

EROSION CONTROL IN MELILLA
MELILLA, ESPAÑA

EROSION CONTROL

Products: MacMat R1 and DT Mesh

Problem

Delfi Vertical SL, was awarded for proposing a solution for the problem of slope erosion on the side of a coastal road as far as the instability of a slope which goes down towards the sea in Melilla (Spain). They contacted Bianchini-Maccaferri to get its best offer for material supply regarding this project.

Solution

Considering the presence of different soil types, and consequently different problems to solve, the solution suggested is made of three products:

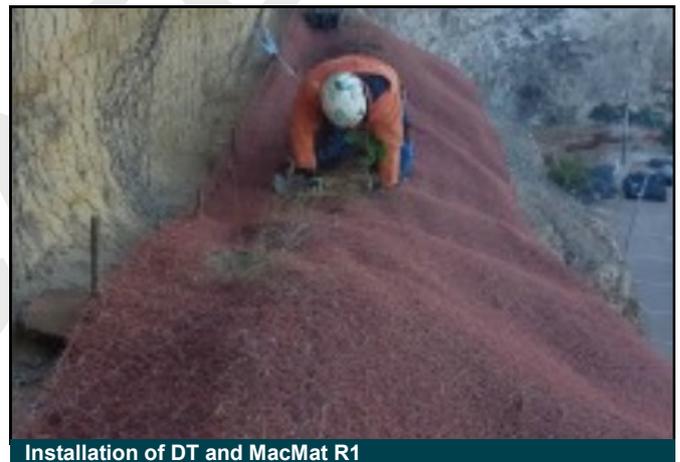
- a. On the upper part it was evident the presence of an erosion problem so MacMat R1 6822 GN, was installed to control it.
- b. On the vertical face of this side was recommended the Double Twisted Wire Mesh with GalMac Plus Coating to contain the fall of small stones.
- c. On the lower part, the closest to the sea, was installed the Double Twisted Wire Mesh with PVC coating to guarantee its durability.

MacMat R1 consists of a geomat made by polypropylene filaments and reinforced through a double twisted wire mesh with GalMac coating (Zn95-Al5). The geomat has the function to protect the soil below from the direct impact of the rain and to block in its geometry the seeds favouring in this way the vegetation growth. The reinforcement given by the steel mesh assure a better slope stability.

In this specific case, firstly they placed a layer of vegetative soil and then they did hydroseeding. After installing MacMat R1 they planted autochthonous species of plants in different points of the slope.



Slope view before the intervention



Installation of DT and MacMat R1



Installation of MacMat R1

Client:

MINISTERIO DE MEDIO AMBIENTE

Contractor:

DELFI VERTICAL S.L.

Designer:

DELFI VERTICAL S.L.

Products:

MacMat R1 6822GN-DT-DT (PVC)

Period of construction:

July—November 2016



General view of the slope after some months since the products installation

On the vertical face of the same slope, a DT Steel mesh was installed to contain the eventual disaggregation of the face. The Steel wire mesh has a GalMac coating and it is connected at the base with the MacMat R1.

The last intervention they did regards to a slope located in the lower part of the slope described before, which goes from the road level down to the sea along a coastline made of rock and gravel.

In this case was installed a Double Twisted Wire Mesh with a polymeric coating in PVC rather than a metallic coating with GalMac. Dealing with a coastal area and almost in contact with the sea, the area of installation of the product is considered a very aggressive environment (C5) and because of this, according to the Norm ISO EN 10223-3, the polymeric coating was selected.



Placing of autoctonous plants

Very High aggressive: (C5) Wet conditions Temperate and subtropical zone, atmospheric environment with very high pollution and/or important effect of chlorides, e.g. industrial areas, coastal areas, shelter positions at coastline Subtropical and tropical zone (very high time of wetness), atmospheric environment with very high pollution SO ₂ (higher than 250 µg/m ³) including accompanying and production ones and/or strong effect of chlorides, e.g. extreme industrial areas, coastal and off shore areas, occasionally contact with salt spray	Polyvinyl chloride (PVC)	Zn95%/Al5% alloy	A	120
	Polyamide (PA6)		E	
	Polyvinyl chloride (PVC)	Zn90%/Al10% alloy	A	> 120
	Polyamide (PA6)		E	

ISO EN 10223-3: Durability

For this Project were installed:

- ⇒ 6100 m² MacMat R1 6822GN
- ⇒ 5600 m² DT mesh GalMac Plus coated
- ⇒ 3000 m² DT Mesh GalMac Plus+PVC coated



DT mesh installed

Officine Maccaferri S.p.A.

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