York Flood Alleviation

Erosion control – HPS2.5

Project Information	
Location	York
Product	HPS2.5 Geotextile
Client	Environment Agency
Designer	WSP
Main Contractor	BAM
Sub Contractor	Chantry Contractors
Installation Date	2023

Erosion Control within a Flood Alleviation Scheme Geofabrics HPS2.5

Historic York's exposure to flooding has been a frequent feature on regional and UK national news during wet periods. The Foss Flood Storage project will strengthen flood protection in York. As part of a wider strategy the delivery of York's flood alleviation schemes will be critical in making the city more resilient to climate change.

The Foss Flood Storage Area (FSA) aims to protect homes and businesses on both sides of the River Foss, extending north from above the Foss Barrier beyond the York inner ring road and up to Strensall. This includes three flood cells. Building the storage area will provide better protection from flooding for around 490 homes and businesses in York and Strensall.

As part of the £13.5m scheme BAM have constructed a storage reservoir which will hold and store flood water. A low caron concrete flow control structure has been constructed across the River Foss to maintain flow through under ordinary conditions. When water levels start to rise during a flood, the structure will limit the amount of water which can flow through at any one time, causing the storage area to fill. This will reduce the peak flow of water downstream. When water levels in the river fall again, the storage area will empty.

The storage area has been created with a 1.65km embankment using site won clay It is anticipated that the flood storage area will partially fill approximately every five years and only fill completely in extreme weather conditions. When the site is not being used to store water, the land can be farmed as normal.

As part of the storage reservoir design an overflow section was required within the embankment design. Grasscrete was specified to meet the requirements of the design. Grasscrete system creates cruciform plan pocket's designed to afford maximum protection to the grass sward from water flow, by optimising the level of structural concrete, whilst at the same time maximising the impression of a grassed area.

GEOfabrics HPS2.5 was laid between the cut earth/sub-grade and the Grasscrete GC2 void formers. Whilst it is critical that precipitation and run-off are allowed the flow through in to the sub-grade its important to allow hydrostatic pressure to be vented. This two way water movement is facilitated through the introduction of a filter separator – Geofabrics HPS2.5.

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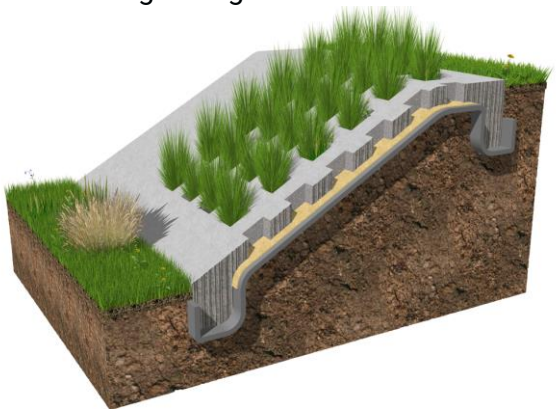
HPS2.5 is a needle punched non-woven geotextile manufactured from 100% virgin polypropylene high tenacity fibres containing 1% active carbon black. The main function of HPS2.5 is to prevent loss of the sub-grade from below the Grasscrete. With low particle size subsoils, the HPS2.5 was ideal with its combined filtration and permeability characteristics whilst its high tensile elongation and CBR provided a robust solution capable of withstanding the rigours of installation.



Without HPS2.5 in place the subgrade would be exposed to the risk of being displaced during a storm event. The consequence of which would be the concrete slopes would have lost some of their grass green camouflage and the structure could be left spanning areas where the subgrade had been eroded.

As part of the installation process the tops of the protruding Grasscrete void formers were removed through melting with a thermal process. In order for the exposed Polypropylene textile not to be degraded by exposure to high temperatures its protected within a covering of sand. The naturally lofty, felt surface of HPS2.5 acts to create surface friction naturally retaining sand particles. Chantry Contractors laid the Grasscrete on falls of 1 in 4. On such slopes a calendared or thermoset textile would not have held the sand and thus been potentially exposed to damaging temperatures.

The **benefits** of using Geofabrics HPS2.5:

- **Easy installation** – 6m wide rolls
- **Manufactured for performance** – high tenacity fibre
- **Bespoke roll length** – minimising joints
- **Isotropic properties** – strength in all directions
- **High tensile elongation** – sufficient stretch during armour placement
- **Puncture resistance** – manufactured to CBR value
- **UV Stabilised** – active carbon black
- **100% virgin polymer Fibres** – 100 years durability

For more information on the York FAS Scheme, please contact Geofabrics: sales@geofabrics.com or call 0113 202 5678

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