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Taking control on Alabama highways

Hydraulically applied erosion control improves roadside safety and beauty for drivers.

By Tom Wedegaertner

Project

I-65 right-of-way revegetation, Chilton County, Ala.

Participants

Alabama Department of Transportation
Sunshine Supplies, Inc.
Forestry Environmental Services, Inc.

Product application

HydraCX² hydraulic erosion control product provides rapid revegetation on steep roadside slopes.



In spite of being applied five days later, the right-of-way sections receiving HydraCX² germinated and established grass more rapidly and thicker than the areas covered by the straw blanket.

The open highway can be a tranquil setting for travelers, but without a proper buffer zone, drivers who need to exit the highway in an emergency may find their calm quickly turning to chaos.

According to a study by the Pacific Institute for Research and Evaluation, more than 40 percent of serious-to-fatal crashes involve a harmful impact with a bridge, tree, or non-breakaway pole near a roadway. Because of this, the Federal Highway Administration (FHWA) requires vehicle run-off areas to extend 60 feet from the edge of the pavement along interstate highways. While not a replacement for safe driving habits, more forgiving roadsides can go a long way toward preventing accidents.

In Chilton County, Ala., about 30 miles south of Birmingham, the Alabama Department of Transportation (ALDOT) was tasked with updating the north- and southbound highway rights-of-way along an 11-mile stretch

of Interstate 65, a main artery that dissects the state and is heavily traveled. Several vehicle run-off areas were identified as being in need of widening. The project scope included clearing existing terrain and revegetating the rights-of-way to meet the FHWA safety requirements.

In past similar applications, the ALDOT used straw erosion control blankets to revegetate rights-of-way. However, in the I-65 application, procedures required to install straw blankets created a challenge because the 60-foot zone ended midway up some of the vegetated slopes that flanked the highway.

Installing an anchor trench part way up the sloped banks to bury the erosion control blankets would prove difficult and allow possible soil erosion beneath the blanket; and soil excavated from the trench was at risk of rolling downhill

because of the slope's steepness. The trench might also provide an entrance for water, causing saturation of the soil and possibly slope failure.

Birmingham-based erosion control distributor Sunshine Supplies, Inc., approached ALDOT engineers and requested replacing traditional double-net straw blankets with the hydraulically applied HydraCX² Extreme Slope Matrix, which was under review as a possible alternative to straw blankets. In March 2009, after the ALDOT approved the use of HydraCX², Forestry Environmental Services, Inc., Chelsea, Ala., stopped installing straw blankets and began installing HydraCX². All land areas were first prepped to ALDOT specifications.

Five days after the last straw blanket was installed, crews applied HydraCX² mixed with a standard summer seed

mix recommended by the ALDOT at a rate of 3,500 pounds per acre over land comprised of sand, rock, and clay and reaching slopes of 3:1 and greater. Finally, wattles were used along the toe of the slope as an extra measure to ensure no sediment migrated onto the roadway or caused harm to local waterways.

How it works

Developed by Mulch and Seed Innovations, LLC, Centre, Ala., along with Cotton Incorporated — and distributed by North American Green — HydraCX² is a high-performance hydraulic erosion control product made with mechanically processed straw fibers, reclaimed cotton plant material, and proprietary performance-enhancing tackifiers that form a protective layer to hold soil in place.

“HydraCX² contains beneficial nitrogen, phosphorus, and potassium nutrients which, when made available to the soil, are important for plant growth,” said Wae Ellis, vice president of sales and marketing for Mulch and Seed Innovations. “HydraCX² also is absorbent and has a beneficial water-holding capacity, which assists with germination and encourages the estab-

lishment of vegetation. The cotton plant material retains moisture in the seedbed for germination and growth, and the interlocking matrix provides enough porosity for seedlings to push through with little barrier.”

Featuring post-industrial waste from the cotton ginning process, the cotton plant material is a new reclaimed option that has proven to be an effective and sustainable alternative to virgin wood and recycled paper, which have previously dominated the erosion control industry. HydraCX² features a low water-to-mulch ratio requiring a maximum of only 100 gallons of water per 50 pounds of mulch. Water-to-mulch ratio is important when considering the costs of water, and the time, labor, and fuel consumption for trips to and from the water source.

Put to the test

The real test came when a severe storm arrived one day after the HydraCX² was applied. Heavy rains and hail pounded the slopes, threatening soil loss and successful vegetation establishment.

In spite of unfavorable weather and a five-day growing disadvantage, compared with the already installed straw

blankets, the sections of the rights-of-way receiving HydraCX² germinated and established grass more rapidly and thicker than the areas covered by the straw blanket. Using HydraCX² afforded Forestry Environmental Services and ALDOT the ability to provide quick erosion protection with small windows of opportunity between subsequent rain events.

By November 2009, grass growth was full and lush along the 11-mile stretch. Safety measures had been restored with newly widened rights-of-way that not only complied with FHWA requirements, but also beautified the area. Vegetation growth was so noticeable that some motorists took the time to contact the ALDOT to compliment them on the look of the roadways and thank them for creating safer roads. HydraCX² proved to be key in helping return the calm and beauty to the open roads of Chilton County. ■

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Crews applied HydraCX² mixed with a standard summer seed mix over land comprised of sand, rock, and clay and reaching slopes of 3:1 and greater.



Full, lush grass growth was so noticeable that some motorists contacted the ALDOT to compliment them on restoring safety and beauty back to I-65.



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