

CHECK DAM FOR VAMANAPURAM RIVER TRIVANDRUM, KERALA, INDIA

Weirs, Culverts and Transverse Structures

Problem

The Suryakanthi pump house with infiltration gallery is located at Chettachal in Vamanapuram river. The water pumped from this source is utilized for the drinking water and irrigation needs of Peringamala panchayath, Trivandrum. In summer the water level and base flow gets confined to the central portion of the river thereby reducing the recharging capacity in the infiltration gallery considerably and resulting in only intermittent functioning of the pump house. This was adversely affecting the water needs of Peringamala Panchayat which depended on this source.

Solution

The Irrigation department, decided to construct a check dam across Vamanapuram river in the downstream location of the infiltration gallery.

The main purpose was:

- 1) To head up the water upstream of the check dam and hence improve the recharging capacity in the infiltration gallery and ensure minimum head required for operating of the pump house.
- 2) To recharge the ground water table, recouping the water level in the wells adjacent to the structure and solve the problem of water scarcity.
- 3) 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.

The client was looking for an innovative, eco-friendly and cost effective solution. The proposal finalised was by replacing the concrete structure with gabion wall with geosynthetic clay liner across the central portion of the gabion structure. The gabion wall provided flexibility to the structure and MacLine GCL NL20 functioned as an impermeable membrane preventing water percolation through the check dam. The GCL was sandwiched between gabion walls to check the seepage.

After completion of the check dam 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. Also there was adequate suction head in the infiltration gallery for pumping and meeting the needs of the Peringamala panchayath during the severe drought period of 2016.

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 MacLine GCL



Photo 2: Macline GCL placed in between gabions



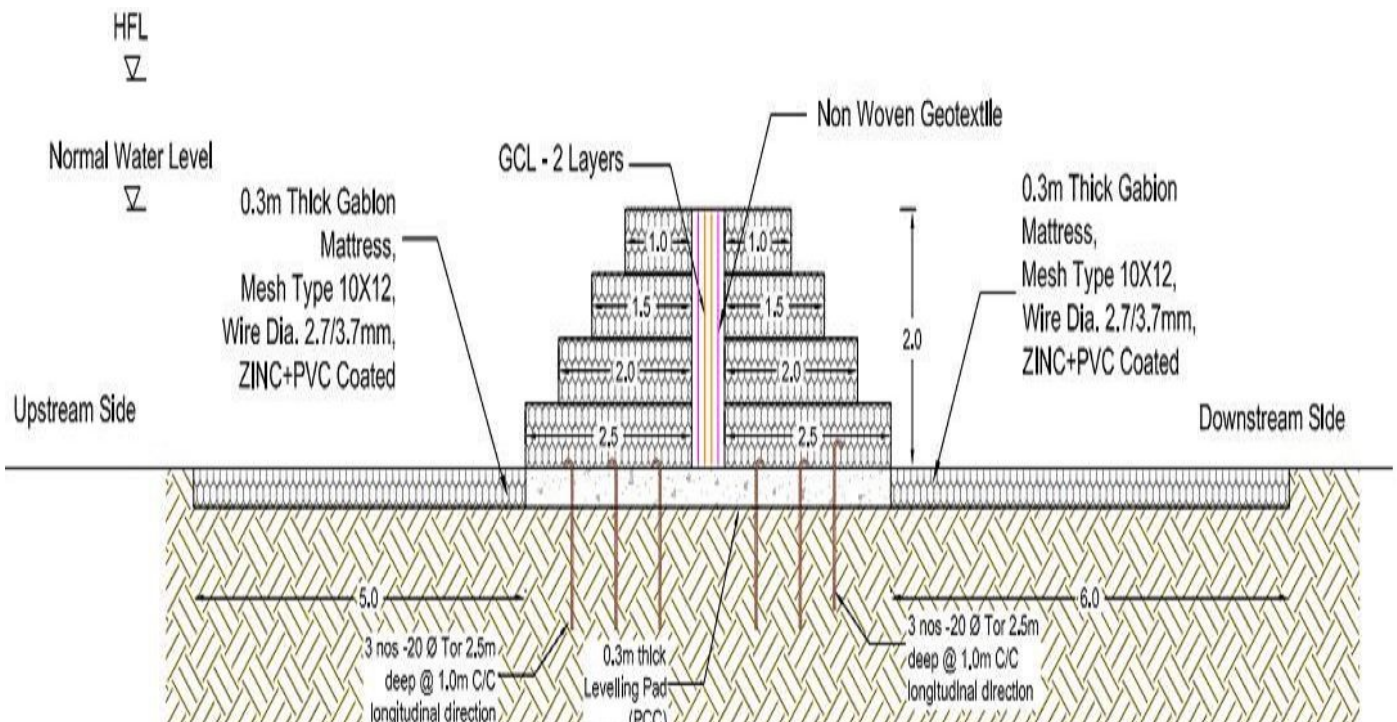
Photo 3: GCL terminated inside concrete



Photo 4: Completed structure with infiltration gallery on the upstream side



Photo 5: After completion



Cross sectional drawing