

CASE HISTORY

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EARTH RETENTION & PROTECTION WORKS AT FOUR LANING OF HAZARIBAGH - RANCHI SECTION OF NH-33, JHARKHAND UNDER NHDP PHASE - III

JHARKHAND, INDIA

Retention Works

Client:	Products used:
NATIONAL HIGHWAYS AUTHORITY OF INDIA (NHAI)	TECHFAB METAL GABIONS ZINC COATED
Main contractor:	TECHGEO NONWOVEN GEOTEXTILE PR20 (200GSM)
HAZARIBAGH RANCHI EXPRESSWAY LTD (JV COMPANY OF ITNL AND PUNJLLOYD)	Quantity supplied:
Manufacturer & Supplier:	GABIONS - 15,000 CUM, TECHGEO - 10,000 SQM
TECHFAB (INDIA) INDUSTRIES LTD.	Year of construction:
	2011

Problem & Challenge:

“Ghanti” is around 10Km length of hill stretch along Ranchi – Hazaribagh road section of NH-33. Due to steep hill section and numbers of hair pin bends, traffic movement on this stretch of road had been very slow and even well below the NHAI guideline of maximum speed for traffic movement of 40Km/hr. With an objective to speed up the traffic movement and faster accessibility, NHAI undertook plan to re-align this road stretch to make the road more or less straight and with smooth curve portion. Additionally, for further safety of vehicle and stability of hill side road embankment, extensive protection work was considered using Steel Gabion technology in valley side.

Thereby, TechFab (India) Industries Ltd suggested TechFab Metal Gabion and TechGeo Nonwoven Geotextile to serve the required purpose. The project was awarded to Hazaribagh Ranchi Expressway Ltd (JV Company of ITNL and Punj Lloyd) which in turn had subcontracted the work to GR Infraprojects Ltd (GRIL). GR Infraprojects Ltd (GRIL) awarded the supply and execution of Metal Gabion and Nonwoven Geotextile to M/s TechFab India Infrastructure LLP (a subsidiary of TechFab India Industries Ltd, formed to provide end-to-end design and build solutions in the field of Infrastructure enhanced with Geosynthetics).

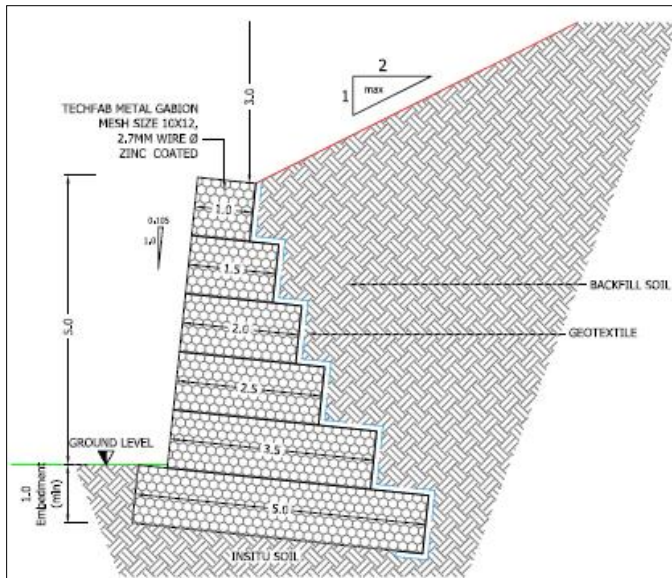


Photo 1 & 2 : TechFab Metal Gabion Installation in progress

Solution:

Gabion Retaining walls are flexible structures which are very suitable in case of retaining structures in deep valley. Gabions can take settlement which may occur in such regions. Walls of varying height (1m to 6m) with surcharge slope of 1V:2H was proposed. 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 hence the project was completed in time. TechFab Metal Gabion and TechGeo Nonwoven Geotextile satisfied all the technical parameters for their effective usage. Thereby, TechFab India Infrastructure LLP successfully supplied and executed 15,000 Cum of TechFab Metal Gabion and 10,000 Sqm of TechGeo Nonwoven Geotextile PR 20 (200 Gsm).



Cross section of 5.0m High Metal Gabion Wall



Photo 3: TechFab Metal Gabion Wall - Side 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.



Photo 4 : Completed Structure - Top View



Completion Certificate : Supply and Execution of TechFab Metal Gabion and TechGeo Nonwoven Geotextile

Conclusion:

The execution was successfully completed in time. The department was happy with the material quality and in time execution of project.

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