

**DYNAMIC BARRIERS PROTECT TF445 HIGHWAY**  
**PUNTA DE TENO, TENERIFE, SPAIN**

**ROCKFALL PROTECTION**

**Product: Rockfall Barriers RMC 300/A and RMC 500/A**

**Problem**

TF-445 road connects the local municipality of Buenavista del Norte, with Punta de Teno's lighthouse, located on the northwest coast of Tenerife, Canary Islands (Spain).

The road runs through a mountainous area with high slopes, made up of basaltic castings interspersed with other volcanic materials. The softer materials are constantly eroded by rain and wind, leaving the tougher rocks precariously positioned and with a very high risk of falling.

Over the course of many years, there have been numerous rock falls that have threatened the road safety closing it on several occasions.

**Solution**

A detailed investigation was carried out involving the analysis of the most dangerous trajectories of the potentially unstable rocks, calculating their related energy.

The solution selected was to install dynamic rockfall barriers to intercept and contain the potentially unstable rocks.

On the basis of the energy evaluations, two different barriers were selected:

- 110 m long x 8 m high 3000 kJ barrier (RMC 300/A)
- 140 m long x 7 m high 5000 kJ barrier (RMC 500/A)

These two barriers are supplied in a complete kit form, consisting of posts, bracing cables and energy dissipating devices. The interception structure consists of steel ring net panels, complemented by an additional hexagonal double twisted wire mesh to capture smaller rock fragments.

During an impact the barrier progressively deflects, absorbing the energy of the falling rock; loads are dissipated throughout the structure. The rock is prevented from moving any further.

The energy dissipating devices are patented compression devices which absorb the applied energy by deformation, and not by friction, thereby offering a more reliable and safer performance than traditional absorption systems.

Both barriers have ETAG 027 compliance (Falling Rock Protection Kits), and they are classified as Class 6 (RMC 300/A) and Class 8 (RMC 500/A) for the Energy Level classification and category A for the Barrier Residual Height. The efficiency of the RMC barriers means they have a low deformation during impact; a critical parameter in this project, given the proximity of the dynamic barriers to the highway.

Client:

VILLAR TRABAJOS VERTICALES

Main contractor:

TENESEMA S.L.

Designer:

INTERRA S.L.

Products used:

ROCKFALL BARRIER RMC 300/A, RMC 500/A

Date of construction

April 2015 - August 2015



Rockfall Barrier installed near a tunnel portal



Rockfall Barriers installed



Detail of the Rockfall Barrier



Rockfall Barrier Installed directly above the highway due to space constraints and topography of the rock face above



Rockfall Barrier installed



Detail of the foundations



Patented compression device testing (before and after)

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