

Structural Drainage & Erosion Control

ABG Deckdrain & Erosamat, Parson's Tunnel, Devon, UK



CASE STUDY



Project Description

The South West Rail Resilience Programme (SWRRP) was initiated following the severe storms of February 2014 that caused the railway in Dawlish to be severely damaged and a subsequent cliff failure that saw 20,000 tonnes of earth collapse onto the tracks near Teignmouth, just to the south of Parson's Tunnel. The storm highlighted the importance of protecting this main route on the South Devon Railway against future extreme weather events. A new rockfall shelter project was commissioned to protect the tunnel and improve the resilience of the line between Exeter and Newton Abbott. The new shelter construction is 109m long and built using 185 pieces of pre-cast concrete, coloured red to match the local sandstone. Red sand was then used on top of the roof and planted with rare rock sea lavender (native to this stretch of coastline) to help it further blend into the landscape. The seaward side of the structure remains open so passengers are still able to enjoy the stunning coastal views.

The Challenge

This section of the railway is one of the most inaccessible in the southwest and is bound by tunnels at either end, a sea wall on one side and sheer 70-metre-high cliffs on the other. The position of the new shelter nestled between the sea and the cliff base makes it vulnerable to erosion and water pressure build up at the back of the structure. The upper rock face also required a solution to help prevent future land slips, and a robust erosion control product was required that could be contoured against the surface of the cliff walls.

Project Information

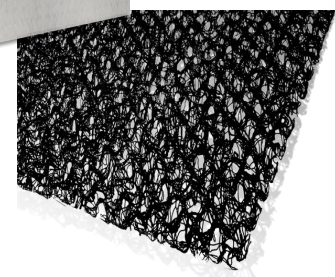
Client	Network Rail
Products	ABG Deckdrain 400S/ST170 ABG Deckdrain 1200S/ST170 ABG Erosamat Type 3/20Z 500
Quantity	7,000 m ²

Benefits

- Deckdrain provides a light-weight and thin profile that is quick to install
- Creates a high-flow capacity over a large surface area
- Geotextile layer prevents blockages
- Erosamat Type 3/20Z 500 provides a flexible, permanent erosion control layer



ABG Deckdrain



ABG Erosamat

ABG LTD

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The Solution

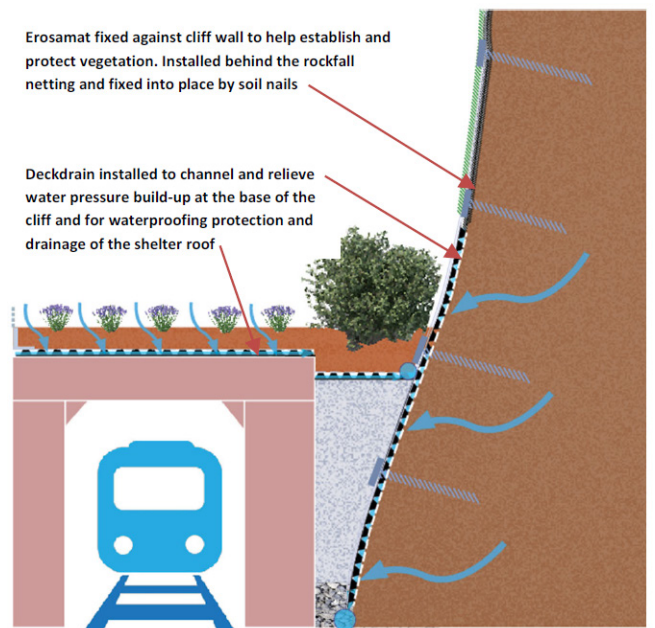
ABG's **Deckdrain 400S/ST170** was installed vertically at the base of the cliff to channel and relieve water pressure. The Deckdrain geocomposite drain features an upper geotextile bonded to a cusped core and the textile side is fixed against the cliff wall to filter away fines and prevent the drainage void from clogging. **Deckdrain 1200S** was additionally installed horizontally onto the roof structure to protect the waterproof membrane and to provide the required capacity to drain the soil mix on top of the roof. ABG's Deckdrain is supplied in light-weight rolls and was especially beneficial for this project since it does not require specialist lifting equipment and can be carried into position for hard to access locations. A further 2,000m² of **Erosamat Type 3/20Z** turf reinforcement mat was contoured against the cliff face, consisting of an entangled matrix of polypropylene fibres manufactured by ABG in the UK. The flexible matting conforms to the cliff surface to protect vegetation against being uprooted, allowing it to establish successfully even in areas exposed to severe weather. The permanent matting was fixed into position in combination with the soil nailing and rockfall netting system.

The ABG Service

Local design, manufacturing and installation support service.



Land slide onto The South Devon Railway line following storms in February 2014



Deckdrain fixed at the base of the cliff wall and Erosamat contoured against the rock face.



Deckdrain installed at the base of the cliff and onto the rockfall shelter roof and covered with red sand / soil mix

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