



STAY GROUNDED

Replacing compost with a hydraulic growth medium

By Kevin Loucks

The California Department of Transportation (Caltrans) recently completed interchange improvements on State Route 132 (SR 132) in the city of Tracy in San Joaquin County.

The affected area included the intersection of SR 132 and Bird Road. The existing interchange was an at-grade intersection, with stop signs on the Bird Road approaches. The Caltrans project included constructing an overpass interchange and making related highway improvements to enhance traffic flow and safety. Major construction on the overpass and on/off ramps was completed in early 2014.

Site Specifics

The area has an average rainfall of 1.8 to 2.6 in. per month and temperatures ranging

from 60°F to 70°F at the time of year the project was completed. The finished grades at the site ranged from relatively flat to more than 2H:1V around the bridge abutments. Soil varies throughout the region, but upper subsoil in this area typically is brown loam and lower subsoil is brown clay. Unamended subsoil in the area is not particularly well suited to grow grass. Caltrans' BMP for this project called for grading and compacting the subsoil, spreading 4 in. of compost, seeding with a local grass mix and applying a tackified paper mulch to control erosion. Selby's Erosion Control Co. Inc. of Newcastle, Calif., was contracted to perform the site remediation.

The Challenge

The typical application of compost, seed and mulch can be expensive and



The hydraulic growth medium six weeks after planting

labor-intensive; generate significant dust; and increase site compaction. Large quantities of compost have to be trucked in, adding to transportation costs, and then typically are spread using heavy equipment that can further compact

the soil. The seed and protective hydromulch layer are sprayed onto the compost using a hydroseeder. The hydromulch is designed to adhere to the compost surface and protect it from erosion, but the bond often is weak due to the loose

consistency of the compost surface. This can lead to erosion problems and poor revegetation results and may require follow-up treatments.

Organic Earth Industries proposed testing an alternative solution utilizing its TerraVita hydraulic growth medium as a replacement for compost. The medium is designed to sustain vegetation through several growth cycles and accelerate natural topsoil building in the upper soil horizon. The product is composed of Seal of Testing Assurance-certified organic compost and an agronomically engineered organic fiber matrix with bonding agents. The fiber matrix is composed of heat-treated straw and other proprietary interlocking fibers. The matrix retains heat and moisture while allowing air and water to penetrate into the soil. The fibers decompose at different rates and release nitrogen and other micro-nutrients into the soil over time as



©2011 PLASTICS PIPE INSTITUTE

CORRUGATED PLASTIC PIPE.

PROVEN THE BEST CHOICE.

100 Year Service Life

Superior abrasion and corrosion resistance, and water-tight joint performance

Globally Accepted

Tested and proven as a reliable drainage and sewer system solution

Ease of Installation

Lightweight, longer pipe lengths, simplified joining, and jobsite compatibility

Greater Cost Efficiencies

Lower installed cost requiring less labor and equipment

 **PLASTICS PIPE INSTITUTE®**

www.plasticpipe.org/drainage

Write in 761



The test site after heavy rains

plant growth begins to succeed in the treated area.

An onsite test was devised to compare the performance of TerraVita with compost as a control on similar site locations (slope and aspect).

A Two-in-One Approach

Organic Earth Industries also developed another hydraulic growth medium and mulch technology with the goal of delivering the benefits of both in one application. Earth Essence Omega

replaces the application of both compost and mulch for erosion control and has a C-Factor of 0.003. Test areas on the bridge abutments were chosen to demonstrate the product.

Then Came the Rains

The first test of erosion control performance came with an unseasonably heavy rain event in late February. Approximately 3 in. of rain fell in the area over a 24-hour period, causing flash runoff in the construction area. With no diversions such as sand bags or wattles to direct water flow away from hillsides, the entire area was subjected to aggressive sheet flow from the road.

All of the test areas performed well compared with the control under these conditions. The Earth Essence Omega application on the bridge abutments also performed well. All soil remained intact.

STORM WATCH

Test all the most important parameters! Complete storm water monitoring using the LaMotte **Storm Watch MS4 and IDDE Water Analysis** kits featuring the SMART 3 colorimeter.

- Ammonia
- Color
- Conductivity
- Detergent
- Fluoride
- Hardness
- pH
- Potassium
- Turbidity

LaMotte
PO Box 329 · Chestertown, MD 21620
p: 800-344-3100 · f: 410-778-6394 · www.lamotte.com

Write in 763

The End Game

With all of the products performing well under aggressive erosion conditions, the focus turned to germination and plant growth. Emergence became evident within a few weeks. Although all of the treated areas showed acceptable levels of vegetation establishment after six weeks, the compost plus paper mulch (control) section had experienced severe wind shear and subsequent erosion. Wind was able to get between the mulch layer and the compost layer, separating the protective mulch layer from the loose compost.

The compost subsequently was exposed to further wind and water erosion, creating a mottled appearance in the control area.

Summary

Although the site is a long way from final disposition, all signs to date indicate that the solutions performed as well or



All products performed well despite aggressive erosion conditions.

better than the current practice (compost and mulch application) in controlling erosion and establishing vegetation. **SWS**

Kevin Loucks is president of Organic Earth Industries Inc. Loucks can be

reached at 970.227.9661 or kevin.loucks@organicearthindustries.com.

For more information, write in 805 on this issue's reader service form on page 49.

The Best Pavements Are Invisible

Grasspave²
grass porous paving

Gravelpave²
gravel porous paving

invisiblestructures.com | 800-233-1510

invisible Structures, Inc.

The advertisement features a large background image of a parking lot. On the left, a silver SUV is parked on a grassy area. On the right, a black SUV is parked on a gravel surface. The text 'The Best Pavements Are Invisible' is overlaid in large white letters across the top. Below this, two product names are presented in colored boxes: 'Grasspave²' in a blue box and 'Gravelpave²' in an orange box. Under each name is a small inset image showing the respective paving structure: circular grass pavers and square gravel pavers. At the bottom, the company name 'invisible Structures, Inc.' is shown in a blue box, and the website and phone number are listed.

Write in 764