

## RETENTION AND BOX CULVERT PROTECTION WORK, VADODARA GUJARAT, INDIA

### ENVIRONMENTAL / EMBANKMENT PROTECTION

Product: Terramesh, Geotextile

#### Problem:

The Vadodara-Gotri-Sewasi-Singrot road is a proposed state highway across river Mahi. Km 6/415 to 8/124. The HFL of the river is 104.645. As per survey carried out; this section (Km 6/415 to 8/124) undergoes submergence during high floods.

To prevent the submergence of the road during floods, authorities have proposed to raise the embankment level to R.L. 105.2. In addition to this, it is proposed to carry out cross drainage work to carry the excess water. Culverts at chainages 6/453, 6/705 and 7/450 Km. are part of the cross drainage work.

The maximum height of retention is 6.7m and the culvert width is 12m. Heavy traffic load is expected on the proposed 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 facia, Paralink as primary reinforcement and mesh as a secondary reinforcement was selected as one among the best solutions. The client, Multi Media Consultant Pvt Ltd, were convinced about the system due to the following merits of Terramesh walls.

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

Client name:

Road and Bridge Departement

Main contractor name:

Patel Infrastructure Pvt Ltd

Consultant:

Multi Media Consultant Pvt Ltd

Products used:

Terramesh, Paralink 100 , Terram 1000, Renno mattress

Construction info:

Construction Start: August 2010

Construction end: November 2011



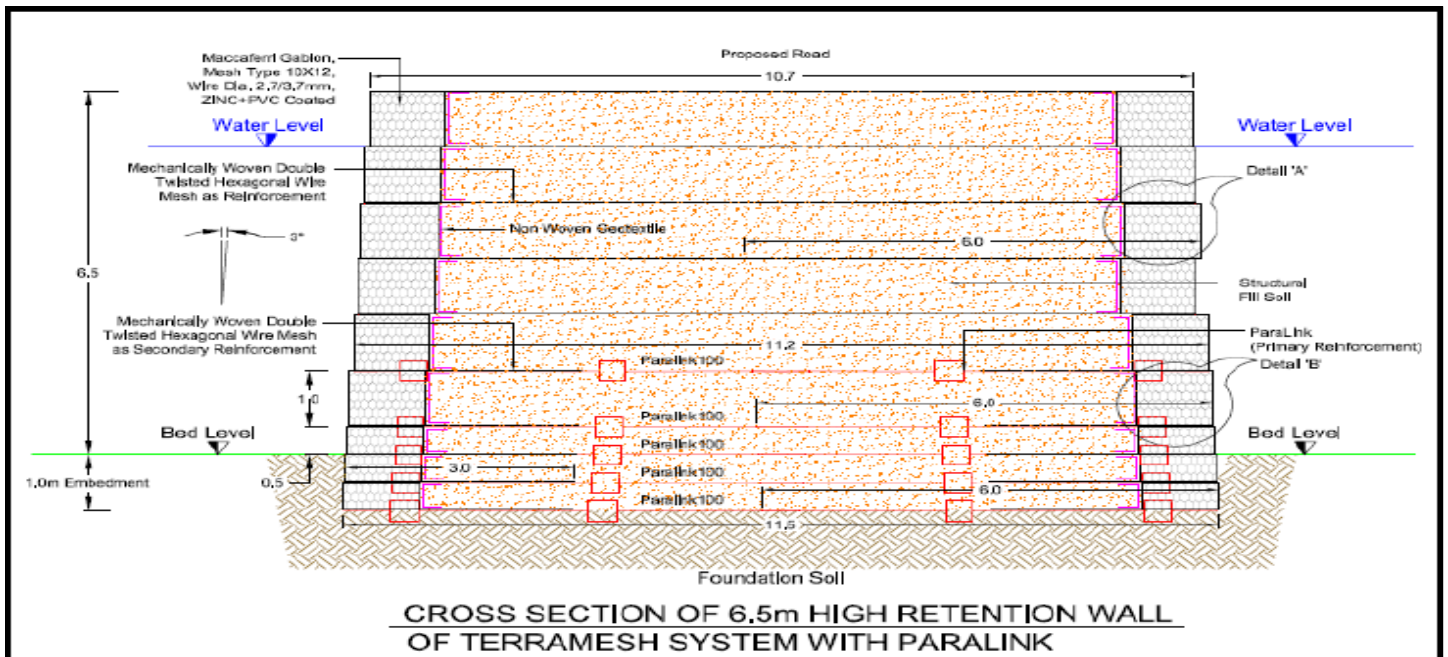
Photo 1 : Initial Stage of Construction



Photo 2 : Installation of Non woven Geotextile



Photo 3 : During Construction - Gabion facia.



Cross Section of Terramesh system



Photo 4 : During Construction - Gabion facia.



Photo 5 : Terramesh system wrapped with Geotextile

**Terramesh system :**

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.

A Terramesh unit comprises 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 layers of compacted granular backfill.

Layers of Terramesh units are then constructed to form reinforced soil retaining structures of the required height. Terramesh has the aesthetics of a gabion structure, with the reassurance and robustness of soil reinforcement system.



Photo 6 : Construction stage—Terramesh system with Box Culvert



Photo 7 : Construction stage—Terramesh system with Box Culvert



Photo 8 : After Completion



Photo 9 : After Completion



Photo 10 : Completed Structure



Photo 11 : Completed Structure

### **Present Status of the Project**

The Project is completed and serving intended purpose.