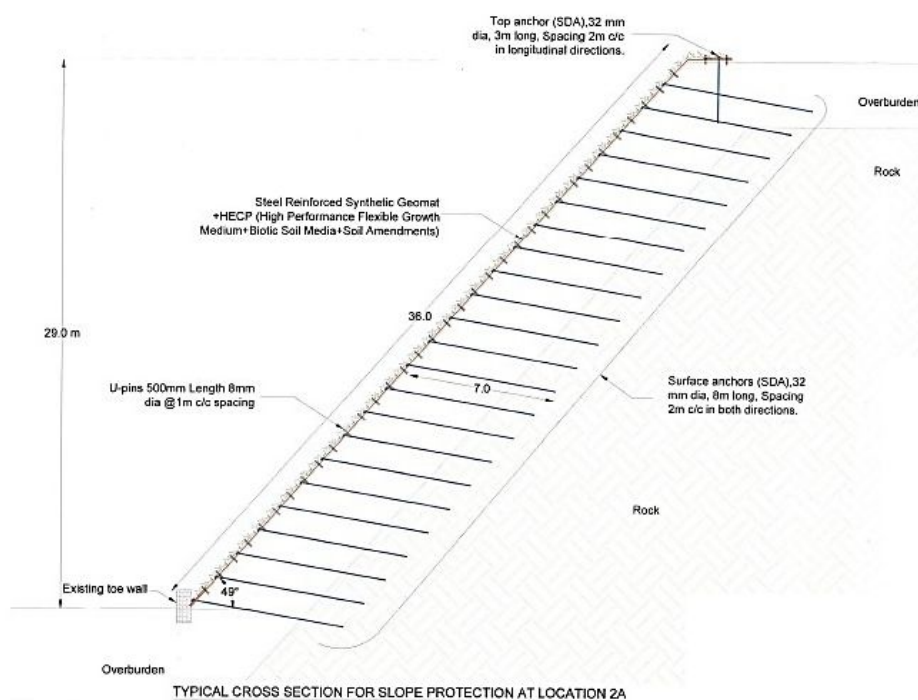


Figure 6-Vegetation establishment over slope



TYPICAL CROSS SECTION

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