

**RETENTION AND BOX CULVERT PROTECTION WORKS,
VADODARA
VADODARA, GUJARAT, INDIA**

Reinforced Soil Walls and Slope Reinforcement

Problem

The Vadodara-Gotri-Sewasi-Singrot road is a state highway across river Mahi. The HFL of the river is 104.645. As per survey carried out; this section (Km 6/415 to 8/124) used to submerge during high floods. To prevent this, authorities proposed to raise the embankment level to R.L. 105.2. In addition, cross drainage works were required to carry the excess water. Culverts at chainages 6/453, 6/705 and 7/450 Km. were part of the cross drainage work. The maximum height of retention was 6.7m and the culvert width was 12m. Heavy traffic load was expected on the road.

Considering the height to be retained and expected loads on the structure, it is advisable to adopt flexible reinforced earth structure.

Solution

Maccaferri's Terramesh system with gabion fascia and ParaLink as primary reinforcement and mesh as a secondary reinforcement was selected as the best solutions. The client, was convinced about the system due to the following merits of Terramesh walls:

- 1) Permeability: As it is made up of gabions, the permeability of the front face ensures the drainage of the backfill resulting in less hydrostatic pressure which may develop during heavy rainfalls.
- 2) Flexibility: System being the flexible soil reinforcing system helps the structure to stand stable during seismic activity.
- 3) Structural Safety : This system offers safety against corrosion, fire, attack by earthworms, insects, rats, etc.
- 4) Environmental Impact: System gets covered with lush green vegetation enhancing the urban landscape.
- 5) Versatility : They can either be built manually or mechanically and in any climate.
- 6) Economy : Being simple, the system does not require skilled labour or special equipment.

Terramesh is a soil reinforcement system which consists of panels of double twist hexagonal woven heavy zinc and PVC coated wire mesh used for stabilizing steep slopes and vertical walls. It comprises of a continuous horizontal panel of mechanically woven steel wire mesh or geogrid with an integral gabion fascia unit. The fascia unit is filled with hard durable rock-fill, identical to a gabion, and the wire mesh/ geogrid tail is then sandwiched between the compacted landfill.

Client: Road and Bridge Department

Designer / Consultant: Maccaferri/ Multi Media Consultant Pvt Ltd

Contractor: Patel Infrastructure Pvt Ltd

Products used (Qty.)

- Terramesh	13,980 sqm
- MacTex N	Quantity not available
- ParaLink	Quantity not available

Date of construction: 08/2010 - 11/2011



Photo 1: Initial stage of construction



Photo 2: Terramesh system wrapped with geotextile



Photo 3: Construction stage- Terramesh system with box culvert



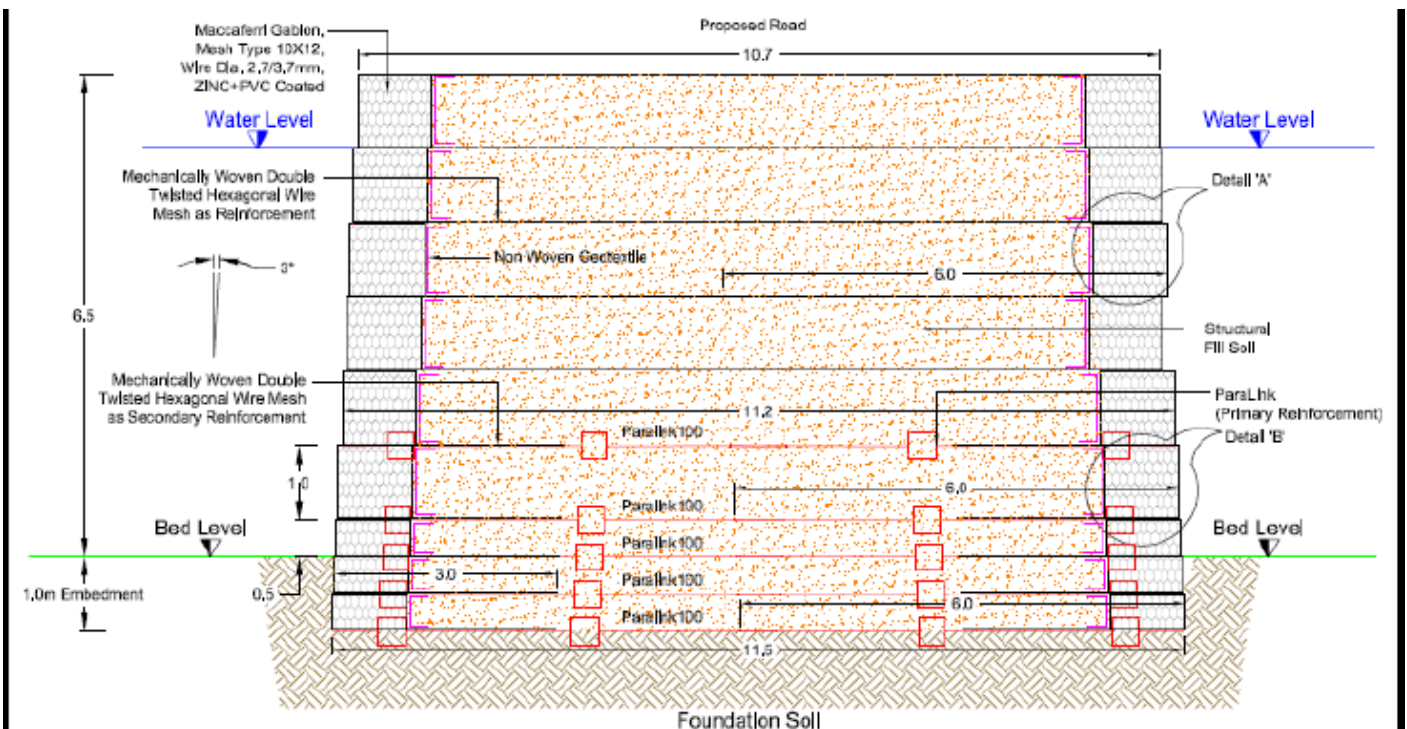
Photo 4: After completion



Photo 5: After completion



Photo 6: Completed structure



Cross sectional drawing