

EROSION CONTROL IN HOUSING SUBDIVISION BOROUGH OF MOUNTAINSIDE, NEW JERSEY, USA

RIVER BANK PROTECTION

Product: Green Gabion™, Gabions

Problem

Nomahegan Brook runs through the Borough of Mountainside, NJ. Repeated storm events had eroded the banks of the brook as it flowed through a subdivision. Nomahegan Brook flows into Echo Lake which is stocked with fish and therefore an environmentally sensitive solution was required to stop the erosion.

Solution

Under the State of New Jersey Department of Environmental Protection planning regulations, any erosion control solution protecting more than 200' of channel has to be a 'green' solution. Furthermore, all tributaries to the stocked lake had to be natural, rather than piped.

Project designer, M. Disko Associates approached Maccaferri, Inc. for assistance with erosion control and soil bioengineering solutions to integrate with the surrounding environment. The banks of the channel were determined to be stable and therefore only erosion protection was required.

Green Gabions™ were selected because the PVC coated woven wire mesh offers the strength and flexibility of a regular gabion but the 30-40% voids between the rocks are filled with topsoil to facilitate vegetation. The Green Gabion™ is lined with Biomac® C, biodegradable coir mat to limit the topsoil washing out under high flow conditions

Beneath the flow line of the channel and below the Green Gabions™, regular gabions were used. Regular gabions offer greater drainage capacity than Green Gabions™ and provide the same erosion protection. The gabions were embedded 3' into the channel bed to allow for future scour and stop undermining at the toe of the structure.

Live willow cuttings, supplied by the Ernst Conservation Seed Co. of Meadville, PA, were inserted into the face of the Green Gabions™. This soil bioengineering technique requires a good nutrient reservoir, which was provided in this case by the topsoil contained within the Green Gabions™ and the slope behind.

Client:

BOROUGH OF MOUNTAINSIDE, NJ

Main contractor:

LOCAL CONSTRUCTION CREWS

Designer:

M.DISKO ASSOCIATES

Products used:

GREEN GABION™, GABIONS

Date of construction

FALL/WINTER 2003



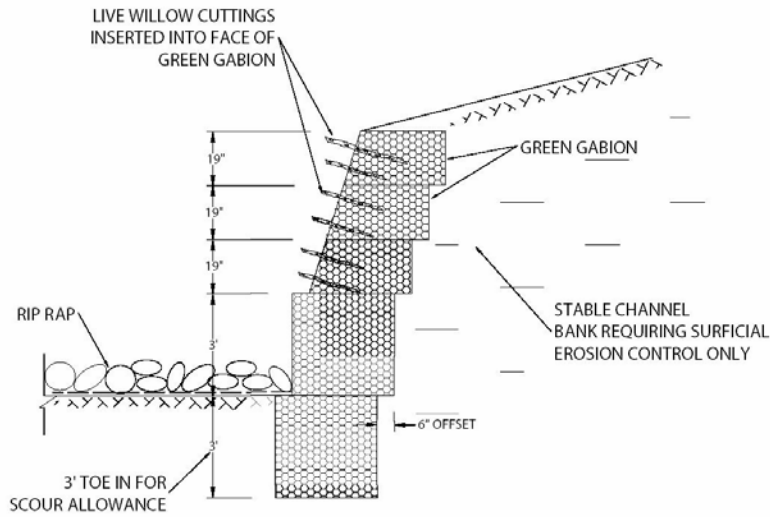
Green Gabions™ being filled with rock and topsoil



Completed Green Gabions™ awaiting live planting



Six months after completion, vegetation is well established



Typical cross section

Six months after completion, the vegetation has begun to establish well.

The solution was successful at embracing the dual requirements of the Borough of Mountainside. The Green Gabions™ combine the structural skeleton and shear resistance of hard armor, with the ability to vegetate of a soft armor solution. Even if the vegetation dies back through disease or damage, the rock core will still be present to protect the embankment from erosion.

This combination of hard and soft armoring within one product provided a cost-effective and environmentally sensitive solution.



Completed structure



Six months after completion, vegetation is well established



Six months after completion, vegetation is well established

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