

5,000kJ ROCKFALL BARRIER (BESPOKE) ARVIER (VALLE D'AOSTA) - ITA

ROCKFALL PROTECTION

Product: OM CTR 50/07/A (5000kJ MEL)

Problem

Regional Road SR n.25 (Valle d'Aosta) around chainage km 4.0 have a long history of rockfall problems. In 2010 and 2011 several blocks impacted the road, causing its closure.

In order to protect the road from the rock falls, the technical department of Servizio Sistemazioni Idrauliche e Dissesti di Versante della Regione Autonoma Valle d'Aosta performed a study of the rockfall characteristics. The study suggested a 2,000 kJ barrier with a minimum height of 5 m was necessary.

Solution

The biggest problem was the small distance between the road and the location of the barrier (less than 2.0-2.5 m) which meant no suitable barrier was available on the market for this project. A reduction of the maximum deflection of the rockfall barrier was needed.

Maccaferri were approached by the designers and suggested to increase the energy level of the barrier (up to 5,000 kJ) in order to reduce the deformation of the barrier [almost] to the SEL behavior; additionally to reinforce the chosen barrier by installing cross cables with energy dissipater devices, in order to further decrease the deflection of the fence during impact.

This special configuration of barrier was studied in great detail and subjected to rigorous performance assessments to confirm its ability to give the required low deformation even under the arduous impact and deformation conditions relevant to the site.

In compliance with these requirements a derivative of the OM CTR 50/07/A barrier (5,000 kJ MEL) was installed for 120 m along the roadside wall, with a height of 6m. To reduce the effect of the down-slope deformation a convex alignment was adopted and the designated system - composed of cables and energy dissipating devices - was installed in a X configuration on each span of the fence.

Due to the loose soil present on site barrier foundation design was another problem for the designers.

The up-slope and the lateral anchors were implemented using a double-spiroid cable 18 mm in diameter and 6 m long. They were installed in a 140 mm hole which was reinforced with a proprietary Maccaferri perforated sleeve system in order to avoid the collapse of the face of the hole during anchor insertion and grouting.

The post foundations were realized using 2 micropiles per base plate. Each with a diameter of 76.1 mm and a wall thickness of 10 mm. Their lengths were 5 m and they were installed into 120 mm in diameter holes.

Client:

REGIONE AUTONOMA VALLE D'AOSTA

Main contractor:

FD Costruzioni

Engineer:

Technical office of Regione Valle d'Aosta

Products used:

OM CTR 50/07/A

Date of construction:

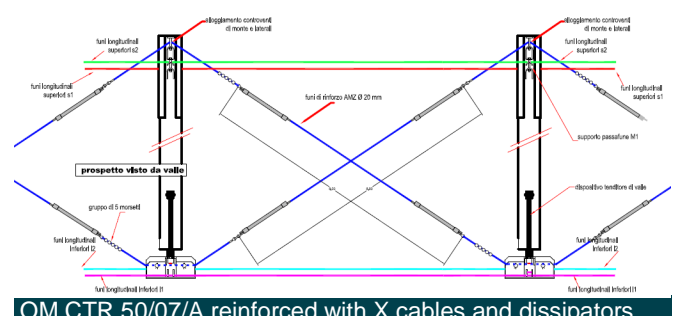
Summer 2012



Detail of the base plate with two micropiles



Front view of the installed barrier



OM CTR 50/07/A reinforced with X cables and dissipators