MACCAFERRI

CASE HISTORY

Ref: AUS / CH / INT/ RS001-Rev 01, June '13

PARABURDOO PRIMARY STOCKPILE WALLS

PARABURDOO, WESTERN AUSTRALIA

GABION RETAINING WALL

Product: Double Twist mesh gabions

Problem:

Rio Tinto's Paraburdoo open pit mine, which began operations in 1972, is located 80km south of Tom Price in the Pilbara. The combined production capacity of the Paraburdoo, Eastern Range and Channar mines is 20 million tonnes of iron ore. The ore is processed on site before being loaded onto rail cars and transported to Dampier.

Solution:

In 2010, Rio Tinto contacted Maccaferri's Australasian partner, Geofabrics Australasia Pty Ltd, regarding a solution to replace the two 7m high timber-sleeper primary stockpile walls. The existing walls were showing signs of distress and it was decided to investigate options to replace the walls with a suitable system. In 2011, consulting engineers Parsons Brinckerhoff, compiled a feasibility report for the replacement walls which included Terramesh® (Gabion faced reinforced soil system) and mass gravity gabion walls as viable options. Rio Tinto evaluated the systems and a decision was made to proceed with mass gravity gabion walls.

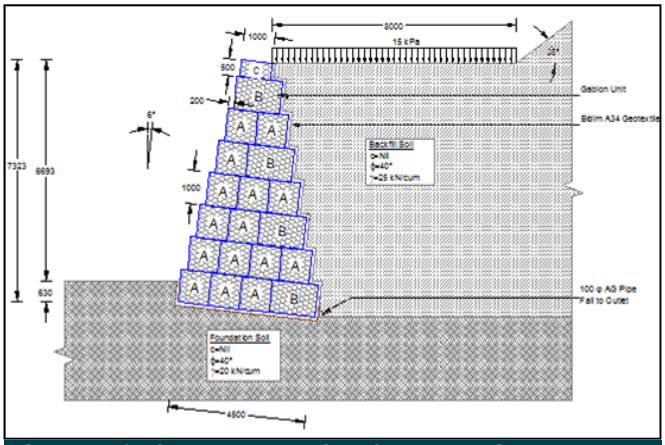
Geofabrics Australasia provided technical input for long term durability of the gabion units, construction methodology, rock fill specification and design parameters of the gabion system. To fulfil the design life requirement, GalMac® (95% Zinc/5% Aluminium Alloy) and PVC coated Gabions were specified for the works.

Austral Construction Pty Ltd, a specialised national contractor for Australia's mining and port infrastructure projects, was awarded the project. They completed the project to a very high standard within the project program and safety requirements.

In addition to the gabions, Geofabrics Australasia also supplied: geotextile separation layer behind the gabion wall; preformed bracing wires to assist in maintaining straight gabion faces; stainless steel fixing rings (and pneumatic lacing tools) to speed up the installation and drainage pipe. A geosynthetic clay liner was also supplied and installed horizontally behind the wall to prevent potential saturation of the backfill.

The original timber north wall

The terraced north wall showing signs of distress



The Maccaferri GawacWIN engineering proposal

Client:

RIO TINTO

Contractor:

AUSTRAL CONSTRUCTION PTY LTD

Products used:

1300m^3 DOUBLE TWIST GABIONS

Date of construction

2012

MACCAFERRI

The completed 7m high mass gravity gabion north wall

The project tender documents stated that the successful contractor would need to provide evidence of experience and participation in theoretical and practical installation training for gabions. Geofabrics Australasia Pty Ltd provided this service, prior to commencement of the gabion wall.

For quality control purposes it was a prerequisite that a sample gabion 'trial panel' was installed on site to establish the acceptable method and standard to which all subsequent gabions would be constructed.

The Rio Tinto project engineers were very pleased with the final outcome and in particular the speed of installation; with a double shift, 1300m³ of gabions took only 20 days to place and fill.

Maccaferri double twist woven mesh gabions produce cost-effective and tough retaining structures. With BBA (British Board of Agrèment) Certification with a recommended design life of up to 120 years, Maccaferri gabions are also proven to be durable and long lasting. The flexibility of woven gabions enables the retaining structure to accommodate differential settlement without sustaining damage, or compromising the stability of the wall.

Maccaferri gabions are manufactured with mechanical characteristics that exceed the requirements of EN 10223-3. The steel wire and mesh are manufactured and coated in accordance with EN 10223-3 and EN10244-2 respectively.

Gabion assembly demonstration

The stepped arrangement of the gabion side wall

Officine Maccaferri S.p.A. Global Headquarters
Via JF Kennedy 10, 40069 Zola Predosa (BO) - Italy
T: (+39) 051 6436000 F: (+39) 051 236507
E: comes@maccaferri.com
www.maccaferri.com

Bureau Veritas Certified Quality System Company with ACCREDIA and UKAS accreditation