



GEOFABRICS CASE STUDY



ROCK-FACED WIRE MESH SYSTEM SECURES LANDSLIPS AT EUREKA BEND

PRODUCTS USED

Wire Mesh System With Rock Face

- A modular wire mesh system, designed to create angled rock-face finish at angles up to 87 degrees
- Manufactured for an expected working life of up to 120 years
- High-grade polymer-coated wire mesh provides exceptional corrosion resistance and structural strength, ensuring reliable performance in harsh climates
- Suitable modular facing unit combined with geogrid reinforcement for structures in excess of 30m in height

Reinforced Erosion Control Mat

- A three-dimensional permanent reinforced erosion control mat that provides surface reinforcement, limits erosion and promotes re-vegetation
- Protects seeded topsoil from washout
- Available in various styles and thickness to meet the needs for the several different applications and situations
- Facilitates the installation on steep slopes using soil nails and anchors
- Use of a geocomposite reduces 50% of the installation cost

PROJECT DESCRIPTION

In November 2006, a major slip formed along State Highway 60 (SH60) on the western side of Takaka Hill, a mountain pass at an elevation of 791 metres above sea level, located at the south eastern end of Golden Bay in New Zealand's South Island. As the only road in and out of Golden Bay, it was imperative that the highway remained open for residents and tourists.

The slip occurred directly below a tight hairpin bend known as Eureka Bend, a switchback corner on SH60 near the base of Takaka Hill, creating a major safety hazard. As a short-term measure, a temporary Bailey bridge, a versatile kit-form bridge system that can be quickly erected and dismantled, was installed until the road could be reinstated with a long-term solution to address the landslide.

The work to restore Eureka Bend required dewatering, establishing a strong foundation base, drainage measures, reinforcing the hillside using a steep Reinforced Soil Slope (RSS), a type of Mechanically Stabilised Earth (MSE) structure, followed by construction of a new pavement.

OUR SOLUTION

Geofabrics New Zealand worked with the consulting engineer to design a wire mesh system with a face angle of between 65-70 degrees from the horizontal. This provided sufficient space to accommodate lengths of Tensar RE500 geogrid, which served as the primary reinforcement for constructing the RSS. The solution minimised costs and earthwork volumes, while saving construction time by reducing backfill requirements.

Bidim® Green non-woven geotextile was used as a separation layer between rockfill that formed the front face and the soil backfill. The wire mesh system was supplied as a modular unit with triangular brackets set at 70 degrees angle. The front face was rock-filled to achieve optimal fit and minimise maintenance.

Largest
rock-faced structure
in the Tasman and
Golden Bay region

65°-70°
slope support

The stability analysis for both static and seismic load cases was carried out using a design software. The contractor removed the landslip site. Stability analysis for both static and seismic load cases was carried out using design software. The contractor, Fulton Hogan, removed the landslip material, and the exposed face was trimmed. Soil nails were installed at varying lengths from the top down, concurrent with excavation and prior to the construction of the RSS. A reinforced erosion control mat was applied to the face between the nail heads and the cut slope profile, described as a 'flexible structural facing option' according to CIRIA Report C637. Drainage measures were also implemented to intercept groundwater, including pipes embedded into the slope and behind the wall.

The site sits well aligned with the surrounding natural terrain and is visible on the approach from the Upper Takaka valley heading east towards Nelson. It is the largest rock-faced wire mesh structure in the Tasman and Golden Bay region, standing as a testament to those involved in its design and construction, and is a valuable asset to NZTA (New Zealand Transport Agency). Every effort was made to minimise inconvenience to road users and the local community.



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