

**KANAWA SLOPE AND RIVER PROTECTION
AMBON, MALUKU, INDONESIA**

Reinforced Soil Walls and Slope Reinforcement

Problem

Kanawa is located in the North of Ambon Island, Maluku Province of Indonesia. Some areas in the vicinity of the Governor’s property were prone to sliding (see picture before the intervention) and have already experienced shallow landslides during the rainy season. The objective of the Client was to stabilize the area using an environmentally friendly solution which could have given a “green touch” to the landscape.

The total unstable soil height to be retained was approximately 10m. The main technical constraint of the project was the presence of a small river discharging directly at the toe of the slope to be retained. The water was falling straight at the toe of the slope with an uncontrolled hydraulic jump of approximately 10m. It was therefore important also to mitigate the water falling energy in order not to erode the new construction and to protect the slope against erosion.

Solution

The Public Works Department decided to build a Reinforced Soil Slope as retaining structure and a gabion-made drop structure to dissipate the energy of the outflowing water. Maccaferri Team designed the solutions using the in-house tools and software (MacStars W 4.0). The proposed solution consisted of a retaining structure combining Terramesh Systems at the bottom (the first 6m) and a 5m-high Green Terramesh retaining structure on top of that. The channel drop structure was entirely made with Gabions and Reno Mattresses.

As channel bed, at the bottom of the retaining structure, Reno Mattresses were used to limit the erosion potential of the water flow. All the Double Twisted products used were Heavy Galvanized and PVC coated for a higher durability in river applications (as per BS-EN 10223:3-2013). All the stability checks have been carried out using Maccaferri internal software.

After construction, the drop structure experienced some severe floods mixed with debris. The drop structure and the channel were not damaged thanks to the high strength of the materials used as well as they high quality coatings. Reno Mattresses and Terramesh System have shown to be a valid alternative to traditional lining systems and retaining structures used in Indonesia (rip-rap or masonry walls) both in t

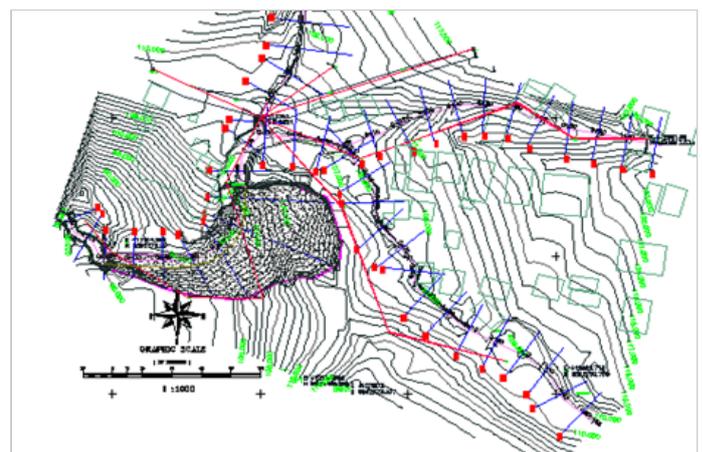
Client: INDONESIAN MINISTRY OF PUBLIC WORKS

Designer / Consultant: PT. Maccaferri Indonesia

Products used (Qty.)

- Terramesh N/A
- Gabion N/A
- Reno Mattress N/A

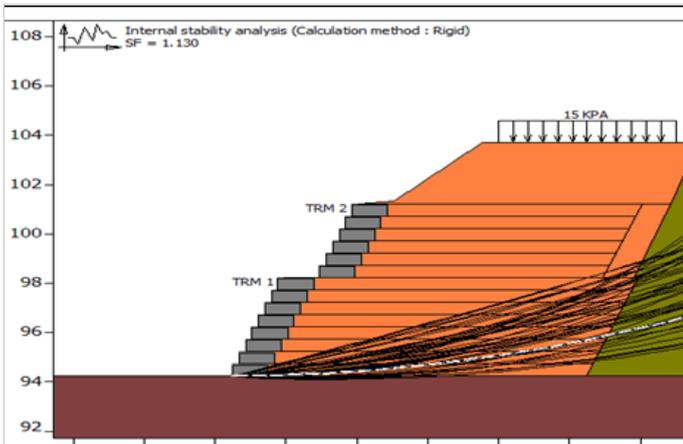
Date of construction: 07/2015 - 12/2015



Project Location



Site condition before the intervention



Design process using MacStars 4.0 software



After work completion



Drop structure working during a flood event