

BRAHMAPUTRA BANK PROTECTION
ROHMORIA, ASSAM, INDIA

HYDRAULIC WORKS

Product: Gabions, MacBag®

Problem

The Brahmaputra River is a trans-boundary river in Asia. It is also one of the major rivers of Asia that cuts through four countries: China, India, Bhutan and Bangladesh. In India, it enters the north-east state of Arunachal Pradesh and then widens to 10km in the state of Assam.

At about 1,800 miles (2,900 km) long, the Brahmaputra is an important river for irrigation and transportation. It is prone to large-scale flooding in spring when the Himalayan snows melt; over the past 20 years, the river has destroyed many paddy fields, homes, schools and plantations in the village of Rohmoria.

Where the river reaches Rohmoria, and flows southwest through the Assam valley, it enters an area severely affected by river erosion. This area is located about 20 to 30 km away from Dibrugarh town in the upstream direction of the south bank of Brahmaputra River. The area has witnessed erosion for the last sixty years and more than 25 villages have been lost due to bank erosion.

To mitigate this problem, the Water Resource Department of Assam proposed erosion protection works be implemented along a 9km stretch of the Brahmaputra River from Bogoritolia to Kasuoni. An area that had been identified as a highly affected zone.

Solution

The protection solution included Maccaferri MacBags®. These large bags are made from geotextile materials specifically selected for erosion protection, which are filled on site with sand or grout. MacBags® are flexible and conform to the ground profile. In this location, a ready supply of rock fill was not available which made traditional hard-armour solutions less suitable. A benefit of the MacBags® is that the units are filled with locally available slurried sand. The slurry water drains through the walls of the geotextile bag, leaving the sand contained within it.

Containing the sands within the protective bags prevents further erosion of the river banks. The bags were placed upon a non-woven filter geotextile to prevent wash-out of fine material from beneath the bags, caused by residual water flows on the slope.

The height of slope to be protected was approximately 5.5m. Peripheral strips of gabions were placed at regular intervals on the slope, to assist with the stability of the scour protection measure. Approximately 800,000 MacBags® were installed as scour protection.

Client:

WATER RESOURCES DEPT., ASSAM

Main contractor:

MACCAFERRI ENVIRONMENTAL SOLUTIONS PVT. LTD

Products used:

MACBAG®, GABIONS

Date of construction

Oct 2011-Apr 2012



Scouring and erosion of the banks of Brahmaputra River



Preparation of the slope ready to receive MacBags®



Filling and transportation of MacBag®



Placement of MacBags® on the river bank



Placement of MacBags®. Note filter geotextile beneath units



Condition of MacBags® and river bank during flood



Condition of MacBags® and river bank after flood



Two years after installation



Two years after installation showing rehabilitation of banks

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