ROCKFALL PROTECTION

Product: Double Twist Rockfall Netting

Problem
The improvement to the Nerang Interchange Junction at Exit 73 on the Pacific Motorway is one of many projects within the AUS$420M upgrade of the Pacific Motorway from Nerang to Tugun. The AUS$45M interchange upgrade included a new four lane overpass, improved on and off ramps, cycleways and upgraded connector roads.

Workers from the main contractor, Seymour Whyte, were to construct a reinforced concrete retaining wall to support a rock cut and steep slope above. The existing steep slope was eroding and rocks were detaching and falling onto the work-area below. The occupational health and safety risks to the workers needed addressing.

Solution
A simple rockfall drapery system was selected as the most cost effective solution that would maintain a safe working area for the workers. Drapery netting consists of double twisted steel wire mesh, secured to the rockface at the top and bottom of the slope. The purpose of the drapery is to act like a curtain, hanging over the face of the rock slope. Any rock debris that detaches from the face of the rock slope will be captured by the mesh, and it will fall harmlessly and in a controlled manner to the foot of the slope behind the mesh.

Although only temporary netting, the mesh would still be exposed to the same forces as a permanent solution.

12mm diameter steel rebars were grouted 400mm into the rock as top anchors. The bottom anchors consisted of steel bar, grouted 300mm into the weathered rockface.

As the retaining wall work progressed along the highway, the protective drapery mesh was moved along the slope as well. Adjacent panels of rockfall protection netting were connected together using Spenax Rings which allowed the mesh panels to be disconnected and reconnected more rapidly.

This approach was not only very successful in providing site safety for the operatives on this important infrastructure project, but cost effective compared to the other solutions considered.

Client: QUEENSLAND MAIN ROADS
Main contractor: SEYMOUR WHYTE
Designer: SMEC
Products used: DOUBLE TWIST ROCKFALL NETTING
Date of construction SPRING 2009
Maccaferri mesh drapery systems have been in use for over 50 years to protect slopes vulnerable to erosion. The mesh manufactured by Maccaferri is double twisted steel wire mesh, with heavy Galfan galvanising and can be manufactured with additional PVC coating. The product is BBA Certified to offer a design life of up to 120 years.

The double twist mesh offers significant advantages over other meshing systems, for example, welded mesh, or single twisted mesh systems;

- The double twist mesh is flexible and can conform to the rock slope if needed.
- It is easy to unroll on the rock-face, unlike single twist (chain link) style meshes, which can get caught up on themselves during deployment.
- If wires within the mesh are damaged or broken, the double twist construction will not unravel and maintains 85% of its strength even when one wire is broken. Single twist meshes unravel when damaged.
- Adjacent panels can be connected together quickly and easily using pneumatic fixing tools. These tools secure fixing rings around the larger diameter selvedge wires securing them together.
- The drapery mesh is available with tensile strengths up to 160kN/m for applications where high slopes, or large amounts of debris are expected.
- Maccaferri MacRO 2 software assists the designer in selecting the most appropriate drapery system for their slopes.