

RIVER BANK PROTECTION AT CITRAGRAN CIBUBUR BEKASI, WEST JAVA, INDONESIA

Slope Protection

Problem

Ciputra, one of the biggest property developers in Indonesia, faced erosion issues for one of their new projects in Cibubur, West Java. Located not so far from the river, Ciputra wanted to protect the access road from erosion and build the slope protection before the landslide come off and harm the area due to the combined action of the water flow causing the erosion of the slope and the heavy rainfalls saturating the clay soil of the slope, furthermore progressive road failure was occurring. Rapid countermeasures to guarantee the safety of the housing area were mandatory.

Solution

Maccaferri as a slope protection specialist provided cost-effective, environmentally friendly, and tailored solutions for the client's problems. Using a 3.5 m high Gabion-made retaining wall, the stability of mass gravity retaining walls relies upon the structural integrity of the units and their filled mass to support unstable earth slopes. In addition, as scour protection of the Gabion wall, Reno Mattresses® were placed at the toe of the gravity structure. A 7m high of Terramesh® on the top of the structure is used as a reinforced slope to make the slope more stable.

Maccaferri provided Terramesh® because it combines the flexibility of soil reinforcement with the benefit of a modular system. Completed with MacGrid® WG 15 as the primary reinforcement, it enables the soil to perform better than it would in its reinforced state and accommodate greater loads as well as stand at steeper angles.

Soil slopes are subject to continuous erosion forces, whether natural or caused by man. For that reason, some form of erosion control was required. Maccaferri used MacMat® for the long-term erosion control to facilitate the re-establishment of vegetation on the slope. MacMat® is very helpful to decelerate the water flow during rainfall.

All the stability checks were performed using the internally developed Maccaferri software (MacStars® W). The retaining structure stability was checked under both static and seismic conditions.

Furthermore, the stability during soil excavation and construction phases has been verified.

The construction works of the retaining wall lasted around 4 months.

Client: PT Ciputra Development Tbk

Designer / Consultant: PT Maccaferri Indonesia

Products used (Qty.)

- Terramesh	n/a
- Reno Mattress	n/a
- MacMat HS	n/a
- MacGrid WG	n/a

Date of construction: 06/2017 - 09/2017



Slope condition before installation



Installation of Reno Mattress® as scour protection



Installation of Terramesh®



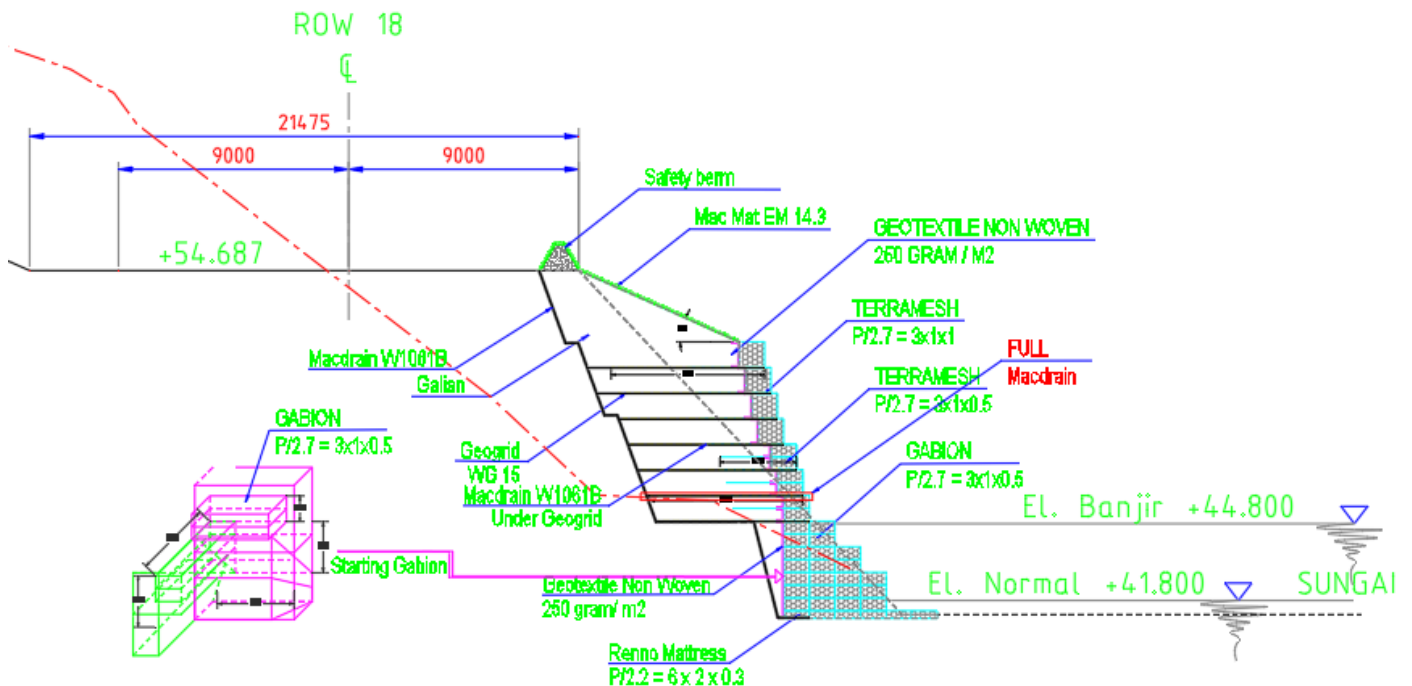
Installation of MacGrid®



Installation of MacMat® as erosion control



Finished construction



Typical cross section of the structure

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