



Channahon, IL Detention Basin Erosion Mitigation

SUSTAINABLE FEATURES

Rather than full concrete reinforcement, erosion control was accomplished through a combination articulated concrete mats tied into the underlying soils and interlocking concrete jacks. Final restoration was accomplished with turfgrass.

Stabilizing the slopes has significantly improved stormwater runoff quality.

Background

The Highlands Subdivision in Channahon, IL was built on the edge of a wooded bluff overlooking the Illinois River. Public improvements were designed and built according to the applicable ordinances; however, downstream impacts were not realized until after development was complete.

Challenge

Stormwater runoff from the site was routed through several detention ponds, which concentrated what had been mainly sheet flows from farm fields into small sewers. The sewers discharged into the heads of natural ravines on the bluff, where erosion began to eat away at the ravines and adjoining banks. Adjacent homeowners were concerned about the steady loss of their property, and its potential impact on their homes. The Village was concerned about the undermining of adjacent public sidewalks and streets, and began placing broken concrete into the ravines to slow the erosion. This stopgap measure did not fully stabilize the soils underneath the concrete, and the erosion continued.

Solution

Baxter & Woodman, Inc. was hired to develop long-term solutions to the erosion dilemma. We examined the site, the development plans and supporting calculations, and proposed several alternative solutions. The solutions ran the gamut from an all-natural solution, using reinforced earth slopes planted with native grasses, to fully-armored concrete reinforcement. After reviewing the alternatives with the Village, a hybrid solution was selected using articulated concrete mats tied into the underlying soils, interlocking concrete jacks, and turfgrass for restoration.

Results

The site has been fully restored. The Village is pleased that the grass has taken hold and the slopes are stable reducing the threat of damage to public and private infrastructure. The overwhelming success of this restoration project has led the Village and Baxter & Woodman to work together to implement a similar solution for another problem area in the same subdivision.



Erosion caused by stormwater runoff threatened nearby homes.



Turfgrass restoration over articulated concrete mats and interlocking concrete jacks stabilized the slopes.



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