

FLOOD PROTECTION WORKS ON RIGHT BANK OF NARMADA RIVER

NARSINGHAPUR, MADHYA PRADESH, INDIA

Longitudinal Protection

Problem

Hirapur Bhatara Ghat is situated on the right bank of Narmada river in the northern part of Narsinghpur district, Madhya Pradesh. During monsoon, the floods occur in the river with high discharge and velocity and the right bank of river gets severely eroded. Due to heavy erosion happening in this area, the land on the top portion was insufficient for public use during various religious and social activities.

The client, Water Resource Department, decided to develop this area as a proper ghat, which could be further used for diverse communal activities.

The height of the river bank which was to be protected was about 19m above bed level with a slope of 1V:3H. So conventional and rigid solutions will not be supportive for long term protection. Suitable protection measures were to be considered for the protection of the bank as well as reclamation of the land.

Solution

Considering the river bank erosion happening constantly in this region and leading to loss of land and property, Maccaferri suggested to go for simple surface protection measures with flexible gabion mattress and provide a scouring apron with mattress to a length of 6m and a key gabion of height 2m, looking into the practical aspects and actual site conditions. An anchor wall of 3.5m height with gabion was suggested at toe portion of the slope to reduce the scouring action at the toe of the river. The entire slope was stabilized by laying mattress over the slope and providing 2m berms at certain intervals for smooth movement of public. At several locations, gabions and mattresses are constructed as staircase to provide accessibility to river.

Benefits:

- Gabion and mattress with Zinc + PVC coating were used to provide long term durability and make it more flexible to the impact.
- The PVC coated mesh ensures that the strength is not compromised by chemical, biological or environmental degradation.
- Gabion and mattress can prevent the surface erosion and the scour action.
- They are self draining. So the huge pore pressure that may get developed in the riverfront will get dissipated.

Client: Hiran Water Resources Division, Jabalpur, Madhya Pradesh

Designer / Consultant: Maccaferri Environmental Solutions Pvt Ltd

Contractor: Maccaferri Environmental Solutions Pvt. Ltd.

Products used (Qty.)

- Gabion	2,575 cum
- MacTex N	15,792 sqm
- Reno Mattress	3,669 cum

Date of construction: 12/2014 - 10/2016



Photo 1: Narmada river bank- before protection



Photo 2: Preparing slope with proper surface compaction



Photo 3: Laying mattress over the slope



Photo 4: Bank slope after execution of mattress

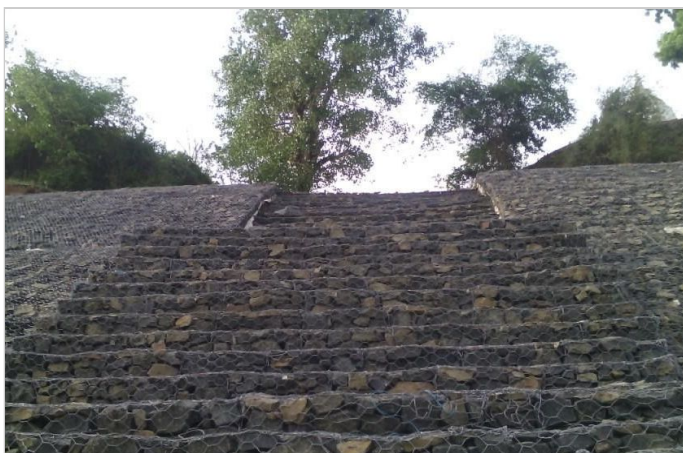
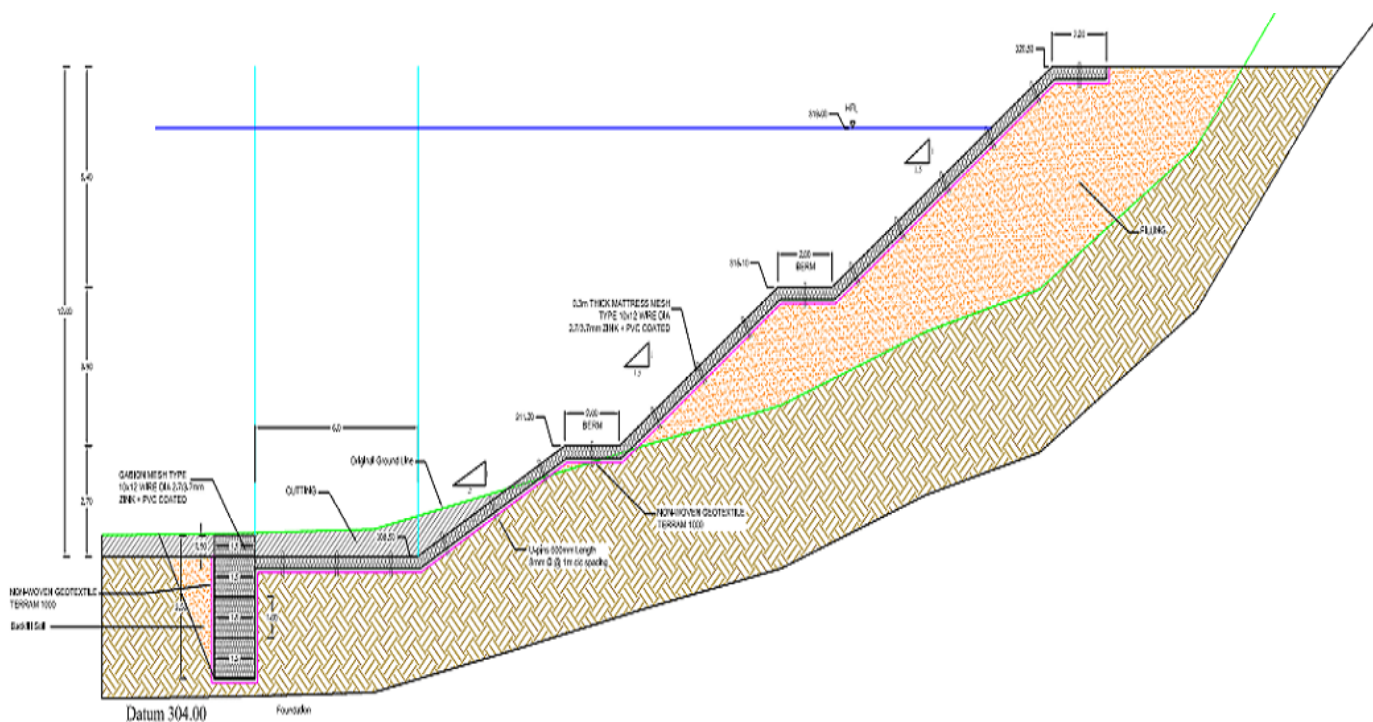


Photo 5: Staircase section provided with gabion & mattress



Photo 6: Completed structure



Typical cross sectional drawing