

Conwy Flood Alleviation Scheme



Salix supplied 9000m² of VMax3 Shear Stress Turf as part of the Conwy Flood Alleviation Scheme in September 2009. The bank was also lowered to become a spillway designed to over top.

Just two months later the area experienced the worst flooding in 25 years of recording with floods exceeding the 1:30 year events of 2004/2005.

Key Facts

The reinforcing element within the Shear Stress Turf P or C is Tensar's VMax C350 or P550.

Both have been independently tested at four research institutions and results are openly published from 1 hour to 50 hour flow durations. The failure criteria are

based on vegetation failure and soil loss, as these are the key factors that lead to a surface erosion protection failure.

Client - Team Van Oord on behalf of the Environment Agency, now Natural Resources Wales (NRW).

The spillway/bank falls under the reservoir act.

Background



Flooding in Llanrwst and Trefriw occurred in February 2004 and January 2005 affecting many properties.

Sections of flood embankment were in poor condition and had breached on a number of occasions.

Part of the scheme involved lowering and protecting flood embankments, creating a spillway, to provide an alternative route for flood flows thus reducing water levels in Llanrwst.



Salix Shear Stress Turf P550 delivered to site

The River

The area is prone to flooding because it drains rain from the mountains in eastern Snowdonia.

Water comes down the rivers Lledr, Llugwy and Conwy, which merge at Betws y Coed, before reaching the narrow part of the valley at Llanrwst and Trefriw.

Key Objective

Preventing the flooding of private properties in Llanrwst and Trefriw.

The flood scheme allows the water to flow over man-made flood banks onto the natural flood plain of the valley floor. It is then stored and drains away over a few days.

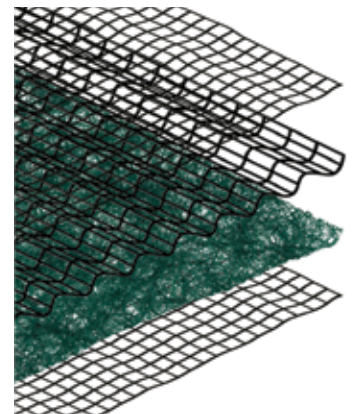
Product Used



The Shear Stress Turf P incorporating VMax P550 was contract grown with a specified grass mixture to provide instant vegetative erosion protection on the lowered flood defences an instantly green solution in an environmentally sensitive location.

VMax P550 within the turf offers permanent turf reinforcement, increasing the power of vegetation to withstand high velocity flow regimes of up to 7.6m/sec.

P550 is composed of a permanent, ultra-high-strength, three-dimensional matting structure incorporated with a permanent 100% polypropylene fibre matrix.



Spillways are often designed to withstand long duration flows (10 hours or more) and changes in reinforced vegetation performance over time vary greatly depending upon the base-reinforcing product.

Central to higher performance is a 3-D structure.

The VMax P550 is typically 18.29mm thick with a corrugated central grid.

The grid greatly reduces velocity and shear stress within the structure and therefore reduces erosive force around the soil surface and base of the mat where the stem/root interface is located.

Impact



High levels of rain fell in the following months after installation.

New figures released by Environment Agency Wales show that during the heavy rain of 6 February 2011 there was more water in the valley than in any other previous incident and yet the villages did not flood.

All parties concerned were impressed with the performance of the product, Team Van Oord Project Manager Matt Phillips stating

“The pre grown NAG P550 performed very well during a significant flood event. There was no flood damage to repair on the banks protected by the NAG P550”.



After the flood