Erosion Control

Reinforced Grassed Spillway, Erosamat TRM, Allermoor, Somerset, UK

abg creative geosynthetic engineering

Case Study

Project Description

The Allermoor spillway is situated between the Rivers Parrett and Sowy in the Somerset Levels. The site is around three metres above sea level and has historically been prone to flooding from both fresh water and occasional salt water inundations.

The Environment Agency monitors high tides on the tidal section of the River Parrett and operates the main inlet structures controlling the water levels and flows. The River Parrett is 3-4 meters above the River Sowy and in flood conditions the Parrett overtops both its embankments and flows to the Sowy over a grassy bank, resulting in severe erosion. Flood management improvements included the raising of the external embankment and the design of a new spillway to take the increased flow between the two rivers when the Parrett overtops.

The Challenge

The challenge was to design a spillway that would withstand prolonged high velocity flood water flows. In line with Environment Agency policy, a natural vegetated appearance is preferred, avoiding concrete or hard armour options if possible.

The Solution

Following the re-profiling of sections of the river bank and spillway, it was determined in discussions with ABG that a correctly installed Turf Reinforcement Mat (TRM) system was required to withstand specified hydraulic loadings during flood events. **ABG's Erosamat Type 3/20Z 500M** was selected for this rigorous application. Defined

Project Information

Client	Environment Agency
Contractor	Interserve/Team Van Oord
Consultant	Black and Veatch
Products	Erosamat 3/20Z 500M
Quantity	21,500m^2
Benefits	• Proven performance of unvegetated TRM in atual conditions • Green surface solution • Easy handling and rapid installation

ABG Erosamat 3/20Z 500M

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as an open mat under CIRIA Report 116, 'Design of Reinforced Grass Spillways', **Erosamat** provides a permanent and effective surface erosion control and vegetative root reinforcement layer.
The intension was to complete construction in early summer allowing time for establishment of fully vegetated slope. However, delays in construction meant vegetation was not fully established by winter 2013/14. Prolonged heavy rainfall led to extensive flooding. The new flood defence measures worked well with no significant loss of soil due to erosion. Independent data collected by Black and Veatch during the 62 day flood reported the spillway and TRM functioned as intended. This data demonstrated that unvegetated **Erosamat Type 3/20Z 500M** provided sufficient protection to the spillway for velocities exceeding 4 m/s over prolonged periods. Fully vegetated, **Erosamat 3/20Z 500M** is capable of hydraulic loadings in excess of 6 m/s.

Correct surface preparation and pinning are essential to maintain good surface contact with the underlying soil followed by careful seeding and filling.

The ABG Service
ABG Provided full specification and design support to aid the approval process.

Depth on crest (m)	Discharge intensity (m^3/s)	Velocities (m/s)					
		On crest	7m from crest	9m from crest	10m from crest	20m from crest	30m from crest
0.10	0.10	0.99	1.4	1.79	1.88	1.91	1.91
0.20	0.28	1.40	2.09	2.38	2.56	2.88	2.89
0.30	0.51	1.72	2.54	2.83	3.01	3.62	3.68
0.40	0.79	1.98	2.88	3.17	3.36	4.17	4.33

- Flow depth and velocities were recorded on Allermoor spillway during flooding on 23 January 2014.
- Erosamat protection system. Installation was installed in September 2013.
- There was only minor grass coverage in January 2014.
- The un-vegetated Erosamat system provided the required level of spillway protection for the velocities exceeding 4m/s.

Data collected by Black and Veatch during the overtopping floods in January 2014

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

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