

Travaux de reconstruction du Chemin d'Avraire – Saint-Dalmas-de-Tende, 06

Tende



TYPE OF PROJECT
Surface Strengthening And Support

YEAR OF CONSTRUCTION
2025

CLIENT
SMIAGE

CONTRACTOR
Razel-Bec / Garelli

DESIGNER
SMIAGE

PROD. RELATED

MacArmour & SteelGrid (MacArmour® 30x30 BIO : 1550,00 M²), TerraMesh (Green TerraMesh® : 309m²), MonoAxial GeoGrids (ParaGrid® 100 : 6 240m²), Drainage Geocomposites (MacDrain W1051 : 3150 M²), Rockfall Barriers (RB 100/UAF H:2m L:50m), Panels (HEA Panels 300/8/16 : 18m²)

Challenge

The reconstruction works on Avraire Road are part of a **G2 PRO geotechnical mission**, following major damage that occurred during **Storm Alex in 2020**, which triggered a landslide in the municipality of **Tende (06)**, at the locality of **Saint-Dalmas-de-Tende**. A detailed study was carried out to identify the causes of instability and to propose appropriate stabilization solutions to ensure the long-term safety of the road and its users.

The affected ground conditions are characterized by a complex geology, consisting of superficial **sandy-clayey formations and rock blocks**, which are particularly sensitive to variations in water content and erosion processes, thereby increasing the risk of further landslides.

The works include **earthworks and reconstruction of the road using reinforced embankments**, built directly within the riverbed, as well as the installation of **temporary protection measures against rockfall** during the construction phase. A **permanent stabilization of the slope upstream of the new road** is also planned to guarantee long-term stability. The **design service life of the structure is estimated at 50 years**.



Solution

As part of the geotechnical study, **Maccaferri provided technical support to the design office**, particularly for the **design of retaining structures, rockfall protection, and slope stabilization**. This collaboration made it possible to define high-performance solutions, such as the **Terramesh® Green system** and **ParaGrid® geogrids**, fully aligned with the site's geotechnical and hydraulic constraints, for the reconstruction of the road using reinforced embankments.

As the **Terramesh® Green system** is installed **directly within the riverbed**, the toe of the embankment is protected by **rock riprap**, which limits scour caused by river erosion. In addition, an **RB 100/UAF rockfall barrier** was installed upstream of the new road to provide protection against rockfall events with energies of up to **100 kJ**, which may be triggered during heavy rainfall episodes.

Below this rockfall barrier, the slope overlooking the road was stabilized using a **soil nailing system combined with a flexible facing**, specifically **Mac Armour® 30x30 BIO**. The reinforced mesh features a **ZnAl alloy coating (GalMac® C2)** and is factory-coupled with a **coconut fiber biomat**, reducing slope erosion.

The **Terramesh®** and **Mac Armour®** solutions, with their **polymer (PoliMac®)** and **ZnAl alloy (GalMac® C2)** coatings, fully meet the project requirements, particularly in terms of durability, thereby ensuring **long-lasting and reliable protection of the infrastructure**.

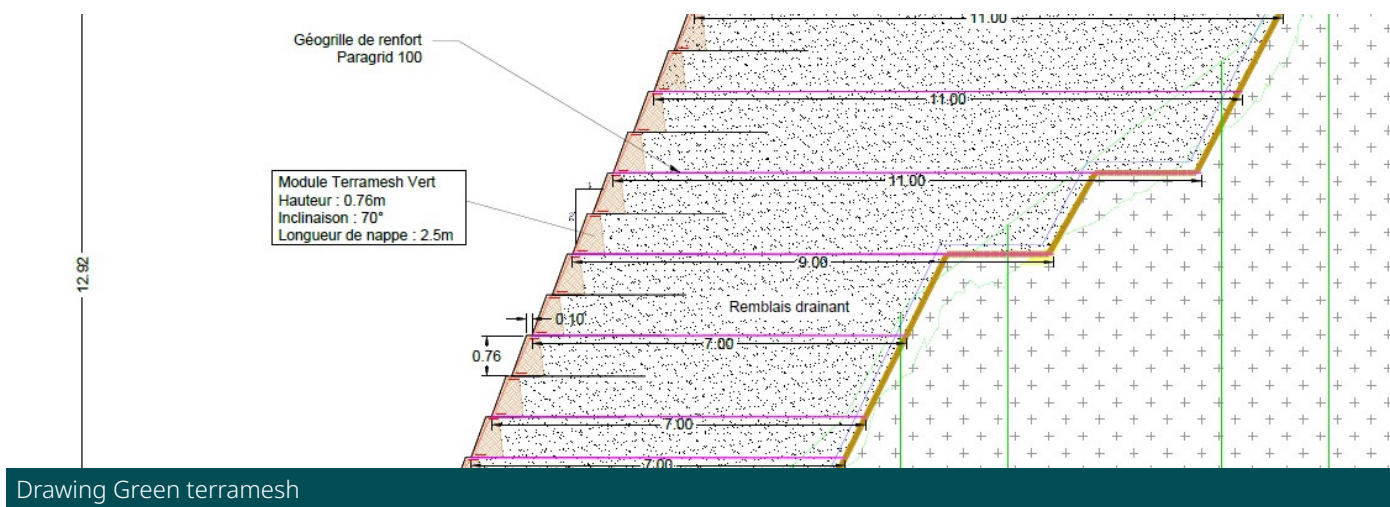




MacArmoMacArmour® 30x30



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