

DAY STREET PREFILLED GABION WALL EAST MAITLAND, NEW SOUTH WALES, AUSTRALIA

ENVIRONMENTAL/GEOTECHNICAL ENGINEERING/GABION WALLS

Product: Maccaferri Galmac+PVC Coated Gabions

Problem

The railway cutting between High Street and George Street in East Maitland was showing evidence of surface undulations due to erosion and undercutting. A 124m long, 4m high retaining wall was required to stabilise the batter and provide adequate protection to the badly eroded slope. Due to the proposed wall being located adjacent to the main Northern Railway Line and within a suburban area with historic significance, many considerations such as construction time, access, efficiency of construction, prolonged performance and aesthetic quality were a prerequisite of the chosen solution. Several retaining systems were considered such as concrete walls, spray concrete facia, soil nails with various facings and a mass gravity Gabion wall. A no fines mass concrete block wall was also initially considered but the high cost, requirement for concrete backfill and base slab and inability of this system to accommodate potential differential settlements made it unattractive to the contractor.

Solution

A woven mesh Gabion wall was selected as the system of choice. The Gabions were able to meet all the criteria as well as show a significant economical advantage over the other considered systems. The Galmac (95% Zinc 5% Aluminium Mischmetal Alloy) + PVC coated units addressed any potential long term durability concerns as Maccaferri have technical documentation stating that in dry land applications, the PVC coated mesh may be considered to have a life expectancy of 120 years. Their inherent flexibility, permeability and the fact that they don't typically require stringent base preparation, made the Gabion option stand head and shoulders above the others. Due to limited space on site it was a requirement that the Gabion units would need to be pre-filled.

An innovative way of filling the Gabions off-site and lowering them into position was presented by Maccaferri and accepted by the ARTC. The procedure involved the placement of a 1m long PVC pipe within each Gabion compartment. The Gabions were then packed with rock and preformed braces ensured that the Gabions held their shape. Slings were then inserted through the pipes to ensure that the units would be picked up from the bottom to limit deformation. The wall was completed within the time frame allowed and the ARTC stated that they were extremely happy with the outcome and would definitely utilise this procedure on future works.

Client name:

AUSTRALIA RAIL TRACK CORPORATION (ARTC)

Main contractor name:

DARACON RAIL

Consulting engineer:

Lindsay & Dynan Consulting Engineers

Product used:

GALMAC+PVC COATED GABIONS

Construction date:

DEC 2005



Before Construction

Date: Sep 2005



Packing Procedure - Note Plastic Pipes

Date: Nov 2005



Lifting Procedure - With Slings and Frame

Date: Nov 2005

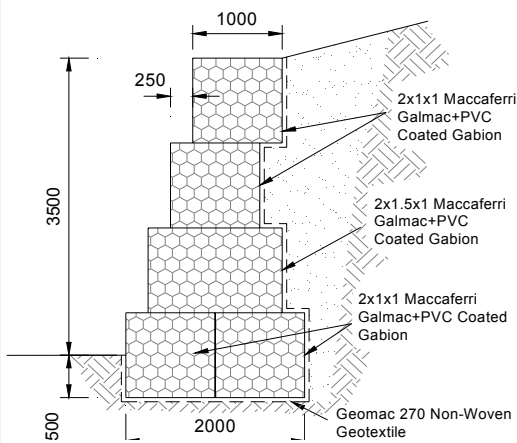


Lifting Procedure Date: Nov 2005



During Construction Date: Dec 2005

The Maccaferri GAWACWIN software was used to verify the stability of the Gabion wall



Project Typical Section



After Construction

Date: Mar 2007

Maccaferri Pty Ltd

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