

**GABION WALLS FOR KSTP UPGRADATION, KERALA
ALLEPPEY AND CHANGANACHERI, KERALA, INDIA**

Mass Gravity Retaining Walls

Problem

The Kerala State Transport Project (KSTP) aimed to improve traffic flow and road safety on Kerala State’s primary road network. This was a World Bank aided project with main aim of upgradation of state highways, providing periodic maintenance to highways and district roads and minor mitigation measures.

The stretch between Alleppey and Changanacheri had to be widened as well as the embankments had to be protected. The soil at this site was soft clay with low friction angle. Since Kerala receives high amount of rainfall, the proposed retaining structures were meant to give protection to the embankment from floods and also provide good drainage.

In the widening process, the stretch along Chadayamangalam to Thiruvalla in the Main Central Road and some stretches in Ottappalam also needed retention. The insitu soil along these stretches was laterite, which is also soft and unstable during monsoon season.

Solution

Consultants LBI proposed three alternatives such as gabion walls, random rubble walls and concrete walls out of which gabion walls were selected because of its flexibility and free draining nature.

Alappuzha Changanasseri Road:

The solution provided as below:

- 1)The embankment retention was provided by using gabions of heights 1-6m.
- 2) Since the foundation soil had poor frictional properties, a foundation improvement scheme was suggested by replacing the existing foundation soil for a depth of 150mm from ground level with soil having frictional properties greater than 25 degrees.

Main Central Road & Ottappalam In the above stretches also, the solution was adopted in a similar manner. There was no requirement for any foundation replacement since the available soil was laterite. Since laterite often acts as a water-bearing stratum, provision for good drainage was made for these stretches also.

A.C. road:

When the actual construction was done, the existing foundation soil was replaced by compacted stones and boulders. In this project, some special size gabions were made for reducing the overall size of the structure. Zn+PVC coated gabions with wire diameter 2.7/3.7mm and mesh size 10x12 were used.

Client: Kerala State Transport Project (KSTP)

Designer / Consultant: Maccaferri/Louis Berger&RITES BecaWilburSmith

Contractor: PATI-BEL JV, Road Builders

Products used (Qty.)

- Gabion 100 tons

Date of construction: 12/2004 - 10/2006



Photo 1: Site conditions before construction of A.C. road



Photo 2: Ongoing construction at A.C. road



Photo 3: During construction at A.C. road



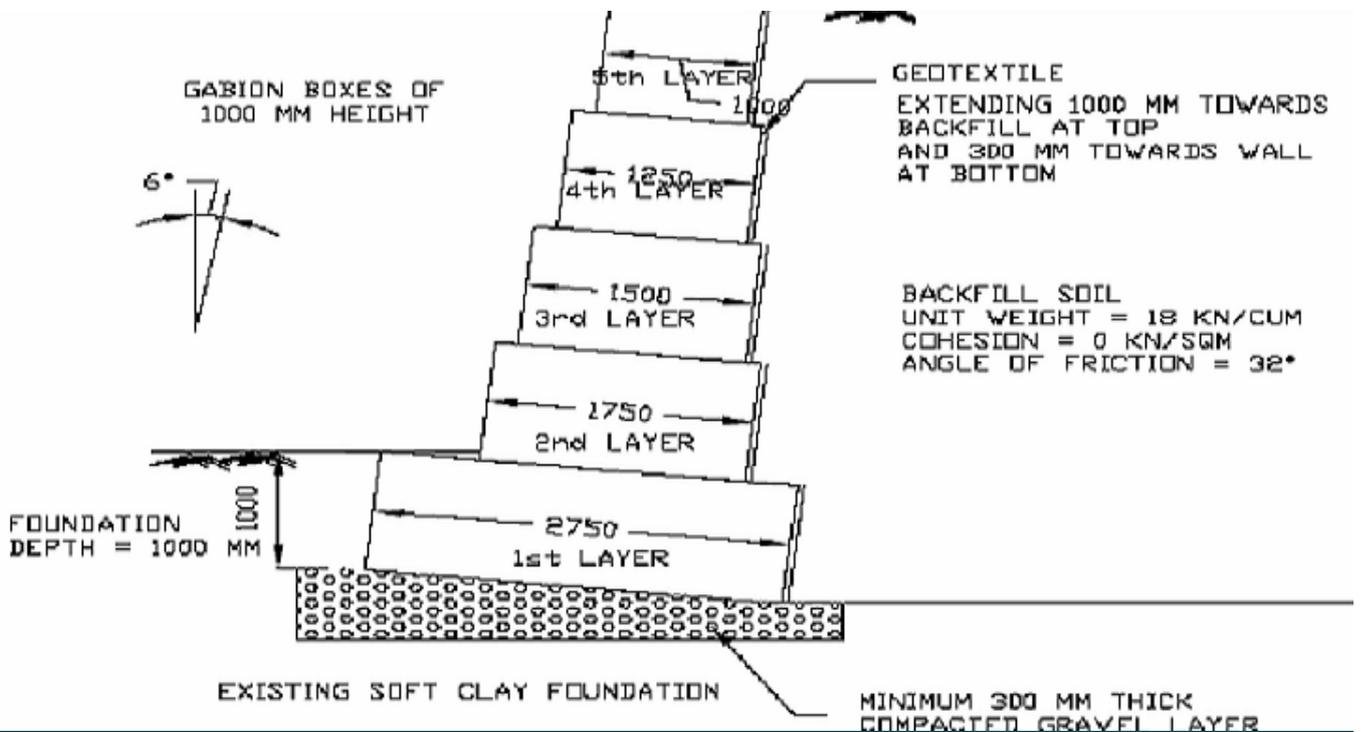
Photo 4: During construction at M.C. road



Photo 5: Completed structure at A.C. road



Photo 6: Completed structure at M.C. road



Typical cross sectional drawing