

LEKKI SHORELINE PROTECTION LAGOS, NIGERIA

Hydraulic & Erosion Control Product: Gabions and Reno Mats

Problem

A deep, wide and slow moving river, had over a period of years been eroding an embankment, creating a future risk to the land and adjacent Asphalt road. The road is the main entrance to a large oil company Exxon-Mobile. It is also a main access for pedestrians and vehicles to Lekki on Victoria Island in Lagos.

Solution

The Consultant Emplan, assessed the risks involved and proposed a shoreline protection solution to arrest the damage and prevent further erosion which would endanger the integrity of the road.

In the analysis it was decided to use Maccaferri products (Reno mattresses) to prevent scouring of the riverbed and double twisted Gabion mesh to create a retaining wall to prevent erosion and prevent further collapse of the road embankment which would lead to damage of the road.

It was defined to a length of 150m of the embankment as an immediate intervention which could be reviewed later if it needed to be extended.

Main Design features

1. By creating a gabion wall the integrity of the embankment was secured.
2. The use of Reno mattresses absorbed the flow action and consequent erosion. This in turn reduces the flow velocity in that area due to the Reno mattress filled with rocks that have a higher friction capacity.
3. The geosynthetic textile separating the insitu soil from the Reno mattress would help keep the soil to remain intact and also not clog or contaminate the intervention structure.
4. The Double twist galvanized mesh wire which is coated with PVC is highly durable and together with the rock infill will give a long term solution.
5. The Gabion and Reno mattress solution was a far more cost effective than a sheet pile solution.



During construction



During construction



During construction

Client:

EXXON MOBILE

Main contractor:

JAGAL NIG LTD

Consultant

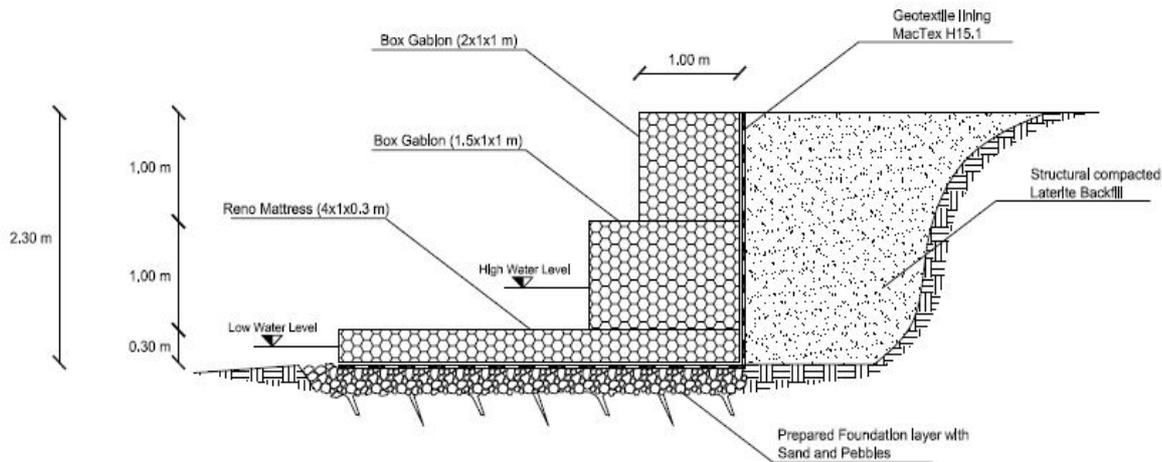
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Products used:

GABIONS, RENO MATTRESSES, GEOTEXTILE

Date of construction

MARCH 2013



Project section

Date: July 2013

Benefits:

1. The materials used have high durability and generate a long term solution.
2. The infill rocks, which are the bulk of materials used, were sourced from a local quarry.
3. The imported backfill soil was sourced from a local supplier, which reduced the project cost.
4. The installation was labour intensive and was carried out by unskilled labour.
5. The solution created a condition, which could reduce the flow velocity by its inherent high friction characteristics.
6. The solution was effective in arresting erosion and preventing further damage, thereby protecting the shoreline, of a major road and entrance to a prominent company.



During construction