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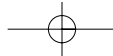
September/October 2006

STORMWATER

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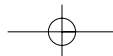
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SLOPE STABILIZATION HAS NEVER been more effective than it is today, thanks to advances in technology. Improved products enable erosion control specialists to work semi-miracles on even the steepest of sites.

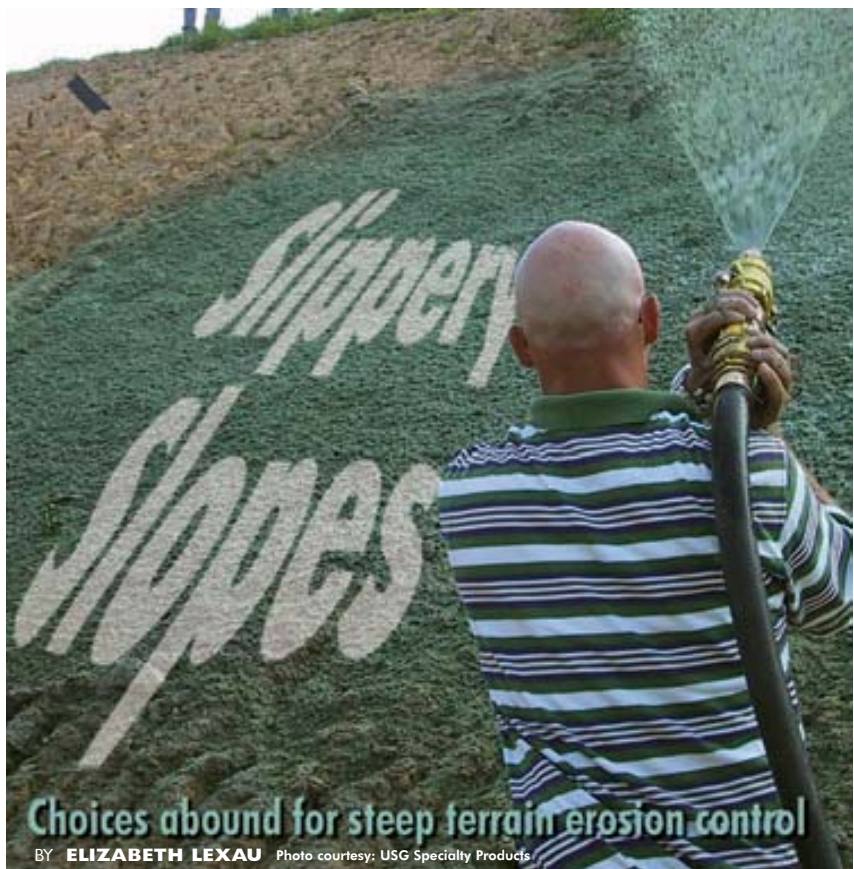
But this plethora of new products can also be a source of confusion. In years past, choices were dictated with relative clarity. Slope length and angle, expected runoff, longevity, and cost generally pointed to a very specific set of options. Now, a sometimes bewildering array of high performance products has turned these clear decisions into—well, a slippery slope.

To complicate things, stricter regulations, stiffer fines, and a more competitive marketplace all make it more important than ever for contractors to know their products and stay abreast of emerging technologies.

John G. Smith, co-owner of East Coast Erosion Blankets, foresees the trend for additional regulations and more diligent enforcement to continue. “People are realizing how much of a difference it makes in terms of water quality,” says Smith. “In this regulatory environment, it becomes even more critical for contractors to be knowledgeable about available products and how to use them. Using the best products for the job and installing them correctly can save the client a lot of money that would otherwise be spent later in clean-up.”

This has always been one of the guiding forces for Paulo DaCruz, president of Northwest Erosion Control, based in Redmond, Washington. “It’s much more cost effective to be proactive than reactive,” says DaCruz. “That’s what we’ve based our business on. We use the best products available to make sure we give our customers good results.”

DaCruz notes that product knowledge is one of the hallmarks of a good contractor. “Monitoring the slope during installation and paying atten-



tion to how the specified products are actually working is something that contractors don’t always do well,” says DaCruz.

