K K Enviro Tech Pvt Ltd
formally known as KK Enterprises
Environment and geotechnical solutions company

Case Study

Slope protection in hilly area at Kohima, Nagaland

Owner: **Regional Institute of E-Learning and Information Technology (RIELIT)**
Consultant: **Gherzi Eastern Ltd.**
Contractor: K. K. Enterprises
Area: 2200 sqm.
Location: Kohima, Nagaland

PROBLEM:-

The hill slopes have been cut and the excavated material has been used as fill, with steep slopes of approximately 50 degrees. The soil of this area consists of clay aggregates, susceptible to erosion when exposed to rain or moving water. The soil has good properties in dry consolidated state with high cohesion of 90 kPa.

REQUIREMENT:-

The steep slopes are to be protected against erosion in the long term and slope stability is to be assured.

SCOPE OF SOLUTION

SLOPES STABILITY

The slope stability is a problem because the soil has a tendency to liquefy when saturated and its angle of repose is only 10 degrees.. The stability is therefore assured by making sure that ingress of water into the slope is controlled by means of drainage cum water proofing geo-composite.

EROSION CONTROL OF SLOPES-

Surface erosion is controlled by using vegetation or reinforced vegetation as the final erosion controller.

DRAINAGE OF TOP SURFACE-

Drainage of top surface must be assured by taking appropriate measures.

Installation of all items

Installation of Grids and Coir Geocell

Downward Drain

coir Geocell with top soil layer on the top of the slope will hold top soil and support vegetation

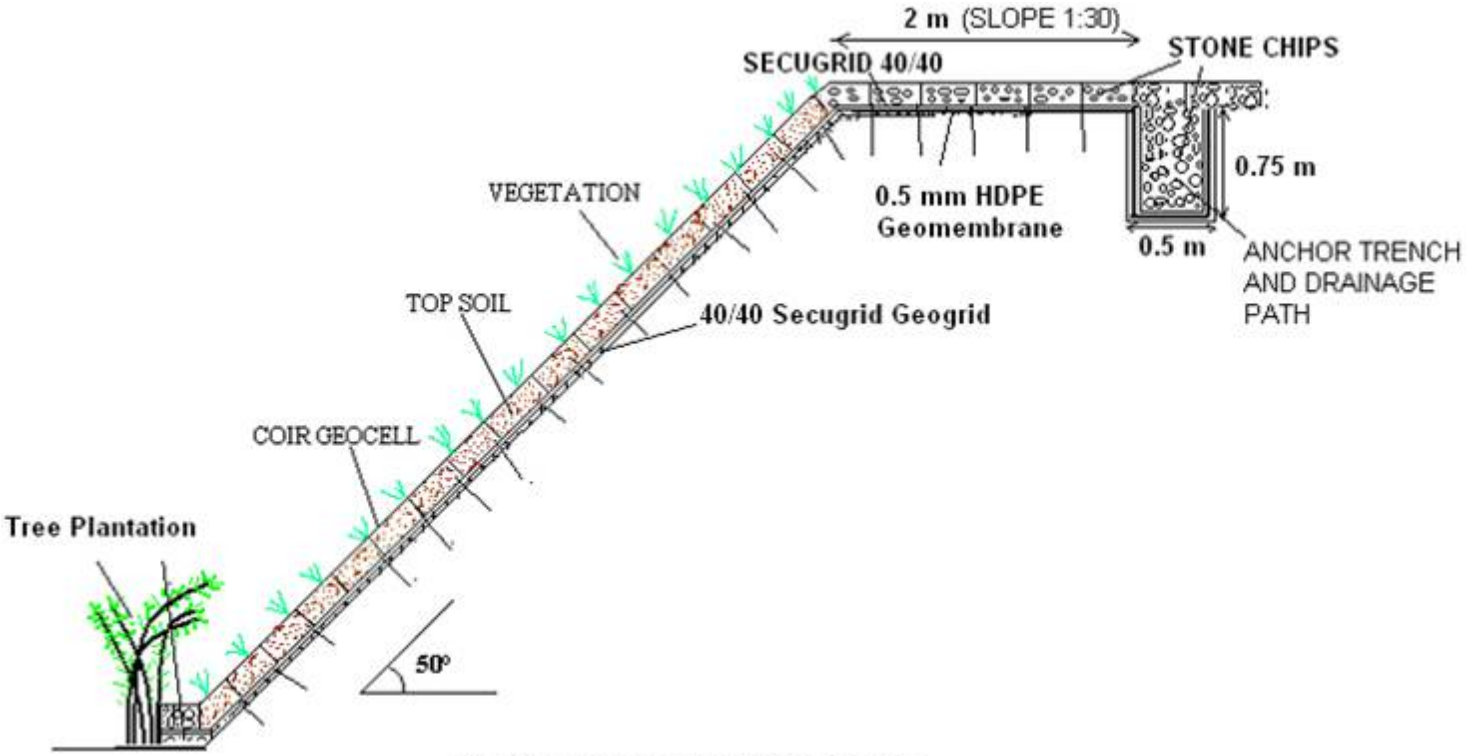
SCOPE OF WORKS

1. Cut the slope to its original hill slope.
2. Make an anchor trench 0.75m deep X 0.5 m wide, 2.0 m away from the shoulder
3. Lay 0.5mm thick HDPE Geomembrane on the top of slope (2 m) and anchor in the anchor trench as shown in the drawing to form a drain to collect and carry water. The geomembrane layer is placed in a slope of 1:30 towards the trench drain. Water from the trench drain can be collected at the end.
4. Place a Secugrid 40/40 layer from the anchor trench to the bottom of the slope and anchor it at the bottom.
5. Top Anchor trench is filled with stone chips.
6. Place Reinforced coir geocell following guidelines for reinforced Coir geocell installation tying the coir geocell to the secugrid laid flat on the slope.
7. On the top portion of slope, coir geocell is filled with stone chips. On the sloped portion, coir geocell is filled with top soil mixed with seeds.
8. Lay coir geotextile on the top and finish.
9. After a few weeks, vegetation will grow up and a green faced slope will develop.

Plantations of trees may be done at the bottom.

Completed view

DRAWING



CROSS SECTIONAL VIEW OF SLOPE

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