

Erosion Control: Tools Of The Trade

By Matthew Frubio



Silt fences and North American Green erosion control blankets were used to control runoff during construction of Minami Golf Course on Oahu, HI.

Triggered by water or wind, erosion is the prime mover of sediment on construction sites. New golf courses and sports fields are not exempt from erosion's forces—they too face, and must combat, erosion's detrimental effects.

Perhaps the worst of these is displaced sediment, which can contaminate watersheds, obstruct natural and manmade channels, and cause flooding. Sediment disturbs natural habitats and, left unaddressed, can cut the life of a reservoir or holding pond in half.

"Whenever you have a new construction project, you're probably going to be disturbing the ground," says Ben Northcutt, executive director of the International Erosion Control Association based in Steamboat Springs, CO. "When that happens, there is strong potential for sediment to leave the site."

A site is most susceptible to erosion and the resulting displaced sediment during its first season of construction and weather activity, says Northcutt. That makes it imperative to attack potential erosion sooner instead of later.

"It's better to control erosion from the beginning than worry about it after it becomes a problem," he explains. "If you put it off, not only can you do significant damage to watersheds and downstream drainage, but it will be more expensive to correct the problem than it would have been if you'd addressed it in the first place."

Tools For Stability

Because no two sites are exactly alike, there is no single "recipe" for efficient erosion control. Stabilizing the banks of a streambed running through one project, for example, may be quite different than stabilizing those of another depending on the degree of slope, soil type, high-water mark, and more. However, site-specific choices for controlling erosion hinge on a general understanding of the basic tools of erosion control and their applications. These tools include:

Silt Fences. Silt fences act as filtering systems for sediment. They are generally made of woven geotextiles, although straw bales are often used for the same purpose, with varying degrees of success. Attached between two wooden posts, silt fences are typically two to three feet high. The bottom six inches of the fabrics, Northcutt emphasizes, must be buried for these tools to be effective.

Silt fences can be installed anywhere on a construction site where water is likely to exit. However, they are *not* dams and should not be used in areas where water velocity is high. Instead, they should

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be seen and used as filters, allowing water to pass through while holding sediment behind.

Hydraulic Mulching And Seeding. In hydraulic mulching, wood fiber or recycled paper products, and water, often combined with a "tackifier," (natural glue), are mechanically sprayed onto an area for erosion control. Since the applicator can spray the mix, under the correct conditions, to areas hundreds

of feet away from the spraying equipment, hydraulic mulching is ideal for erosion control in inaccessible areas.

Hydraulic seeding, as the name implies, involves spraying seed mixes onto areas for both erosion control and revegetation. Establishing vegetation is vital in long-term erosion control.

"Hydraulic mulching and seeding are probably unsurpassed in applying mulch and seed to slopes," says Northcutt. "These methods are generally most effective on slopes that are 2:1 or less, including flat ground, although other methods may be more cost-effective on flat terrain.

Seed mixtures selection varies with the site and region. Naturally, some mixtures are better suited to some projects than others. Yet there are a few basic points to keep in mind regardless of the specific site you're treating. For example, a water-loving grass on a south facing slope probably won't last long, much less provide soil stability.

"In terms of the seed mix, it's better to have more than one species involved because you have a better range of

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adaptability," Northcutt advises. "That's particularly true on large sites, which may have their own range of soil and micro-climate conditions."

Covers, Blankets, and Mats. From jute netting to synthetic mats, these products serve as "coverings" for areas at risk to erosion. They are best used and most cost-effective, says Northcutt, on steep slopes 3:1 or greater or areas with relatively low velocities of "channelized" flowing water. Natural blankets are often constructed of jute, coconut, or straw fibers, or even recycled paper products. Synthetic mats can be made of various plastics or geotextiles. Both natural and synthetic products have their strong points.

"In the correct application, both work very well," says Northcutt. "Which you choose may depend on your budget, as well as your feelings on what should go into the ground. Synthetic products last longer than natural products, but they also cost more. Natural can do the jobs as well as synthetic products and are

biodegradable, but they don't last as long."

Realistic Approaches

Becoming familiar with the various products and their applications, working with hydrologic engineers and erosion control specialists, and hands-on expe-

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rience are all vital to understanding and implementing erosion control. Still, no matter how thorough the control plan and its implementation, a certain amount of sediment will always escape from a construction, says Northcutt. To

expect to retain *all* sediment to remain on the site is unrealistic. The idea is to *minimize* it and, in doing so, minimize environmental impact.

"You're not going to be able to control all the sediment, but you can control it to the point where our natural systems can handle it. There are environmental and economic impacts to not controlling it, whether that means spending tax dollars to clean water, dredge a reservoir, or even return soil to its original site.

"Sediment is the number one pollutant of our waterways now, and some of that comes directly from construction site erosion, whether the site is a future shopping mall or sportsfield complex," he concludes. "We must be aware of the effects of uncontrolled erosion on the sites themselves, as well as surrounding wildlife." □

Editor's note: The International Erosion Control Association's Conference will be held February 23-26, 1993, in Indianapolis, IN. For more information contact Ben Northcutt at the IECA office, (303) 879-3010.

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