

Project: Rubicon Gold Mine
 Date: January 2011
 Client: Barrick (Kanowna) Limited
 Contractor: Rocktech (Anchor Installer)
 Location: Eastern Goldfields, Western Australia

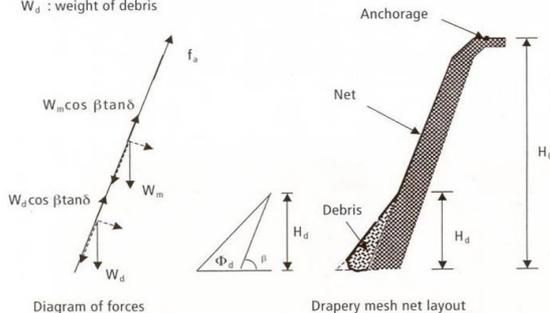
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Rockfall Protection – Rockfall Netting

The Kundana gold deposit is situated 21 kilometers west of Kalgoorlie in the Eastern Goldfields of Western Australia. The Kundana gold mine itself is made up of three individual gold mines; Hornet, Rubicon and Raleigh.

In late 2010, Barrick Gold contacted Geofabrics Australasia to request a design suggestion for 18,000m² of Rockfall netting drapery for a number of their pit slopes at Rubicon Gold Mine. Preparation was being made for a number of portal sites for a new underground mining operation. The suggestion was provided to Barrick Gold using the MACRO 2 design software. The software uses the formulations proposed by Muhunthan B. et al. (Washington State DOT, 2005).

W_m : weight of the net
 W_d : weight of debris



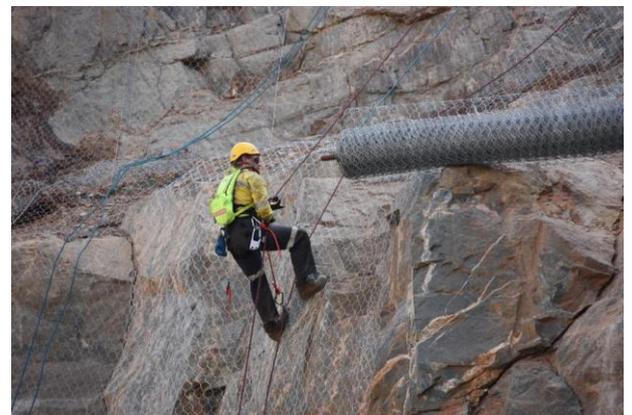
Although it was proposed that the drapery should not be anchored at the toe, debris accumulation between the mesh and slope can occur on unsecured systems and must not be overlooked. According to industry standards, all draperies should be designed based on debris accumulation at the toe.

A number of different mesh systems were considered but based on the slope heights, slope inclinations, and expected debris accumulation, Barrick Gold ultimately selected double twist woven Rockfall netting as the drapery system most suited to their requirements. They also considered important aspects like; ease of installation, corrosion protection and ability to withstand unravelling in the event of wire breakage. This was a real threat given the potential for fly rock damage during blasting. It's \$/kN rate makes for an extremely cost effective system.

For over half a century, double twist mesh has been used extensively both internationally and locally on infrastructure and mining projects.



Custom manufactured roll lengths and widths



Rope access techniques to connect adjacent rolls together



Anchors at the crest of one of the slopes



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The Rockfall netting draped over five benches – roll lengths in excess of 120m long can be supplied if required



Portal protection – note the fly rock damage to the netting in a couple of locations caused by close proximity blasting. Unlike single twist (fencing type) mesh, the double twist technology ensures the mesh structure cannot unravel in these areas and tensile strength is maintained

How Rockfall Protection Systems work.

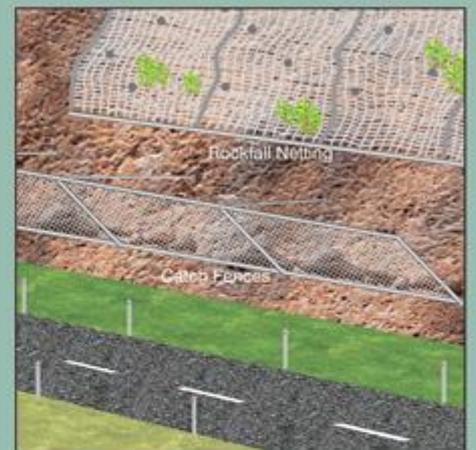
Rockfall protection systems are a crucial element in the design and maintenance of road and railway infrastructure networks and keep users safe from unstable rock slopes.

It's important to make a distinction between the different types of **Rockfall protection systems** and ensure the most suitable system is selected.

Secured drapery and surface stabilisation systems are designed to work in conjunction with anchorages, to increase the stability of the unstable surficial layer of the rock slope. The stiffer the mesh, the more effective it is in limiting propagation of the instability.

Passive systems (draperies, catch fences and rockfall embankments) do not affect the process of rock detachment. Instead they focus on containing and intercepting falling and sliding debris, and thereby averting any danger for road or rail users.

Geofabrics offers a range of **rockfall protection systems**, including hybrid, attenuator and debris flow barriers and supports our systems with design advice and installation support.



Rockfall Protection Systems



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