

Roadwater Erosion Protection

Flooding Risk

The River Washford runs through the village of Roadwater near Minehead, Somerset. The catchment creates a flashy river which floods parts of the village in large flood events. The increasing frequency of flood events required the existing system to be replaced and improved.

Problem

A forty metre section of the river which had timber piled revetment running between properties required urgent attention. These piles were at the end of their working life and new erosion protection was required. The site was constrained on both sides and as such a conventional system was not feasible. Salix was approached by the Environment Agency to offer a design and build solution, in order to provide long term protection to the riverbank, but using bioengineering solutions to ensure that the riverbank was ecologically sensitive.

Solution

The old wood piling was removed and the bank behind was graded to about 45° as shallow an angle as achievable. The scrub and soft vegetation was removed, leaving the small bankside trees as they were integral to the bank stability.



A flood event before the pole piled improvements were made to the river.



Photographs above show the original pole piled erosion protection in low flow and moderate flood on 28th October 2013.

The new bank protection provided a robust toe and a reinforced turf slope. This combination has the required shear stress resistance to the flow during peak flood events. Rock Rolls are 300mm diameter high strength nets ready filled with stone and were used instead of rip-rap or gabions. They were placed to provide "engineering" resistance to flow and also to create natural features with habitat value. They are sewn together where they touch to create one mass, either in line or where stacked up the slope. The pebble bedload was thought to be mobile so site won brushwood was placed around them to slow the water and reduce potential impact. As the slope was so steep and this was a live repair Salix installed "Shear Stress Turf". This is a turf reinforcement mat (TRM) grown off-site and therefore has immediate resistance to 6m/s flow. This reinforced turf instantly provided the required performance in this confined site.

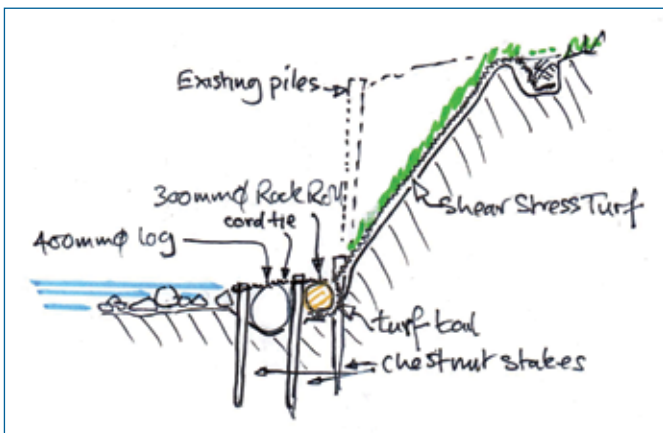


The new system installed after 2 weeks work, in November 2013, gives the river more room for flood events and a sustainable natural slope.

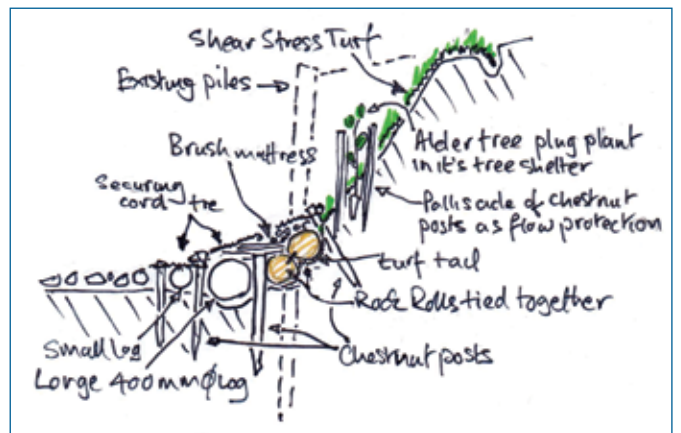


After only 10 months, in September 2014, new in-stream and waterline plants are colonising the new work and the slopes.

Roadwater Erosion Protection – typical sections



Type 1 section



Type 2 section



Photographs above show the Rock Rolls which are delivered to site prefilled and were quickly installed into the flowing water. The Rock rolls protect the toe against erosion and anchor the Shear Stress Turf.



VMax³ Shear Stress Turf provides long term erosion protection and vegetation establishment assistance while permanently reinforcing vegetation. At installation the turf can resist 6m/s flood events.



Photograph above taken 10th January 2014 show the new bank intact after a major flood event in only one month after installing the system.

The riparian owner commented that previously in an event of this type the road would have flooded. Kevin Coombes, Flood and Coastal Risk Officer for The Environment Agency commented: "An urgent solution was required and Salix were able to evaluate the situation and resolve the problem within the tight budget."