

CASE HISTORY

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CONSTRUCTION OF GABION RETAINING WALL AT BEAWAR PALI, RAJASTHAN

BEAWAR PALI, RAJASTHAN, INDIA

TECHFAB INDIA

Retention Works

Client:	Products used:
NATIONAL HIGHWAYS AUTHORITY OF INDIA (NHAI)	TECHFAB METAL GABIONS ZINC+PVC COATED
Main contractor:	TECHGEO NONWOVEN GEOTEXTILE PR20
L&T ECC	Quantity supplied:
Manufacturer & Supplier:	Year of construction:
TECHFAB (INDIA) INDUSTRIES LTD.	

Project brief:

L&T ECC was executing the project of four laning, starts from Pali village of Rajasthan. Regions are hilly with rocky terrain. Road alignment was passing through higher elevation. There is a need for retaining structures of varying height to support the elevated road. Road was also passing through the tunnel, where heavy blasting was carried out. Due to blasting, boulders are available and can be used for retaining structures.

Solution:

Considering the requirement and resources available, we have proposed Gabion Gravity structures for various heights. It has been decided to consider up to maximum 10 meter of height for single wall. For the height, more than 10 meters, two tiered wall of Gabion wall with minimum berm width of 1.0 meter was proposed.

Gabion Retaining walls are flexible structures which are very suitable in case of retaining structures for protection. It is also very effective for the protection near the water body, as the porosity of boulders will dissipate the wave energy effectively. Gabions are flexible in nature and can accommodate differential settlement very well. In future, with due design consideration height of wall may be increased, if required. Gabion Walls of varying height (0.5m to 14.0m), were designed and executed. There is a requirement of filter behind the Gabion wall, to avoid erosion of backfill material. TechGeo Nonwoven Geotextile PR 20 was placed at the rear end of gabion wall which acts as filter.

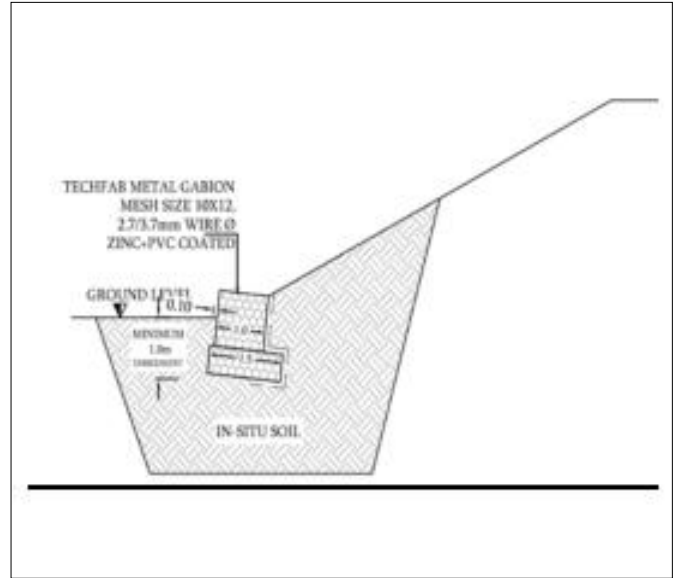
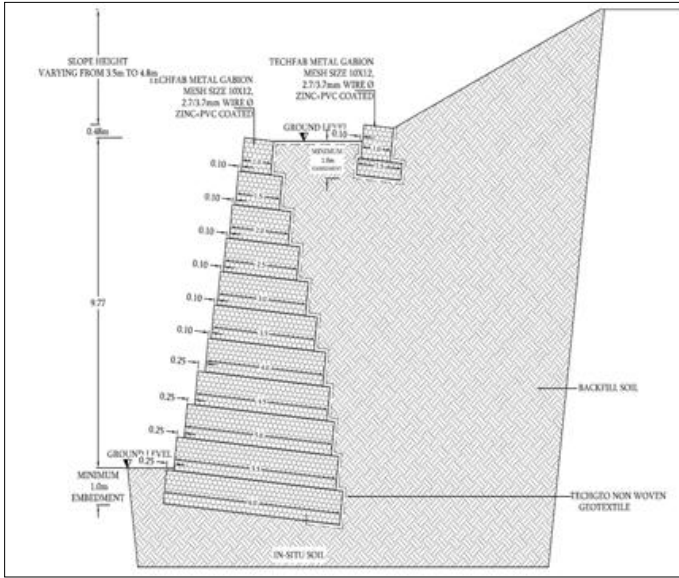
Gabion construction is fast and can be done using unskilled labours. Boulders are available in the vicinity, reduced the overall project cost and make the project very cost effective. Excavation for minimum 1 meter depth was carried out in the virgin soil. Any unsuitable soil removed and replaced with good quality soil. Nonwoven Geotextile are used beneath and behind the Gabion wall for filtration purpose. Compacted filling was proposed and being carried out at site. Final batter as per the design was achieved after the completion of the work.



