

## RIVER BANK PROTECTION FOR TAWI RIVER JAMMU, JAMMU & KASHMIR, INDIA

### Longitudinal Protection

#### Problem

Tawi river in Jammu, J&K, changes its course throughout the year, breaching embankments and eroding the fields of around 25 border villages along the 15-km stretch. Erosion rates are very high, with tremendous river fluxes during the monsoon season. Thus, the villages along the river are worried a lot with uncertainty of flash floods looming large during rains.

Tawi river bifurcates into two different directions near the main Jammu Tawi bridge to meet again at the Makwal border check post nearly 12 km from here. And the villages on the banks of the eastern tributary have been facing erosion of fields. This tributary is known as "nikki" (smaller) Tawi, as it earlier carried only 20 per cent of the main Tawi river. But now this "nikki" Tawi actually shares more than 60 per cent of the main Tawi river after its bifurcation near the Tawi bridge in Jammu city, the fact realized by the authorities concerned including the irrigation department and the floods control wing of the state government.

#### Solution

Considering the described problem, it was suggested to provide an erosion control structure which will withstand the water forces and control the floods of 13000 cumecs. Conventional structures like concrete wall and lining were very costly solutions. Also, these are rigid structures and would have developed pore water pressure behind and underneath of the protection wall. So, it was appropriate to provide a flexible and self draining structure to control the erosion.

Hence, a gabion wall as bank protection was suggested and approximately 6m wall was constructed for the stretch of 10km. Along with flexibility and self draining, gabions also contributes through its advantages in strength and lower cost due to use of local material.

Advantages of gabion retaining wall:

- 1 Highly stable due to its large weight & flexibility.
- 2 Maintains its functions even after the settlement of the foundation.
- 3 Structure can be built without heavy equipment.
- 4 Can be repaired by opening the boxes, refilling and wiring them shut again.

Hydraulic Properties:

Discharge= 13000 cumecs.

Width of river= 320m.

Velocity= 6.276 m/s.

River bed gradient= 0.04.

Particle size (dm)= 0.89.

**Client:** HSL Enterprises

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

**Products used (Qty.)**

- Gabion

Not available

**Date of construction:** 02/2008 - 05/2008



Photo 1: Before construction



Photo 2: During construction- Excavation





Photo 3: During construction



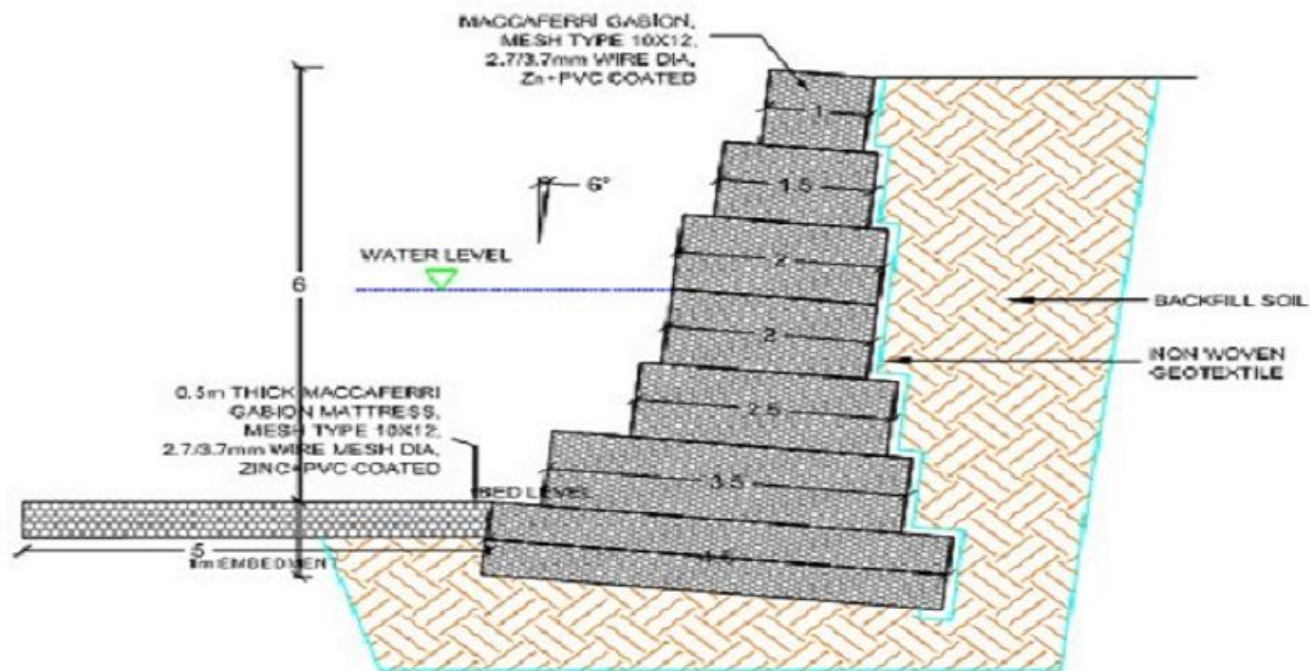
Photo 4: During construction- filling of gabions



Photo 5: Wall near to completion- gabion mattress laid for scour protection



Photo 6: Completed structure



## Cross sectional drawing

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