MACCAFERRI

CASE HISTORY

CH/INT/PH/RWSR037 - Rev: 01, Sep16

SYCAMORE HEIGHTS SLOPE PROTECTION

TAGAYTAY MIDLANDS, CAVITE, PHILIPPINES

RETAINING WALLS & SOIL REINFORCEMENT

Product: MacGrid®, MacTex®, MacDrain®

Problem

One of the recent developments in Tagaytay Midlands involves construction of the Sycamore Heights, an Asian contemporary themed community fronting the famous Taal Lake in Cavite, Philippines. The development was divided in several phases. The first phase of the development required a 420m-long slope protection system along its boundary line which is directly adjacent to an existing creek. The slope to be protected has varying heights from 5m to about 20m, where the major access road of the project is located.

Solution

In close coordination with the project consultant, TCGI Engineers, and the owner Belle Corporation, Maccaferri assisted in the design of a slope protection system that would offer economy as well as technical performance.

A soil reinforced slope (mechanically stabilised earth) using Maccaferri MacGrid® geogrids as soil reinforcement were evaluated and proposed to the client. A wrap-around fascia system would provide the necessary economy. At the foot of the slope, where storm water run-off would need management, Maccaferri gabions and Reno Mattresses were proposed.

The proposal met the Owner's requirements including budget and was duly selected for construction.

Aside from its ease of construction and being a cost-effective alternative to other retaining systems, another distinct advantage of using Maccaferri geogrids is their flexibility to accommodate complex slope geometry requirements. Furthermore, the slope face is designed to vegetate, enabling it to blend into the existing scenery.

In wrapped-face reinforced soil slopes, the MacGrid® geogrids are placed horizontally into position and structural backfill is placed and compacted upon them. The face of the slope is held in place by a temporary support and the geogrid is wrapped back around the layers of compacted fill, enveloping it. In this project, topsoil contained in soil bags were placed immediately behind the geogrid fascia to enable vegetation to establish on the slope face.

During construction of water control structures, January 2014

During construction of reinforced soil slopes, January 2014

Client:

BELLE CORPORATION

Main contractor:

M.B. MALIGAYA CONSTRUCTION

Designer:

TCGI ENGINEERS

Products used:

MACGRID®, MACTEX®, MACDRAIN®, GABIONS, RENO MATTRESS®

Date of construction

Nov 2013 - Sept 2014

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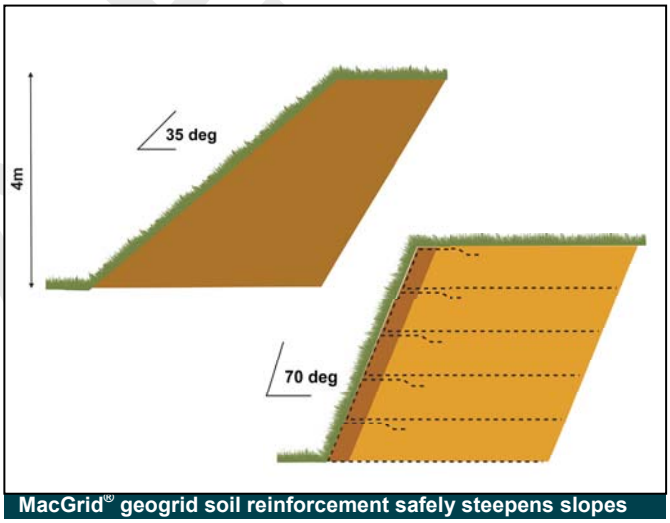
During construction, March 2014

Subsequent layers of MacGrid® are placed consecutively, and backfill compacted to increase the height of the structure. Maccaferri MacGrids are high quality polyester geogrids with a polymeric protective coating providing good long-term performance.

In common with other retaining wall solutions, reinforced soil structures require consideration of storm and ground water management. This is to prevent the structural backfill becoming saturated and weakening.

MacDrain® chimney and subsoil drains were included within the structural backfill. These drainage geocomposites feature a 3-dimensional monofilament matrix, sandwiched between two polypropylene filtering geotextiles. The geotextiles prevent fine soil material from clogging the 3d drainage matrix.

These connected into the site stormwater management system, which in this case included gabion and Reno Mattress hydraulic control structures.



MacGrid® geogrid soil reinforcement safely steepens slopes

Structure nearing completion, August 2014

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