

EROSION CONTROL TRIALS DONE ON RAILWAY EMBANKMENT, CHATTISGARH NEAR PATAN VILLAGE, CHATTISGARH, INDIA

Slope Protection

Problem

The trial location identified on railway siding bank embankment side slope near Patan Village, Chattisgarh, has been facing soil erosion problems. These soil embankment has been formed by cutting and filling process of soil during the construction of railway track. The erosion has been triggered by erosive agents such as wind, water and gravity. Resultant loss of soil due to erosion has become a matter of serious concern. Unchecked erosion has resulted in cuts, rills or gullies and slide problems.

Solution

To protect the slope, Maccaferri suggested Hydraulically Applied Erosion Control materials - MacFlex, MacGanics and other agronomic amendments such as AquapHix, Jumpstart, Bioprime & NPK. As part of the trial, project area of 1,000 sqm was selected, split into multiple bays and the above mentioned products along with different combination of seeds are applied on the slope. Agronomic soil tests had been conducted to determine the soil nutrients condition to measure soil's ability to supply essential elements to seeds, to recommend the amendment to improve the soil and to ensure appropriate plant species selection. The solution was decided according to these tests.

The seed species were selected based on the soil type present at site, pH, climate, type of planting, availability of local seeds and discussions with a horticulturist. The quantities of hydraulically applied erosion control materials, soil amendments were finalized before mixing in a hydroseeder along with seeds and water in a two step process. The slurry obtained after mixing was sprayed over the slope surface and maintenance was 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 (i.e. vegetation coverage). Germination started within few weeks and grasses were visible on the treated slope. Proper maintenance of the treated areas was mandatory to ensure the sustenance of the system.

Client: NUVOCO VISTAS CORP. LTD

Designer / Consultant: Maccaferri Environmental Solutions Pvt. Ltd.

Contractor: Maccaferri Environmental Solutions Pvt. Ltd.

Products used (Qty.)

- Other Biomaterials	1,000 sqm (MacFlex, MacGanics)
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Date of construction: 08/2017 - 08/2017



Photo 1: Initial condition of soil embankment



Photo 2: Preparation of slope



Photo 3: Division of slope into multiple bays



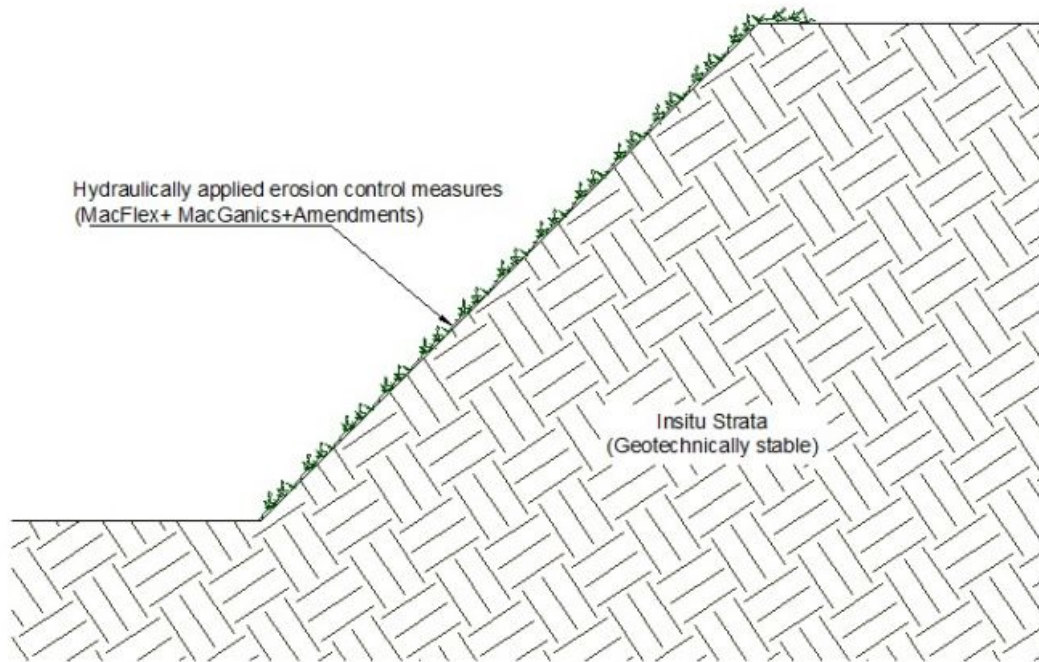
Photo 4: Application of MacGanics



Photo 5: Application of MacFlex



Photo 6: Germination observed (left) and vegetation observed (right)



Typical cross-sectional drawing