

SAFETY IMPROVEMENTS IN BORAL QUARRY ADELAIDE, SOUTH AUSTRALIA

ROCKFALL PROTECTION - CATCH FENCES

Product: CTR 05/07/B 500kJ - ROCKFALL CATCH FENCE

Problem:

Boral Resources (SA) Limited's Greenhill Quarry is located on the south-western hillside of Slape's Gully adjoining Stonyfell Quarry in the Adelaide Hills. In the quarry there is a 90m high rock-face that was excavated in the 1940s above an area where trucks need to turn to dump materials into a conveyor feed bin.

The face was excavated using rudimentary techniques and in the last few years the blocky rock exposed in the face has begun to show evidence of deterioration. As part of an ongoing campaign of risk reduction, Boral contracted Rocktest Consulting to recommend solutions that would reduce the risks associated with any rock falls that occurred.

Solution:

A detailed investigation was carried out involving a quantitative risk assessment and numerical modelling. There were two options initially considered; to install a flexible rock fall barrier (catch fence) to give protection for trucks and workers below, or to install a 40 m long x 15m high Maccaferri drapery netting over the higher section of the rock face. It was decided that the most cost effective, technically sound solution would be the installation of a Maccaferri flexible rockfall barrier, 25m above the toe.

A 3m high, 40m long Maccaferri 500KJ barrier was selected.

This barrier has been full scale tested and certified by the University of Bologna DISTART Department in accordance with the **ETAG 027 Guideline** directions (Falling Rock Protection Kits). The full scale crash test involved a 1610kg boulder impacting the barrier at 25.6m/s. Maccaferri are able to provide flexible rockfall barriers up to 5000KJ (16,200kg boulder travelling at 25.77m/s).

Retaining Wall Solutions Pty Ltd, a local contractor with the necessary qualifications and experience, completed the challenging installation well within the allocated timeframe.

Maccaferri CTR barriers offer numerous advantages compared to other systems in the marketplace:

- It is supplied in a single kit format; all components to build the fence are provided from the factory.
- The loads transferred to the ground anchors during impact are lower with the Maccaferri fence than with other barriers. This reduces the anchor capacity required, saving costs during installation

Client:

BORAL RESOURCES (SA) LIMITED

Main contractor:

RETAINING WALL SOLUTIONS PTY LTD

Designer:

ROCKTEST CONSULTING

Products used:

CTR 05/07/B 500KJ FLEXIBLE ROCKFALL BARRIER

Date of construction

DEC 2007



Drilling for the posts

Date: Dec 2007



Drilling for the anchors

Date: Dec 2007



Post installation

Date: Dec 2007



Completed barrier installation works Date: Oct 2008



Completed barrier installation works Date: Oct 2008



Barrier foot-plate detail Date: Oct 2008



Completed barrier installation works Date: Oct 2008

- Maccaferri CTR barriers deflect less than other systems in the market. The fence contains the rock impact and stretches less; this means the fence can be constructed closer to the facility you are trying to protect, saving valuable land space.
- The components of a Maccaferri CTR fence are lighter than other barriers, making installation safer, quicker, easier than other systems.
- The patented compression brakes within the system are simple and cheap to replace in the event of an impact. They are not susceptible to 'sticking' of the device due to deterioration, rust on cables, inconsistency of galvanising and changes in temperature, which can occur with traditional 'friction' style cable brakes.



The patented braking system, before and after impact

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