

LAGUNA GATEWAY INLAND CONTAINER TERMINAL SAN CRISTOBAL, CALAMBA CITY, LAGUNA, REGION IV-A, PHILIPPINES

Slope Protection

Problem

ICTSI upgraded and expanded its Laguna Gateway Inland Container Terminal, a container yard in San Cristobal, Calamba City, Laguna. Over the years, the boundary of the property adjacent to the San Cristobal river has been reduced due to erosion.

Based on the conducted flood study by the Project Consultant (AMH Philippines, Inc.), it has been found that the upstream and downstream portions of the perimeter adjacent to San Cristobal river required immediate rehabilitation against scouring and erosion.

Solution

After several discussions with ICTSI engineers and the Project Consultant, Maccaferri's filter point grout mattress (MFM Type II) was recommended at the lower portion of the slope and Maccaferri's reinforced 3D geoblanet (MacMat R) was proposed for the upper slope portion.

The toe of the bottom slope was further protected with articulated blocks to address scouring. Also, the bottom slope with MFM Type II was lined first with compacted gravel at 1V:2H inclination. The upper slope portion with MacMat R was maintained at inclination of 1V:1.5H.

Due to the longer slope length where the MacFormer grout mattress was installed, the grout was pumped at slower rate to minimize bursting of the woven geotextile, and the grout was maintained to have higher slump to ensure flowability inside the mattress.

Besides being a cheap alternative to other erosion control systems, another distinct advantage of MacFormer grout mattress is its fast constructability. And with MacMat R, its ability to be fitted to slope geometry requirements is known to be its biggest advantage, along with its ability to promote vegetation in the slope due to its moisture-retention capability during the dry season, whilst serving permanently as an erosion protection material.

Client: International Container Terminal Services, Inc.

Designer / Consultant: AMH Philippines, Inc.

Contractor: AUHK General Contractor, Inc.

Products used (Qty.)

- MacFormer MFMII	N/A
- MacMat R - Steel	N/A
- MacTex Non-woven Geotextile	N/A

Date of construction: 06/2016 - 11/2016



Before Construction



During Construction



During Construction



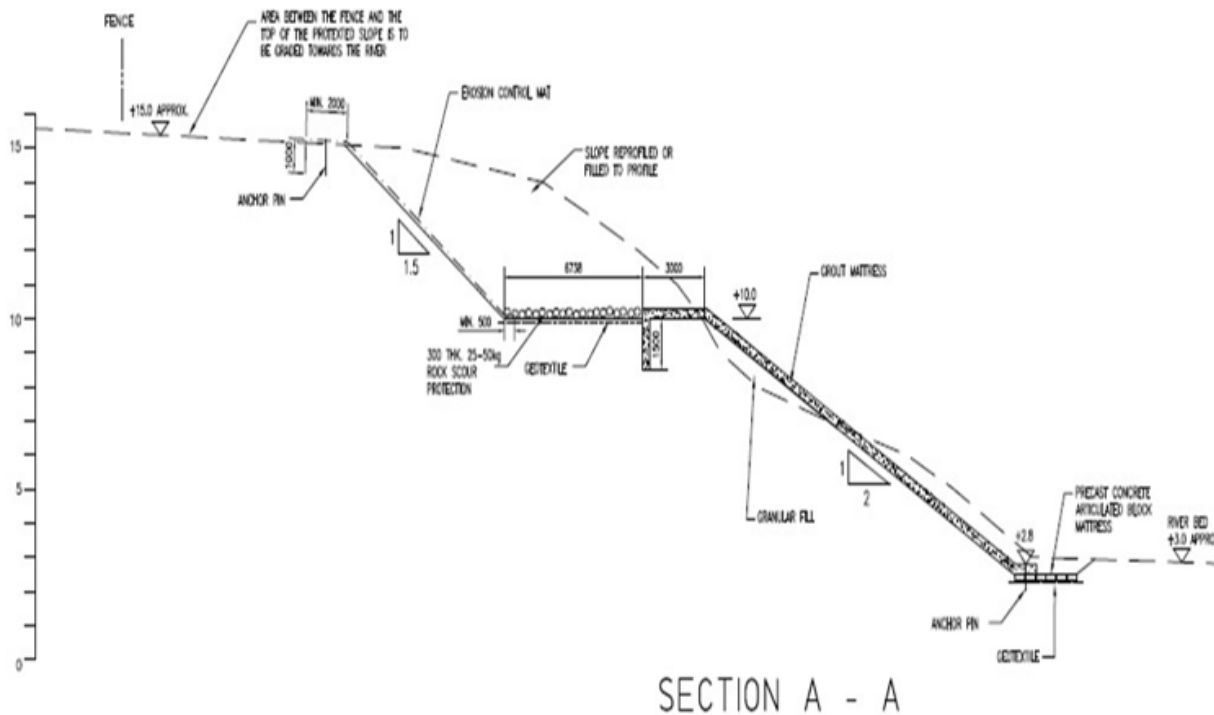
During Construction



Vegetation has established after construction.



A month after construction, vegetation has established in the slopes.



Typical Cross Section Detail

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