

CASE HISTORY

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PROTECTION WORKS TO ERODING LEFT BANK OF RIVER CHURNI AT RABON-BORE, RANAGHAT, NADIA, WEST BENGAL NADIA, WEST BENGAL, INDIA



River Bank Protection

Client:	Products used & Quantity Supplied:
GOVERNMENT OF WEST BENGAL, NADIA IRRIGATION DIVISION, I & W DIRECTORATE, NADIA	TECHGEO NON WOVEN GEOTEXTILE PN 25 TECHGEO NON WOVEN GEOTEXTILE BAGS 420GSM
Main contractor:	Consultant:
TULIP CONSTRUCTION & SUDIP ROYCHOUDHURY	
Manufacturer & Supplier:	Year of construction:
TECHFAB (INDIA) INDUSTRIES LTD.	

Project brief & Challenges:

Churni was actually an artificial canal built by the Maharaja Krishna Chandra, King of Nadia, in order to protect the region from the enemies. However, due to the tragic flood over the years, the artificial canal built turned into river, caused erosion at the bank of the river. Effect of erosion was so serious that it caused serious losses in the form of loss of agricultural land, home, property, loss of lives, economic loss are a few to name. Embankment bank protection with conventional methods such as rip-rap had proved to be costly and unyielding over a longer period of time. As clear from the photographs above, the existing embankment slope was severely eroded due to the flood in the river.

Thereby in order to mitigate the erosion, TechFab (India) Industries Ltd suggested the TechGeo Nonwoven Geotextile and TechGeo Nonwoven Geotextile Engineered Fabric Bags with high abrasion resistance. Government of West Bengal, Nadia Irrigation Division, I & W Directorate, Krishnagar, Nadia awarded the protection works to eroding left bank of river Churni at Rabonbore for a length of 650m in Block – Ranaghat – I, P.S – Ranaghat, Dist. – Nadia, West Bengal to M/s TULIP Construction & M/s SUDIP ROYCHOUDHURY.



Before Rehabilitation – Churni River Bank



Before Rehabilitation – Churni River Bank

Solution:

TechFab (India) Industries Ltd suggested the use of TechGeo Nonwoven Geotextile PN25 over the Embankment slope surface, to act as a filter fabric for prevention of soil erosion. Also TechGeo Nonwoven Geotextile Engineered Fabric Bags with high abrasion resistance of 420 Gsm was suggested to be placed at the bank of the river, to reduce the impact of waves over the embankment slope surface.

Execution

To protect the embankment against further erosion, the following step by step procedure was adopted:

1. The existing embankment slope of approximately 25m length was dressed properly to attain a working surface by smoothening out the top soil.
2. A trench of 2' deep x 4' wide was made at the top and bottom end of the embankment slope.

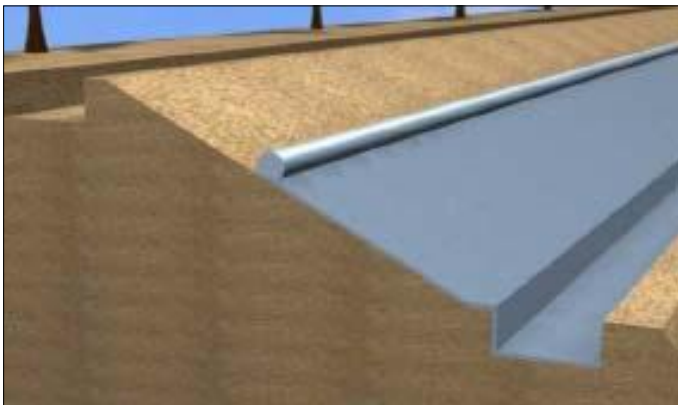


Dressing of the Embankment Slope



Excavation of Trench at the End

3. A layer of TechGeo Needle Punched Nonwoven Geotextile PN25 was laid as Filter Fabric, over the prepared slope surface.

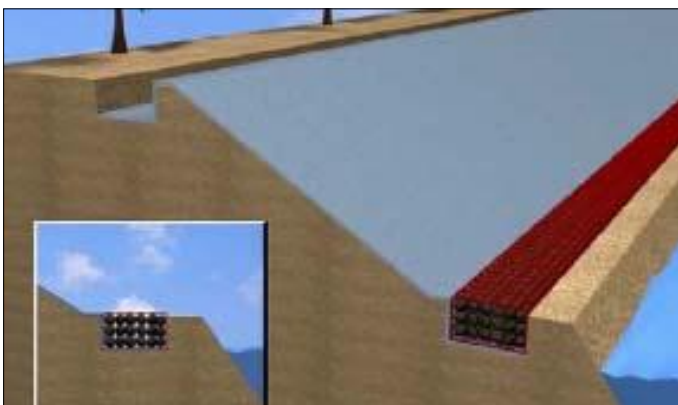


Unrolling of TechGeo Nonwoven Geotextile



Unrolling of TechGeo Nonwoven Geotextile

4. In order for the TechGeo Nonwoven Geotextile to function properly it should be laid taut over the surface. Therefore, a metal gabion filled with boulders was placed in the top and bottom trench, to secure the TechGeo Nonwoven Geotextile in place.

