

EROSION CONTROL TRIALS DONE ON RED MUD OB DUMP AT BELAGAVI BELAGAVI, KARNATAKA, INDIA

Slope Protection

Problem

The trial location was identified on side slope of overburden (OB) dump at Nehru Nagar, Yamanapur, Belagavi. Karnataka has been facing soil erosion problems due to 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.

The red mud OB dump at site is fine in nature and the surface is uneven. The red mud soil was highly toxic and contained zero organic content. Hence, a 200mm thick top soil (clayey natural soil) cover, free from toxicity was laid over the selected red mud area.

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 650 sqm was selected, split into multiple bays and the above mentioned products along with different combination of seeds were 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: HINDALCO INDUSTRIES LIMITED

Designer / Consultant: Maccaferri Environmental Solutions Pvt Ltd

Contractor: -

Products used (Qty.)

- Other Biomaterials

650 sqm
(MacFlex,
MacGanics)

Date of construction: 03/2020 - 03/2020



Photo 1: Pre-watering works



Photo 2: Application of MacGanics



Photo 3: Application of MacFlex



Photo 4: Watering after mulch application



Photo 5: Establishment of Vegetation



Photo 6: Establishment of Vegetation

Hydraulically applied erosion control measures
(MacFlex + MacGanics + Amendments)

Insitu Strata
(Geotechnically stable)

Typical Cross-section

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