

Stabilisation

Abgrid and Abweb, Quarry Bank Mill, Styal, Cheshire, UK



Case Study

Project Description

In 1784 Samuel Greg managed his cotton mill at Quarry Bank, Styal. Now run by the National Trust, this site has a number of attractions including the most powerful working water wheel in Europe. Large numbers of visitors arrive every day, and overflow car parks were being used extensively, so an extension to the car park was added in 2017.

The Challenge

The overflow car parking was built on greenfield areas, and required a permeable surface to control run off. As the first lift of granular capping soils and geosynthetics was placed the vibrations from construction vehicles operating at the surface caused excess pore water pressures in the saturated subgrade soils, and resulted in spongy surface deflections when trafficked. Investigation concluded that the small pond on site had previously been much larger and had been partially backfilled with weak clayey mixed debris soils extending more than 1m below foundation level.

A solution was required that would remedy the problem without having to excavate and replace the first lift of granular capping soils and geosynthetics. One of the affected areas was under the main spine road for the car park, and would be the most heavily used area both during construction and once the car park was opened. Importing permeable granular material to improve the CBR of these areas was prohibitively expensive and environmentally damaging, and such an operation would have generated a large amount of unusable spoil to dispose of meaning further costs.

Project Information

Client	National Trust
Contractor	P C Casey
Consultant	TEP
Products	Abgrid, Trigrid, Abweb
Quantity	4,500m ²
Benefits	<ul style="list-style-type: none">• Reduction in sub-base depth meaning reduced dig out• Reduced material import• Fast installation



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The Solution

To stabilise the various soft spots **ABG** designed an additional layer of **Abweb**, backfilled with granular capping material, on top of the first lift which had already been placed. This meant that no further excavation was required, no additional fill was required and there would be minimal disruption to the construction programme. **ABG** redesigning each specific area saved the Contractor and Client significant amounts of stone import and removed the need for a site wide solution designed for a “worst case scenario”. It also meant areas could be dealt with on an individual basis which minimised disruption to the construction programme. **Abgrid** and **Trigrid** enabled the achievement of the target CBR with 30% less sub-base, with **Abweb** allowing a 50% reduction. This is particularly cost effective where an expensive permeable sub-base is needed to meet a site SuDS plan.

The ABG Service

ABG provided a design and supply. When the low CBR was discovered we attended the site and developed a detailed design complete with PI cover to ensure the success of the scheme.



Abweb is easy to handle on site enabling fast installation



Testing after installation verified the required CBRs were achieved with the reduced material use



Abweb can provide a 50% reduction in the required thickness of sub-base

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