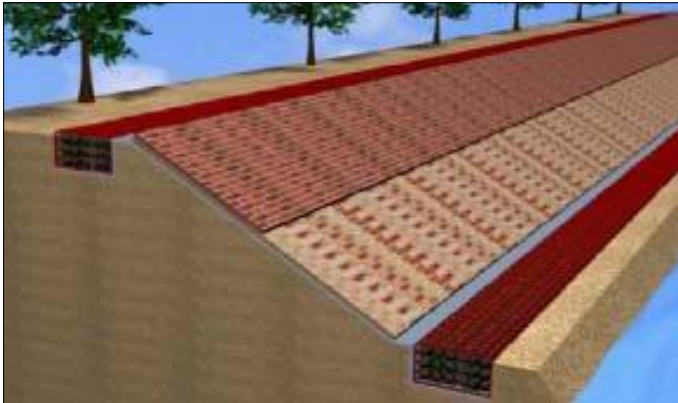


Metal Gabion Placed at Bottom Trench



Metal Gabion Placed at Bottom Trench

5. The embankment slope covered with TechGeo Nonwoven Geotextile was further protected with two layers of bricks that were readily available.

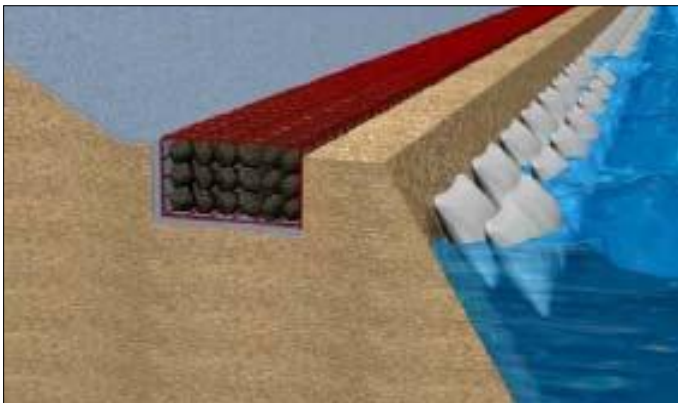


Two Layers of Brick Placed Along the Slope



Two Layers of Brick Placed Along the Slope

6. Further, 6500 nos. of TechGeo Nonwoven Geotextile Bags filled with locally available fine sand, were laid in two layers at the edge of the river bed to take care of the soil erosion. The size of each TechGeo Nonwoven Geotextile Bag was 1m x 1.5m with the weight of the each filled bag of approximately 80 to 90 kg. These bags are engineered fabric bags with high abrasion resistance of "Pillow Type" duly "Chain Stitched" in 3 lines at TechFab (India) Industries Ltd's manufacturing facility.



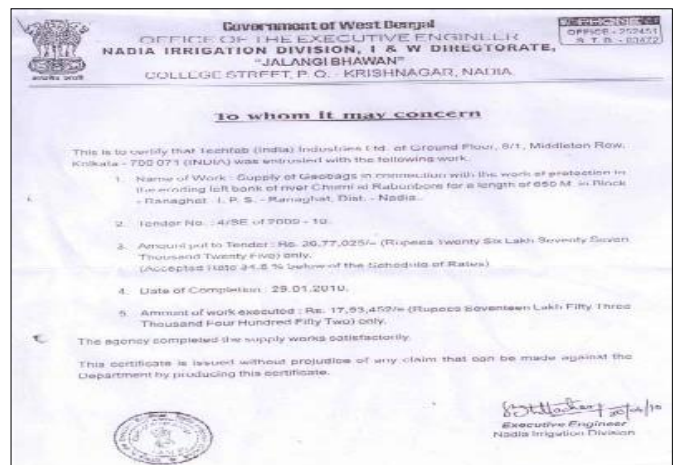
TechGeo Nonwoven Geotextile Bags in Two Layers at the Edge of the River Bed



TechGeo Nonwoven Geotextile Bag Being Filled with Local



After Rehabilitation – Churni River Bank



Completion Certificate Supply of TechGeo Nonwoven Geotextile Bags

Benefits of TechGeo Needle Punched Nonwoven Geotextile:

1. Geotextile functions as a filter.
2. Geotextile prevents soil from embankment from being washed away.

Benefits of TechGeo Nonwoven Geotextile Bags:

1. TechGeo Nonwoven Geotextile Engineered Fabric Bags with high abrasion resistance provide reinforcement to the edge of the embankment.
2. Reduces the damage to the base embankment considerably.
3. Life of embankment extends exponentially.

Advantages of Geosynthetic Solution v/s Conventional Riprap:

1. Reduction in Granular layers.
2. Considerable saving of construction time.
3. Longer life of the embankment even after repeated floods.

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