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Project: Welney Wash, Cambridgeshire
Client: Environment Agency
Consultant: Halcrow UK
Contractor: EA's Emergency Work Force
Products: Armorflex 140 revetment blocks. Geotextile filter fabric
Date: 2001-2005

Introduction

Welney Wash, the United Kingdoms largest man-made flood storage area, was originally constructed by the Dutch engineer Sir Cornelius Vermuyden during the 1630s. By containing the flood water from the Bedford Ouse River, noblemen landlords were able to create vast areas of dry fertile farmland from the flood plains in Eastern England.

The storage area covers over 1900 hectares and, to this day, protects many towns and villages as well as over 29,000 hectares of agricultural land from flooding.



The area is a major environmental site of international importance including: -

- A designated SSSI
- Ramsar Convention Status.
- A Special Protection Area for birds.
- A candidate for Special Protection Area (for the Spined Loach).
- An RSPB Reserve.
- A Wildfowl and Wetland Trust Reserve.
- An English Nature Conservation Area.

Problem

The 30km of Middle Level Barrier Banks bounding the west of the washland are exposed to severe erosive forces which arise due to the extensive fetch (the open area over which waves build-up and travel). At the time of the Easter 1998 floods for example, 70 million cubic metres of water were stored at some 5m above the surrounding ground level. During these flood periods the south westerly winds generate severe prolonged wave attacks which cause damaging erosion of the slope face.



Should the barrier bank fail it could result in a potential damage bill of £42M

Seventeen kilometres of the most seriously eroded sections of the Barrier Bank are currently undergoing a £2.5 million erosion control project.



Project Report



Solution

Armortec's suggestion to use their Armorflex 140 cable-tied concrete revetment system was the Consultant's preferred solution. The EA's Emergency Work Force installed the pre-assembled Armorflex mats on a renewed profile covered by a woven geotextile filter fabric.

The function of the filter fabric was to prevent the movement of fine material from beneath the blocks during water turbulence, thus ensuring the Barrier Bank revetment is not undermined. Angular gravel was placed in between the blocks interlocking them to prevent movement. Following installation the voids of the Armorflex blocks were filled with locally won topsoil and seeded.



Conclusion

The Armorflex mats will eventually form one 17km long revetment. The vegetation will establish and provide an attractive green environment for the wildlife during the Barrier Banks' targeted 100 year life. Work on some 2km has already been completed and the project is expected to be finished in 2005.



RPC Ltd

Quarryfields, Ruthin, Denbighshire LL15 2UG
T: 01824 709102
F: 01824 709105
E: info@armortec.co.uk
W: www.armortec.co.uk