

NATIONAL CYCLONE RISK MITIGATION PROJECT
ORISSA, INDIA

HYDRAULIC WORKS

Product: Gabions, geotextile

Problem

The State of Orissa is one of the thirteen cyclone prone States in India which are vulnerable to the destructive impacts of frequent cyclonic storms and concurrent flood hazards that cause considerable loss of life, cattle, agricultural land and other infrastructure.

The strongest tropical cyclone ever recorded in the North Indian Ocean hit Orissa as a 155 mph (250km/h) super cyclone on October 29th and 30th. It inflicted severe damage in 14 districts of the state and caused the death of about 10,000 people. These lives were lost due to lack of available protected shelters, particularly in the areas prone to storm surge.

In the aftermath of the super cyclone, the State Government decided to build elevated embankment structures able to withstand very high wind speeds and protect human and animal lives from flooding and saline inundation.

The Government of Orissa Water Resources Department (WRD) executed 23 sub-projects for saline embankments improvement works under the National Cyclone Risk Mitigation Project (NCRMP).

Solution

The existing embankments were constructed from unprotected clay-based soils which had become damaged by flooding and erosion.

To make the existing embankments effective against cyclone surge for the next 50 years, WRD decided to raise and strengthen the embankments and then protect them with Maccaferri gabions under the NCRMP project. These taller embankments will contain higher storm surges than previously and thereby provide flood protection to agricultural land and save the lives of the people living nearby. Furthermore, the gabion armouring of the embankments serves to protect them, dramatically extending the design life, and reducing the maintenance required.

The gabions were engineered from steel wire double twist mesh. The steel wire is heavily galvanised and protected by an additional polymeric coating for extended design life in these demanding conditions. The double twist mesh gabions are flexible and can accommodate differential settlement without damage, unlike more rigid erosion protection systems.



Installation of gabions and geotextile



Installation complete



After installation

Client:

WATER RESOURCE DEPT., ORISSA

Main contractor:

MACCAFERRI ENVIRONMENTAL SOLUTIONS PVT.

Products used:

GABIONS, TERRAMESH®

Date of construction

Spring 2012



February 2012

A benefit of the flexible double twist gabion units (or Reno Mattresses) used in this context is that the units are approximately 35% voids. These gaps between the rock-fill quickly fills with soils travelling in suspension in the river flow.

This creates an ideal environment for the establishment of local vegetation. These plants help to integrate the solution with nature delivering a soft vegetative appearance, but with a robust core of hard armour.

The social and economic status of the area has improved since completion of this project.



May 2014



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