

GABION WALLS FOR TRIVANDRUM-PONMUDI ROAD TRIVANDRUM-PONMUDI, KERALA, INDIA

Longitudinal Protection

Problem

The Road Maintenance Component (RMC) of World Bank Aided Kerala State Transport Project (KSTP) was responsible for the periodic maintenance of 1000Km of State Highways and other priority roads. The 40 KM stretch Trivandrum Ponmudi road was selected as the Phase 3 of the above Project. Ponmudi is one of the most beautiful hill stations in God's own country, Kerala.

The maintenance of the existing Ponmudi road necessitated retaining and protection works for road embankments, drainage along with withstanding vehicular traffic. The project site was along river Kayyar, Kerala and height of embankment was 6 meter from river bed level. River bed soil was mostly laterite with boulders and rocks. Water level in the river kept varying since it was subjected to flash floods with boulder movement and therefore, resulting in the scouring of the embankment. Moreover, steep hill on the other side of the pavement added to the large overburden surcharge weight. Due to this, existing conventional rubble masonry failed at many stretches and this necessitated the requirement of a retaining structure which counters the erosive action of water.

Solution

Gabion retaining walls were provided as the solution. The maximum height of retention for road embankment was 6m. The foundation at site was rocky in nature and it was difficult to excavate for providing the required embedment depth. Therefore, a reinforced concrete footing of minimum 300 mm thickness was provided on the rock stratum and gabion wall was anchored to this concrete slab.

The slab also helped to obtain the batter of 6 degrees which is helpful to increase the stability. As the gabions are permeable in nature, it also helped in dissipation of pore water pressure developed in the backfill due to the presence of the lateritic soil. The contractor's technical persons were had previous experience of gabion construction. This helped to achieve a good quality workmanship.

The Gabion wall with its stone face integrated well with the flora and fauna of Ponmudi. A number of other stretches were identified along the same route where gabion wall may be ideal solution.

Client: Kerala State Transport Project (PWD)

Designer / Consultant: Maccaferri (Designer) / ICT Ltd & Kerala PWD

Contractor: Kaikkara Constructions

Products used (Qty.)

- Gabion 900 cum

Date of construction: 08/2005 - 10/2005



Photo 1: Before construction



Photo 2: During construction



Photo 3: Placement of stones in hexagonal wire crates

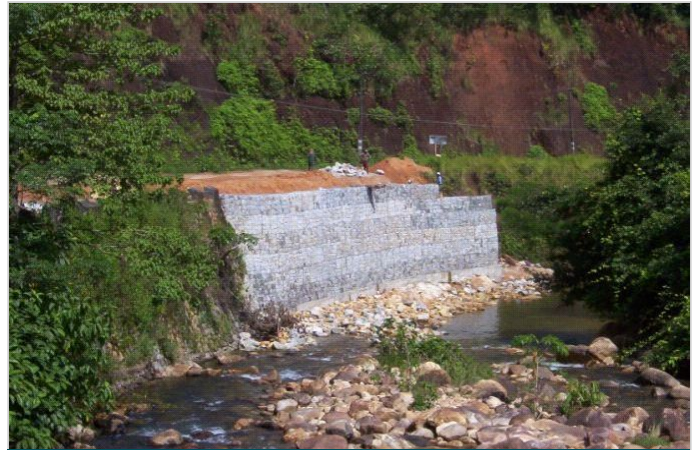


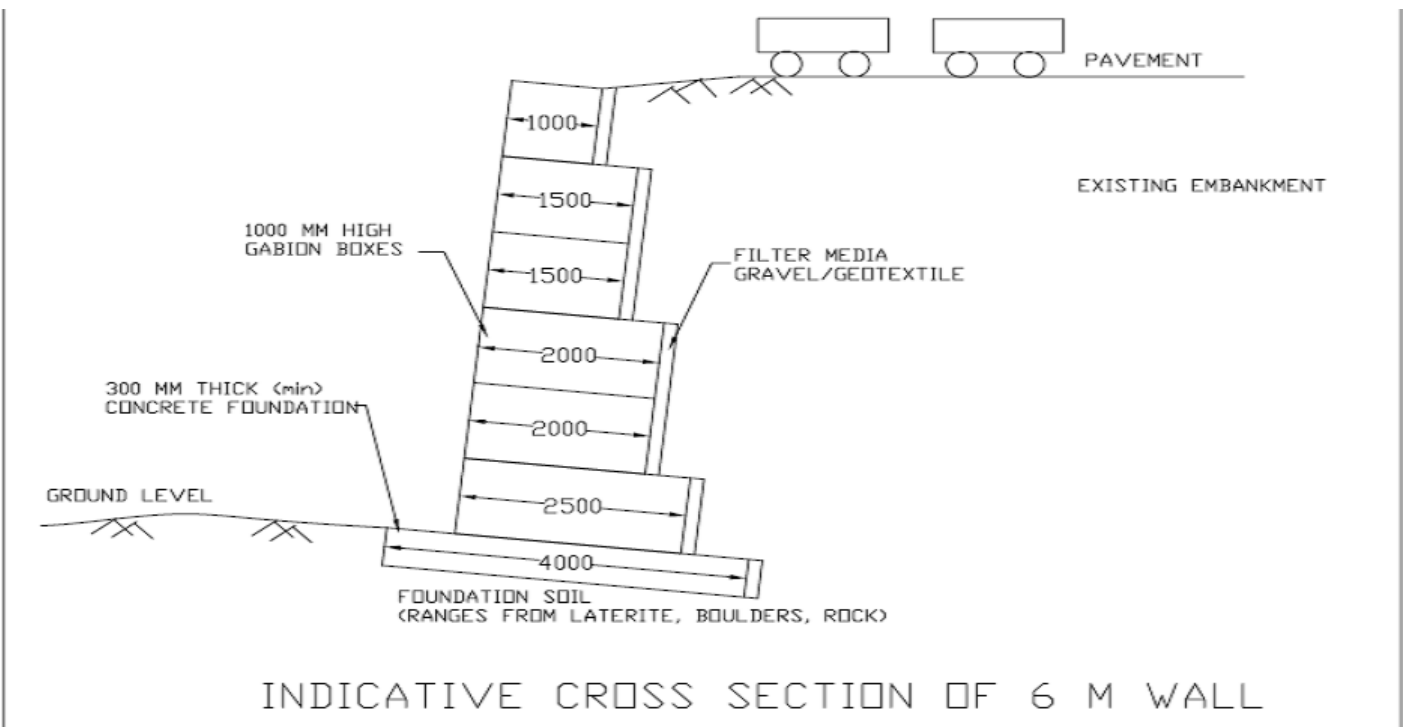
Photo 4: Completed gabion wall



Photo 5: Gabion wall after 2 years



Photo 6: Gabion wall after 2 years



INDICATIVE CROSS SECTION OF 6 M WALL

Typical cross sectional drawing