American Excelsior Company®

Bindex™ Wood WT and Curlex® I Reclamation of Former Wastewater Treatment Plant

Case Study – Bindex™ and Curlex®
Erosion Control Solutions

Introduction

A municipal wastewater treatment plant in Wisconsin closed its doors for the final time after 40 years of continuous operation. Once construction of the new treatment plant was completed, project owners focused on returning the area containing remnants of the former plant to natural conditions. The first step in doing so was protecting and revegetating its bare soil areas (see Figure 1).

Figure 1: Newly graded bare soil area at the site of the former wastewater treatment plant after the first round of erosion control BMPs was applied.

Project Scope

The former plant occupied approximately 1 acre of land, most of which was fenced in and separated from a nearby river by a wall of trees (see Figure 2). A ≤ 4H:1V sloped area provides a corridor to the river separated by rip rap, and areas formerly occupied by infrastructure were either flat or shallow-sloping. The selected erosion control Best Management Practices (BMPs) needed to be able to keep underlying soils in place and out of the nearby streets and river.

Figure 2: Aerial View of the site (boundaries highlighted in red) (source: www.maps.google.com).

The Plan

Many different types of erosion control BMPs are available today; it is important to consider that each has its appropriate application(s). Sometimes, it is appropriate to use both rolled erosion control products (RECPs) and hydraulic erosion control products (HECPs).

American Excelsior Company's Bindex™ Wood WT HECP (see Figure 3) was selected to protect and revegetate the flat and shallow-sloped areas. It features 100% sustainably harvested great lakes aspen wood fibers (no blending of unknown outside materials) coupled with non-toxic tackifier and green dye materials to provide a cover to protect seeds, enhance germination, and hasten revegetation. Its efficient application of a uniform mix aids vegetation establishment.

Figure 3: Close-up of Bindex Wood WT application.

On steeper slopes, especially near environmentally sensitive areas, it is appropriate to use BMPs whose components are held together via mechanical bonding vs. those that rely upon chemical bonding. The potential for mass wasting in such areas is higher for products held together by chemical bonds due to their reliance on water absorption. Depending on site-specific conditions, BMPs with this failure mechanism can go from great performance to mass wasting in mere seconds.

Therefore, American Excelsior Company's Curlex® I RECP (see Figure 4) was selected to protect and revegetate the steeper sloped area adjacent to the river. Its engineered curled and barbed Curlex® fibers are mechanically bound together to form a Velcro-like connection to the subgrade that keeps soil in place while simultaneously reducing the force of raindrop impact and the effects of sheet flow due to the fiber matrix's naturally high roughness factor. Curlex fibers also expand and contract when exposed to moisture, allowing Curlex I to create a "greenhouse effect" that fosters favorable seed germination and establishment conditions when wet and return moisture to the seed bed when dry.

Figure 4: Close-up of Curlex I application.

Executing the Plan

- Grading and RECP installation took place before HECP application. Per its corresponding Installation Guidelines on www.Curlex.com, Bindex Wood WT was applied at approximately 2,000 lbs/acre (see Figures 5, 6, and 8), and Curlex I was anchored across the sloped area (see Figure 7). Both products were installed in conjunction with WI DOT No. 40 seed mix.

Figure 5: Project personnel hydraulically applying Bindex Wood WT at the site.

Results

Figure 6: Bindex Wood WT applied on a shallow-sloped area at the site.

Figure 7: Curlex I installed on the ≤ 4H:1V sloped area adjacent to the nearby river.

Figure 8: Bindex Wood WT application on the site's flat and shallow-sloped areas.

Next Steps

- The site will continue to be monitored to ensure vegetation is established.