

## GABION CHECK DAM FOR KILLI RIVER, TRIVANDRUM TRIVANDRUM, KERALA, INDIA

### Weirs, Culverts and Transverse Structures

#### Problem

Killi river, also called Killiyar, is the main tributary of Karamana river and originates at Theerthankara near to Panavur in Nedumangad taluk of Thiruvananthapuram district. There was an increasing demand from villagers and local authorities to beat the scarcity of water in the summer season. Constructing a checkdam across Killi river was proposed with an aim to control the water velocity, conserve the soil and recharge the ground water table. In addition to this, there was utmost requirement of constructing the check dam in very short time and maintaining the economy. This could be possible by using advanced technologies utilizing the materials available at site.

#### Solution

The main purpose of constructing the check dam was:

- 1) To recharge the ground water table and to recoup the water level in the nearby wells adjacent to the structure and solve the problem of water scarcity during dry seasons.
- 2) To trap sand in the sand mined location upstream of the structure and thereby bring back the geomorphology of the river to the original river bed profile.

One of the specific requirement of the client was to have an innovative, eco-friendly and cost effective solution. The proposal was finalised by replacing the concrete structure with a gabion wall with geosynthetic clay liner across the central portion of the gabion structure. The gabion body wall provided flexibility to the structure and MacLine GCL NL20 functioned as an impermeable membrane preventing water seepage through the check dam.

After completion of the check dam, the structure was monitored for a few months and it was inferred that the intended purposes were met. The local soil moisture profile and ground water recharge improved considerably. The water-shed structure improved the water level in the nearby wells adjacent to the structure. This was one of the first works wherein GCL has been used as the impermeable layer replacing other measures conventionally adopted.

**Client:** Irrigation Department, Kerala

**Designer / Consultant:** Maccaferri Environmental Solutions Pvt Ltd

**Contractor:** Sam David Contractors, Kerala

#### Products used (Qty.)

- Gabion	Not available
- MacLine GCL	Not available

**Date of construction:** 09/2016 - 12/2016



Photo 1: Construction of check dam using Gabions and GCL



Photo 2: MacLine GCL placed in between gabions





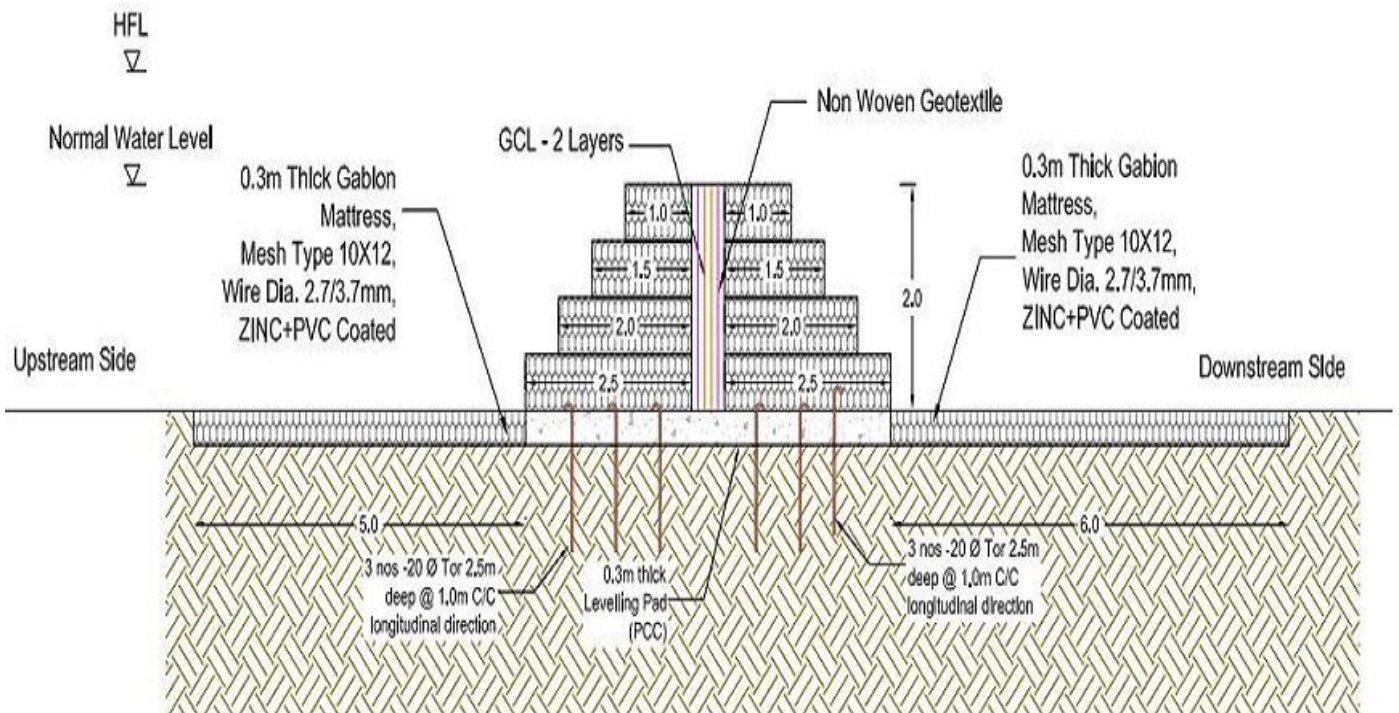
Photo 3: During construction of check dam



Photo 4: Completed structure (GCL working efficiently without any water seepage)



Photo 5: Photograph of completed structure



Cross sectional drawing