

### SSSI SITE — RIVER SEVERN ESTUARY 10 MILES NORTH OF THE SEVERN BRIDGES

#### EROSION PROTECTION

#### Product: Reno<sup>®</sup> Mattress & Loop Mat

##### Problem

A 200m stretch of the river Severn in Gloucestershire had suffered acute erosion along the high tide line. This flood bank had already been protected with stone cladding, which unfortunately had not offered sufficient erosion protection. The mud flats in front of the flood bank are designated a SSSI which meant that engineered solutions required special consideration.

##### Solution

As the erosion was acute, there would be no way that a soil-bioengineering solution alone (coir logs, root balls, riparian wattles etc) would offer sufficient erosion protection. Furthermore, the traditional old fashioned way of using Reno<sup>®</sup> mattresses, although offering sufficient protection, would present a hard faced 'stone' solution. Therefore, Maccaferri Ltd proposed an integrated design using stone filled Reno<sup>®</sup> mattress base units made from double twisted hexagonal wire mesh. These units were laced together and filled with suitable stone. To accelerate the growth of vegetation, soil was then brushed in to fill the voids and to hide the stone surface.

Before the Reno<sup>®</sup> mattress lids were tied down, a 'Loop Mat' biotextile was laid onto the rock / soil surface, extending in front of the mattresses for several metres into the mud flats. 'Loop Mat' is specially woven coir matting with a 20mm loop pile upper surface. Used to line the lids of Reno mattresses it reduced the visual impact of the wire and rapidly promotes vegetation establishment.

The configuration of the 'Loop Mat' weave provides erosion protection because of the tightly woven mat matrix and good sedimentation opportunities are provided by the vertical loops. All new surfaces were then seeded.

This arrangement of these materials allowed the tide to wash over the repair which does not have vulnerable interface junctions.



Existing scour line



Newly installed Geomac



SSSI established in the Geomac

Client:

THE ENVIRONMENT AGENCY

Main contractor:

THE ENVIRONMENT AGENCY

Consultant:

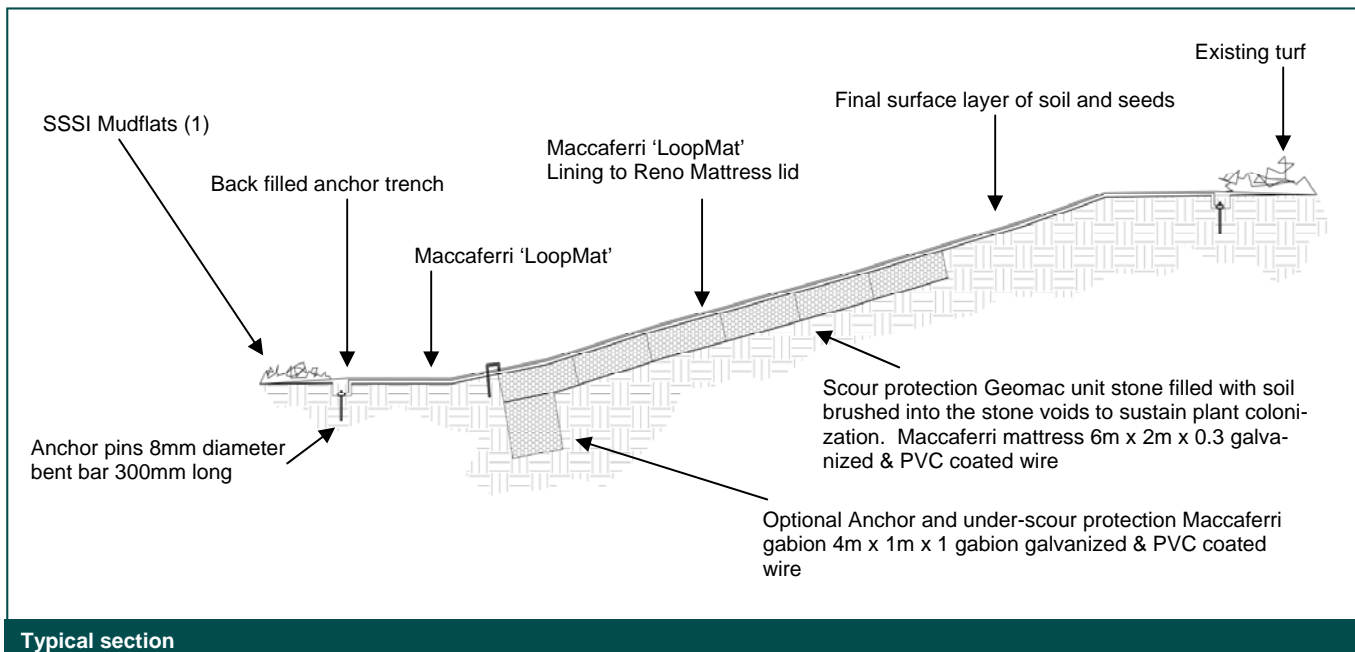
ENVIRONMENT AGENCY (TEWKESBURY)

Products used:

GEOMAC (Reno Mattress, Stone, Soil, Seed)

Date of construction

OCTOBER 1997



## Post Construction Performance

Once tides had taken effect, mud was left in the surface of the 'Loop Mat' and the grass established from the top of the bank down towards the river throughout the mattress zone. Natural colonization by SSSI saltmarsh plants is occurring in the lower areas of the repair zone, despite being part of the new engineering revetment.

## Benefits

By adopting an integrated design approach to the problem both engineering and ecological requirements were catered for. Even the SSSI plants were able to take advantage of the gabion type structures that stabilized the ground conditions, thereby allowing for more extensive colonization.

This innovative solution fully addresses the criticism leveled at hard armour with the aesthetics and environmental acceptability of a soil bioengineering solution. Maccaferri Geomac proves you can have your cake and eat it!



**Erosion scour trimmed and Geomacs in place**



**Reinstated bank and grass seeded**

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