

SAFETY IMPROVEMENTS TO HIGHWAY ADELAIDE, SOUTH AUSTRALIA

ROCKFALL PROTECTION - CATCH FENCES

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

Problem:

The head of the 20km long Torrens River Valley is located approximately 12km north-east of the centre of Adelaide at the base of the western slopes of the Mount Lofty Ranges. The deeply entrenched river system creates a rugged topography with valley walls rising up to 250m above the river below. Gorge Road was originally excavated in the floor of the valley in the mid 1800s as one of only few access roads across the north-eastern section of the Ranges. The road was used for bullock teams travelling to the small townships beyond. It now handles over 800 vehicles per day in each direction; the vehicles using it to service the light industry and housing developments that have developed throughout the Ranges.

In 1969, the Kangaroo Creek Dam was constructed 8.5km up the valley. Part of this project involved constructing a 5.6km long diversion road adjacent to the reservoir up to 75m above the valley floor. The road has a 6.5m carriageway and an average 1.8m wide shoulder. Cuts immediately adjacent to the road are up to 50m high however the rock faces above them often extend for twice this height. Many of the cuts were constructed without benches and with virtually no support, reinforcement or rockfall control although the kinematic characteristics of the rocks warranted their use.

The strongly foliated schists within the cuts tend to be even more susceptible to weathering than the quartzo-feldspathic gneisses in the older section of the road. Even though they have been exposed for considerably less time than the latter rocks, rockfalls along the new section of road have regularly occurred primarily during periods of heavy or prolonged rainfall. Damage to the carriageway is evidence that the fallen rocks have come from high up and have dissipated significant kinetic energy upon impact. The narrow or non-existent road shoulders have been insufficient to prevent the rocks from ending up on to the carriageway. The narrow pavement width and/or winding route can make it difficult to negotiate around fallen rocks.

Solution:

To address the rockfall problem on a particularly problematical section of the road, the State road authority, Department for Transport, Energy and Infrastructure, commissioned a 500kJ Maccaferri rockfall barrier to be installed. The 60m long barrier was installed 5m above the road. Sections of the barrier were 2m and 3m high to suit the

Client:

TRANSPORT SA

Main contractor:

RETAINING WALL SOLUTIONS PTY LTD

Designer:

ROCKTEST CONSULTING

Products used:

CTR 05/07/B 500KJ FLEXIBLE ROCKFALL BARRIER

Date of construction

MAY 2008



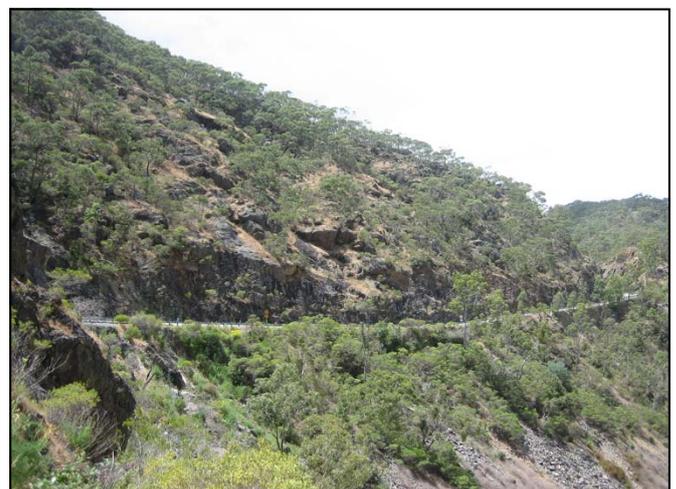
Evidence of rock detachments

Date: Nov 2007



Evidence of rock detachments

Date: Nov 2007



Gorge Road Cutting

Date: Nov 2007



Catch fence conformance test site facility

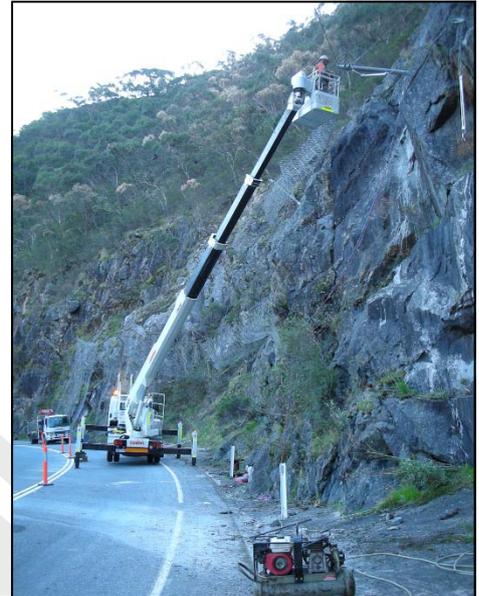
local topography. This barrier has been full scale tested and certified by the University of Bologna DISTART Department in accordance with the **ETAG 027 Guideline** directions (Falling Rock Protection Kits). The full scale crash test involved a 1610kg boulder impacting the barrier at 25.6m/s. Maccaferri 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 double twisted woven mesh rock fall netting was draped below the barrier to ensure that rocks did not roll out from under it where it crossed low points in the topography. The specifications and location for the barrier and site supervision were provided by Rocktest Consulting. The complex construction work was carried out using boom lifts and roped access techniques by Retaining Wall Solutions in only three days once the drilling was completed.

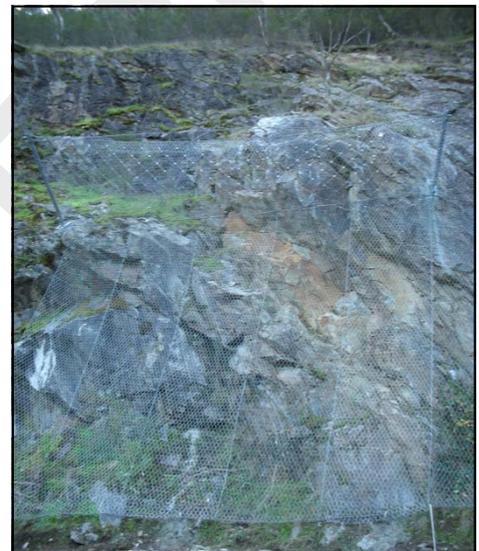
Maccaferri CTR barriers offer numerous advantages compared to other systems in the marketplace:

- 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
- 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.



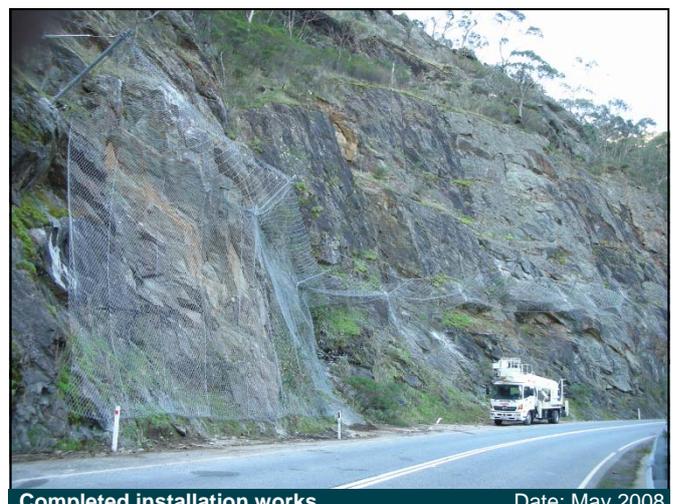
During installation

Date: May 2008



Barrier with rockfall drapery netting

Date: May 2008



Completed installation works

Date: May 2008

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