



GEOFABRICS CASE STUDY



SECURING LANDSLIPS WITH MINERAL TERRAMESH AT EUREKA BEND

PRODUCTS USED

MACCAFERRI MINERAL TERRAMESH®

- An environmentally friendly modular system used to form rock faced Reinforced Soil Slopes (RSS)
- Consists of angled front face made of prefabricated units of polymer coated double twisted wire mesh (8x10 type), stiffened with a welded mesh panel and fitted with triangular support brackets.
- Structures can exceed 20m in height when combined with geogrids
- Enhanced durability compared to standard weld mesh systems due to the combined GalMac® and PoliMac® coating
- Quick and simple installation process that provides cost savings compared to wraparound systems where greater geogrid quantities are required
- Independently verified and tested with BBA – HAPAS certification.



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📍 LOWER NORTH ISLAND, NEW ZEALAND

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 791m above sea level, located at the south eastern end of Golden Bay in New Zealand's South Island. It is the only road in and out of Golden Bay, and it was imperative that it remained open for residents and tourists.

The slip was directly below a tight hairpin bend, Eureka Bend, which is a switchback corner on SH60 near the bottom of the Takaka Hill, creating a major safety hazard. A temporary Bailey Bridge, a versatile kit-form bridge system that is quick to erect and dismantle, was installed as a short-term solution until such time that 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) and a new pavement.

OUR SOLUTION

Geofabrics New Zealand (GNZ) worked with consulting engineer GHD to design the Maccaferri Mineral Terramesh system having a face angle of between 65-70 degrees from the horizontal. This created sufficient room to accommodate the lengths of Tensar RE500 geogrid that provided the primary reinforcement for the construction of the RSS. This solution resulted in minimising costs and earthwork volumes and saved construction time by reducing backfill requirements.

Bidim® non-woven geotextile was used as a separation layer between rockfill that formed the front face and the soil backfill. Maccaferri Mineral Terramesh was supplied as a modular unit with triangular brackets set at 70 degrees angle whose front face could be either vegetated or rock filled. The later was selected for best fit and low maintenance.

PRODUCTS USED

MACCAFERRI MACMAT® R

- A three-dimensional permanent reinforced geomat 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

The stability analysis for both static and seismic load cases was carried out using MacStars software. The contractor, Fulton Hogan removed the landslip site materials, and the exposed face was trimmed. Soil nails were installed at various lengths from top down, concurrent with the excavation and prior to the construction of the RSS. Maccaferri MacMat was also used at the face between nail heads and the cut slope profile, a 'flexible structural facing option' according to CIRIA report C637. Drainage was also installed to intercept any groundwater via pipes directly into the slope as well as drainage 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 Mineral Terramesh structure in the Tasman and Golden Bay region and stands as a testament to those involved in the 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.

Largest Mineral Terramesh structure in the Tasman and Golden Bay region

Mineral Terramesh face
angled horizontally at
65° - 70°
to facilitate RSS
construction



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