“Contractors need to be able to provide input on what’s working at the site and what isn’t. They need to know what’s available on the market to make things work. Some engineers have been using the same plans for many years, even though technology and products have changed. Something might look great on paper, but when you’re actually moving dirt around, it might be a different story.”

A lack of standardized performance measures is one factor that can lead contractors and designers to shy away from new products. “There’s been a tremendous explosion of new and different products that can be used for slope stabilization,” says Samuel Morris, vice president of sales and marketing for Phoenix Paper Products, an Illinois manufacturer of paper-based mulches. “How-

ever, one of the biggest problems in the industry is that there is no standardization among products. More progressive companies know this and are working with each other and a variety of agencies to develop some common ground and meaningful measures, but it’s a slow process.”

Without standardized ratings for new products, many designers opt for what they’ve used in the past because they know how it works. However, they may be doing themselves and their customers a disservice by not choosing the best, most efficient, or even the most cost-effective product for the job.

“Many of the new products available not only do a better job, but can also be installed much cheaper, thus saving the customer money,” says Brad Fogel, market manager for USG Specialty Products, makers of Enviro-Shield bonded fiber matrix. “Contractors who are not willing to try new methods or products are going to lose their competitive edge.”

“It’s a lot like the tools on your workbench,” says Tom Rich, marketing director for Mat, Inc., a Floodwood, Minnesota based company that manufactures a variety of wood fiber mulches, along with Soil Guard bonded fiber matrix. “The more tools you have, the more problems you can solve effectively.”

This may be especially important when it comes to contracts for private developers. Developers want slope stabilization methods that result in clean and neat sites because they’re more attractive to buyers, and they want it at the lowest possible cost. Contractors who can take advantage of the full array of available methods can give them what they’re looking for. As development continues to push into steeper terrain, the market grows for those who can provide erosion and sediment control that holds up in tough conditions.

“If the project is a private development, contractors have much more input into types of products and methods of installation,” says Doug Graham of Fiber Marketing International, Inc. which represents Canfor mulch and bonded fiber matrix products. Better products sometimes cost more, but as Graham points out, these additional up-front costs can result in much better performance, less headaches, and more business down the line. “If a failure occurs, the contractor is on the hook for repairs and re-installation,” says Graham.

The challenge

When it comes to erosion control and re-vegetation on slopes, the biggest challenge is the obvious: weather. Weather is the big unknown—it can drown the best laid plans. When accelerated by steep slopes, even a moderate amount of rainfall can carve small rills that can quickly turn into larger gullies carrying sediment off site.

“At the time of year when most of these jobs are being done, there’s usually a lot of rainfall,” says Joel Fields, technical sales representative for Wilbur Ellis, a Spokane-based distributor of a variety of erosion control products. “But when seeding is done, there’s often a dry period that can prevent seeds from germinating.” One of the biggest challenges then, is to minimize the eroding effects of rain while conserving needed moisture. Fortunately, new products in every category are rising to this task.

Many solutions

For low sloping sites which require a temporary erosion control measure, traditional hydroseeding/hydromulching has become standard. A blend of seed, fertilizer, and mulch can be sprayed quickly to protect the slope and re-establish vegetation under moderate conditions.

Basic mulch comes in a variety of flavors. Selection depends on the needs of both client and contractor for cost control, speed of application, moisture retention and longevity.

Wood and paper-based mulches have dominated the market for a number of years, and each has its advantages. Wood/paper blends are also available to provide some of the advantages of both options.

Paper is economical, readily available, and easy to apply. However, wood fiber holds more moisture and releases it more slowly. “Thermomechanically refined wood fiber, made from wood chips pulled apart

under high pressure steam, forms long, feathery, hairy fiber strands which hold lots of moisture,” says Graham. “Wood fibers also last longer on the soil surface; they degrade a bit slower, due to larger, longer fiber size.”

A relative newcomer to the scene is a pelletized straw from Illinois-based HydroStraw. “HydroStraw is made of recycled Kentucky bluegrass straw,” says Ron Edwards, co-owner. “It’s applied at a similar rate to wood and performs like wood. It’s a renewable resource with a large supply, so you’re not fighting inventory. But the key advantage is that you can



Photo courtesy: Colbond

add more square footage per tank so the contractor can do more work in less time.”

