

DOUBLE TRACK RAILWAY DENCHAI-CHIANGRAI-CHIANGKHONG DOILUANG, CHIANGRAI, THAILAND

Slope Protection

Problem

New double track railway project, Denchai-Chiangrai-Chiangkhong route is a part of projects under transportation infrastructure development strategy of Thailand by developing inter-city railway network to enhance potential of rail transportation services. Supporting the transportation of passengers and goods that are increasing. This new route will connect to Laos and south China, stimulate trade in the area.

Total distance of the project is 323 km, passing through 4 provinces in the north Prae, Lampang, Payao and Chiangrai consist of 4 big station out of total 26 stations with total budget of 85,345 million Baht.

The project cut through mountainous area thus contain lots of cut works that leave lots of slope that need to be protected from erosion. The existing design for slope protection are either concrete lining or geocell. The problem with concrete lining are its appearance that gives a hard feeling, not in harmony with nature and relatively higher cost than other solution. While geocell has limitation on slope angle, if it is too steep, geocell cannot withstand weight of gravel filling inside and torn apart eventually. Including demand for gravel that needs to be transported to the construction site and sometime when construction progress makes some area no longer accessible for truck to deliver gravel.

Solution

After receiving all requirements from client, we've proposed our Macmat for slope protection. The advantages of Macmat are fast and easy installation, lower cost, promote vegetation that gives a nature look and is more sustainable.

To prove the performance of Macmat, trial section has been carried out along with several products such as geocomposite, biomat from other manufacturers. Test results shown that main difference among products is the growth of vegetation that Macmat performed the best. So all the parties including project owner, consultant and contractor have positive feedback on the result. Project owner gets the solution that meets their requirements and is in harmony with nature, consultant gets technical support from our expertise and contractor benefits from easy and fast installation.

Client: State Railway of Thailand

Designer / Consultant: MAA

Contractor: CKST DC (Ch.Karnchang & STECON Joint Venture)

Products used (Qty.)

- Macmat 40000

Date of construction: 06/2023 - 12/2023

[Google Maps](#)

[Google Earth](#)



Slope Protection with Macmat



With and without Macmat



Preparation Before Installation of Macmat



During Installation



During Installation



Vegetation Start to Grow