

Retaining Wall – Flood Defences

Webwall, Forge Bridge, Keswick, UK



Project Description

The Forge Bridge over the river Greta in Keswick and the downstream embankments were extensively damaged during Storm Desmond in December 2015. The listed structure (originally constructed in 1817) forms a constriction to river flows and during the storm, the difference in the depth of water between the upstream and downstream sides of the bridge was 5-8m. This created a highly turbulent flow on both downstream sides causing heavy erosion of the river embankment. This severe scouring and erosion caused the riverside footpath to slip, putting nearby trees and property, including the adjacent Grade 1 listed Smoke Cottage at risk.

The Challenge

The simplest remediation would have been to widen the river, forming a self-stabilised embankment capable of handling high volumetric flow at lower water velocity. This would cause a loss of supporting ground for the trees downstream however and would encroach into private land and the river footpath on the upper side of the river bank. The bridge structure, which had also been damaged, was to be returned to its original profile and the private land restored. A steep reinforced wall solution was required which could withstand high flow in flash flood conditions but faced with materials which remain in-keeping and sympathetic with its location in the heart of the Lake District, renowned worldwide for its outstanding natural beauty. The challenge was to optimise cost, design capability and aim for as natural a finish as possible.

Project Information

Client	Environment Agency
Contractor	Ashcroft Plant Ltd
Consultant	Tweddell & Slater
Products	Webwall
Quantity	96m ² (front face)
Benefits	<ul style="list-style-type: none">• Easily transported to remote site• An immediate improvement to defences• Aesthetically pleasing, in-keeping with and complementing the surrounding landscape



ABG Webwall

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The Solution

A steep concrete revetment was constructed for the lower section of the embankment and faced with local natural stone to protect against high turbulence created by the narrow bridge. At the higher levels of the embankment there will be less scour and ABG's flexible **Webwall** system was installed to provide a reinforced soil retaining system, bringing the embankment up to the required level of garden and footpath. Locally sourced top soil was used to fill the front panels prior to planting. The front faced cells help to establish and protect the vegetation roots from erosion in the event of a flash flood. The **Webwall** solution is highly cost effective and achieves far lower carbon footprint compared to transporting concrete and stone to site. In addition, it is faster and cheaper to install and the green colour of the front face immediately blends in with the surroundings. In a short period the wall will be completely overgrown blending with all the other vegetation the area.

The ABG Service

ABG supplied a design and installed the 45m long and 1.5 to 2.25m high **Webwall**. The installation was completed in 10 days, supervised by Geogreen (sister company to ABG)



Easily carried to the area and placed by hand. Front panels filled with top soil prior to planting and backfilled with locally won suitable fill.



Designed to cope with flash flood levels



Webwall will eventually present a green finish.

Contact ABG today to discuss your project specific requirements and discover how ABG past experience and innovative products can help on your project.