TechFab Metal Gabion - Initial Stage



TechFab Metal Gabion Wall



Typical Cross Section Drawings



Construction Stage - I



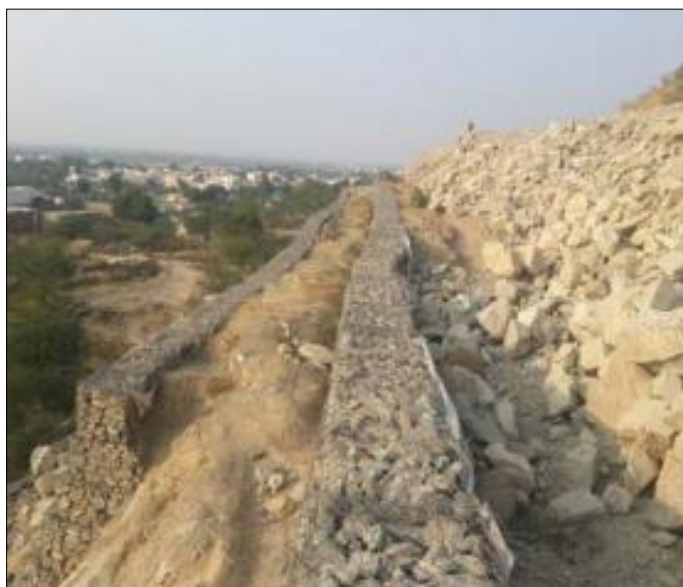
Construction Stage - II



Two Tier Wall – Longitudinal View



TechFab Metal Gabion



Two Tier Wall Alignments



TechFab Metal Gabion – Top View

Benefits of TechFab Metal Gabion over Conventional RCC Retaining Wall:

TechFab Metal Gabion was suggested for retaining and erosion control purposes in lieu of the conventional R.C.C Retaining Wall for achieving the following advantages:

- Flexible structure which can accommodate differential settlement.
- Free draining structure with no pore pressure development behind wall.
- Easy in construction, as it does not require skilled labourers.
- Does not require curing time as in case of R.C.C Retaining wall.
- Eco-friendly, as the vegetation growth over it, is compatible with surrounding environment.
- Does not corrode under areas which are in constant / partial submergence.
- Cost incurred is very less compared to R.C.C Retaining Wall and depends only on the local availability of boulders.

Benefits of TechGeo Nonwoven Geotextile:

- Acts as a “Filter” by preventing the backfill material from being washed out through Gabion face.
- Acts as a “Separator” between the backfill material and the Gabion facia and thereby prevents the mixing of the tow.



TechFab Metal Gabion – Front View

Conclusion:

TechFab Metal Gabion and TechGeo Nonwoven Geotextile satisfied all the technical parameters for their effective usage. The execution was successfully completed in time. The department was satisfied with the material quality and on time execution of project.

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