

CASE HISTORY

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CONSTRUCTION OF EMBANKMENT USING TFI 5200 TAPE WOVEN GEOTEXTILE AT CALICUT BYPASS PHASE-III, NH-17, CALICUT, KERALA CALICUT, KERALA, INDIA



Embankment Stabilization

Client:	Products used & Quantity supplied:
NATIONAL HIGHWAYS AUTHORITY OF INDIA (NHAI)	POLYPROPYLENE TAPE X TAPE WOVEN GEOTEXTILE (TECHFAB TPP 250 EQUIVALENT TO TFI 5300) IN 5M WIDTH
Contractor:	
BHARAT GEOSYSTEMS, CHENNAI	
Manufacturer & Supplier:	Year of construction:
TECHFAB (INDIA) INDUSTRIES LTD.	OCTOBER 2003

Project brief:

As a part of the Calicut Bypass Phase III project, funded by the Ministry of Road Transport & Highways and executed by Public Works Department (National Highways), Kerala, it was required to construct a three km. long road embankment with heights up to 5m, on very soft ground comprising old paddy fields and marshy land. Techfab Woven Geotextile was used to solve difficult problems associated with construction of embankments on soft sub-grades.

Problem:

The thickness of the soft clays at the site varied from 3 m to 8 m. Hence issues of embankment stability and post-construction settlements need to be carefully considered. Also, the upper most clay layer was extremely soft with very high water content. Therefore, it was not possible to carryout normal construction operations on this stratum. However, removal of this layer was not a viable option because of uncertainty in thickness of layer, cost and time involved in excavation and removal and environmental objections to disposal of the excavated material. Hence innovative techniques were considered to find a satisfactory and cost-effective solution to these problems.



Installation of Techfab TPP 250 Woven Geotextile

The Solution:

Pre-fabricated Vertical Drains were installed to accelerate the consolidation of the soft clays. As the clay consolidated, there was a corresponding increase in the shear strength, thereby ensuring adequate stability of the embankment. It also ensured that most of the settlements occurred prior to construction of the pavement.

As an alternative to excavation and removal of the top layer of extremely soft clay, it was decided to use a woven Geotextile to stabilize the sub-grade. After a careful evaluation of the required Geotextile functions and properties, Techfab TPP 250, a woven polypropylene tape Geotextile manufactured by Techfab India was selected for this purpose. The Geotextile had a combination of mechanical and hydraulic characteristics making it suitable to function as a separator and reinforcement. In addition, it had a width of 5 m to minimize overlaps.

Techfab TPP 250 Woven Geotextile installed at the surface of the sub-grade functioned as a separator between the very soft clay and the better quality fill material allowing placement of fill material without mixing and excessive rutting. It also acted as a reinforcement supporting the loads imposed by the initial lifts of embankment fill and construction traffic without inducing shear failure of the clay foundation. The restraint offered by the Geotextile, enabled the proper compaction of the initial lifts of embankment fill.

The use of Techfab TPP 250 Woven Geotextile resulted in an environmentfriendly Solution and enabled the successful completion of the project with appreciable savings In cost and time.



Installation of Techfab TPP 250 Woven Geotextile

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