

RIVER BANK PROTECTION FOR MULA RIVER AT SANGAM BRIDGE PUNE, MAHARASHTRA, INDIA

Longitudinal Protection

Problem

Naik Environmental Research Institute Ltd (NERIL) was assigned the work of protecting the bank of Mula-Mutha river near Bund Garden, Pune. Due to the high velocity of the river heavy bank erosion had taken place and the existing UCR was got damaged. The soil present at the site was black cotton soil which had weak shear strength and structure may be subjected to differential settlement. Under these conditions flexible structure was preferred to rigid structure.

The velocity of the water flowing was expected around 3.94 m/sec and approximate scour depth expected to be 8m. A district judge's bungalow was quite close to the river bank. Hence, it was also required to construct a compound wall along the plot boundary. This was termed as location 1 and the above specified river-site was referred as location 2.

Solution

At the location 1, to protect the bungalow as well as bank, a gabion wall (Zn +PVC coated mesh type 10X12; 2.7/3.7 mm wire dia) of height 6m was constructed.

Reno Mattress (0.3m thick, mesh type 6x8, wire diameter 2.2/3.2mm, Zn+ PVC coated) was provided as an apron at the base of the toe wall which would reduce base erosion and protect the bed.

For the eroded bank (referred as location 2), it was suggested to provide bank protection with mattress and gabion. Gabion wall of height 3m above ground level as a toe wall was constructed along with Reno mattress as an apron. The purpose to provide toe wall and apron was to reduce the scouring action at the toe of the river bank. The upper slope was protected by laying Reno mattress and maintaining gentle slope.

Location 1:

The existing foundation has following properties:

- Cohesion (C) = 10 kN/m².
- Angle of internal friction = 20 degree.
- Unit weight = 18 kN/m³.

The existing backfill soil has following properties:

- Cohesion (C) = 10 kN/m².
- Angle of internal friction = 28 degrees.
- Unit weight = 18 kN/m³.

Location 2:

The Existing foundation has following properties:

- Cohesion (C) = 18 kN/m².
- Angle of internal friction = 20 degree.
- Unit weight = 18 kN/m³.

The Existing backfill soil has following properties:

- Cohesion (C) = 18 kN/m².
- Angle of internal friction = 28 degrees.
- Unit weight = 18 kN/m³.

Client: Pune Municipal Corporation

Designer / Consultant: Maccaferri Environmental Solutions Pvt Ltd

Contractor: M/s Nikhil Construction

Products used (Qty.)

- Gabion	Not available
- Reno Mattress	Not available
- MacTex N	Not available

Date of construction: 02/2010 - 06/2010



Photo 1: Before construction



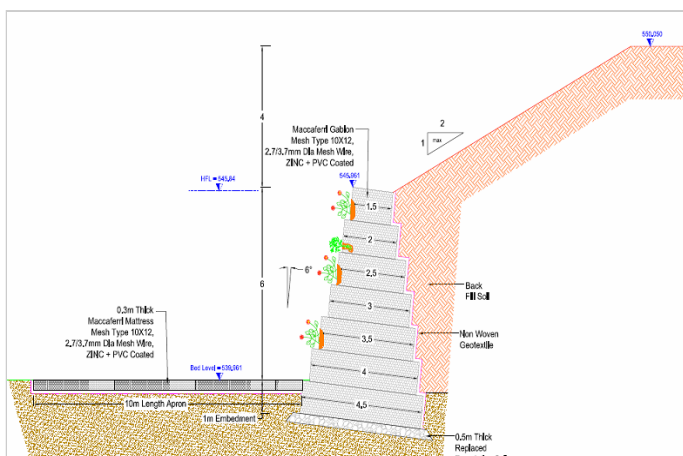
Photo 2: Construction of bottom layer



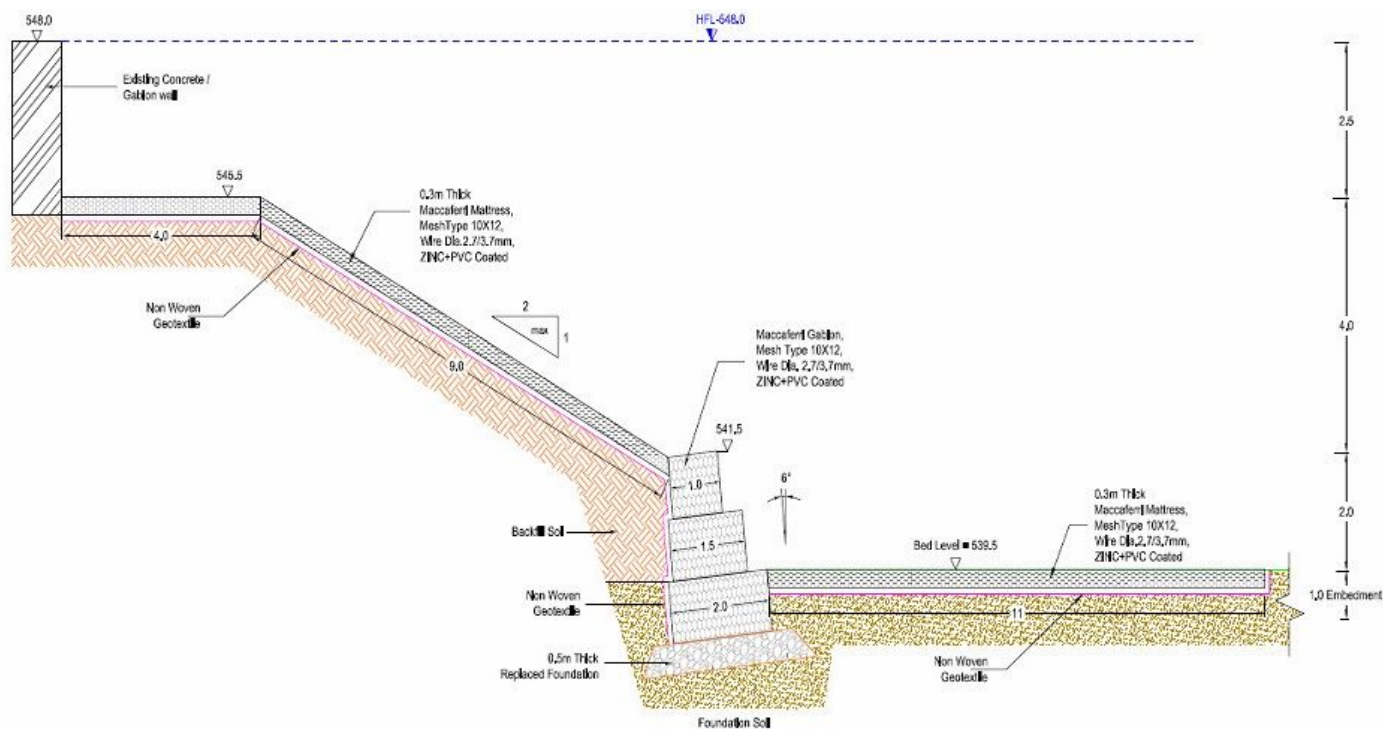
Photo 3: Gabion wall construction



Photo 5: Reno mattress laid



Drawing 1: Sectional drawing of gabion wall in Location 1



Drawing 2: Sectional drawing of gabion wall in Location 2