Compost mulch is another choice gaining in popularity not only due to its erosion control power and moisture retention, but also for its soil amending qualities. It can help to replace some of the chemical and biological properties needed to re-establish healthy soil. Compost can be applied in blanket form, sprayed on as compost tea, or used in compost berms.

On slopes where a little extra holding power is needed, tackifiers are often added to the hydroseeding mix-

ture. These serve as a glue to hold the seed, mulch, fertilizer and soil together until germination takes place. The amount of mulch and additives used will vary, depending on the slope length and angle, soil conditions, and other factors at the site.

For more extreme slopes where more protection is needed, the erosion control tool chest includes

spray-on bonded fiber matrix (BFM) products. It also includes rolled erosion control products such as erosion control blankets and permanent turf reinforcement mats.

Erosion control blankets are temporary, biodegradable or photodegradable products that are rolled out and secured over a slope to hold seed in place and deflect the forces of rain and wind. Blankets help protect

seed, retain moisture, and reduce water velocity. Their three dimensional structure absorbs water and maintains close contact with soil, providing a protective environment for seeds and young plants. They are constructed of a variety of materials which degrade at different rates so that the correct levels of longevity and protection can be tailored to the needs of the site.



For permanent support with extreme slopes and high flow situations, turf reinforcement mats (TRMs) are called in. TRMs such as EnkaMat by Colbond, ECC-3 from East Coast Erosion Blankets, Earth Lock by Erosion Control Systems, and Landlok by Permatherne Earth Solutions are designed to provide permanent reinforcement of vegetation. They can be constructed of either synthetic or organic materials. Recyclax from American Excelsior Company is composed of 100% recycled post-consumer goods—green soda bottles, to be exact.

Falling somewhere in between a traditional mulch and a blanket, BFMs are sometimes referred to as “spray-on blankets” because they are hydraulically applied like hydro mulches but, like blankets, they are more resistant to higher rainfall and are longer lasting. “They have much longer durability,” says Graham. “Most BFMs will last nine months or more, to allow slower growing native grasses to emerge and establish.”

How do they work? Rich explains, “Soil Guard offers a cross-linking chemistry that dries in less than twenty-four hours and becomes

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water insoluble. It eliminates the impact of water on soil, but absorbs and retains moisture to provide ideal germination conditions.”

Because they are sprayed on, BFM's are especially useful on steep-



Photos courtesy: EnkaMat by Colbond

er slopes where it's more difficult to roll out blankets, and in places where variable terrain can cause blankets to tent. "Soil Guard can be shot from 100 feet away and can conform to just about any surface," says Rich.

Enviro-Shield from USG is a BFM product that incorporates the use of

gypsum plaster in the formula. "The plaster ingredient cures and creates a protective crust while also promoting plant growth by providing calcium and sulfur to the soil," says Fogel. "Gypsum acts to improve the structure of heavy clay soils."

To contain sediment and slow down and deflect water on slopes, straw wattles offer a number of advantages. They work by filtering sediment and "shortening" the slope to give water less time to accelerate. "One of the biggest advantages of straw wattles is ease of installation and use," says Smith. "They are easy to handle. You need no equipment to install them and you can reuse them, depending on their degree of saturation. When they're finished, they are fully degradable."

No matter what product you use,

one of the key factors for success is correct installation and follow up. "Maintenance is often overlooked," says DaCruz. "When you first put in a BMP, it may work for a time, but silt build-up, construction traffic, weather, all of these can damage the system and render it ineffective. Some contractors get a plan, follow the plan and say 'Great, I've done my erosion control.' But stabilizing the ground requires more than that. The site has to be maintained or it could be fined or even shut down, costing thousands of dollars. A good contractor knows that ongoing maintenance and monitoring is part of the job."

It takes time to stay on top of emerging products and technologies. It's easy to stick with known commodities. But becoming familiar with all available erosion control tools will give you more ways to tackle projects creatively, successfully, and profitably. ☺

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