U.S. Department of Transportation
Federal Highway Administration

IMPROVED CONSTRUCTION AND MAINTENANCE TECHNOLOGIES

new strategies to enhance the quality and performance of highway systems

Innovations in Silt Control

Help Prevent Silt Fence Blowouts

Temporary Sediment and Erosion Control

Effective sediment and erosion control at construction sites has become an ongoing and dynamic concern. Rulings by the U.S. Environmental Protection Agency, the Federal Highway Administration (FHWA), and State departments of environmental protection show the desire of those agencies to control soil particles associated with runoff waters. Of the methods identified for temporary erosion and sediment control on construction sites, silt fencing is one of the methods most widely applied. Silt fences slow the flow of stormwater with a geotextile fabric filter, allowing time for sediments to settle on the project.

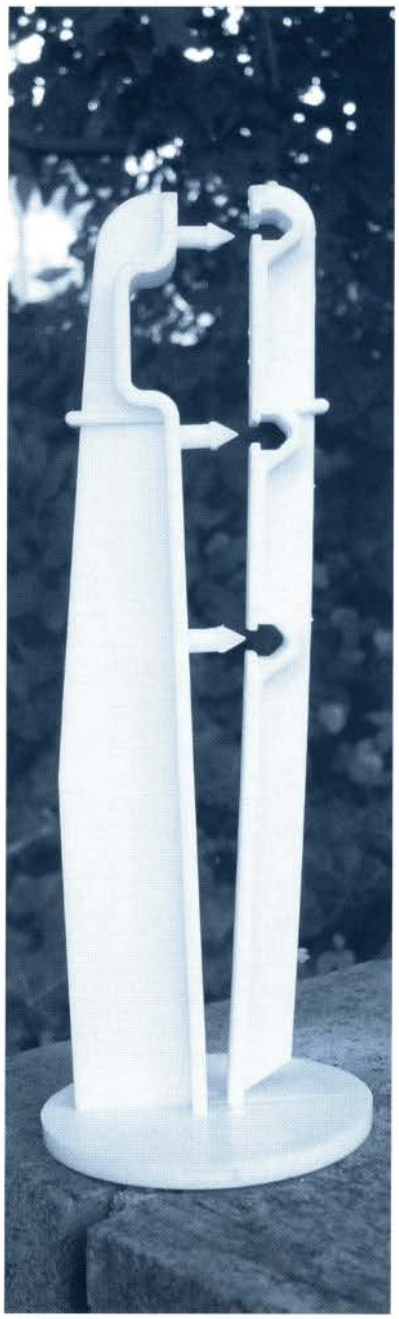
Silt fencing is poorly equipped to deal with heavier loads imposed on it by storms. The force of additional water buildup during storms often overwhelms fence supports and allows silt-laden water to escape from the site into nearby streams, streets, and properties. Due to such occurrences, the improper condition of silt fences is increasingly the subject of violations cited on State department of transportation (DOT) construction projects.

The Consequences of Blowouts

Preventing the failure of silt fence barriers is an important concern in the development and management of an erosion and sedimentation plan. The escape of silt-laden water from a construction site onto nearby roadways can result in mudslicks that contribute to unsafe driving conditions and pose a threat to motorists. Recent lawsuits in Georgia and Alabama have arisen from the failure to provide necessary erosion control protection, resulting in accumulations of water and mud on roadways that caused fatal crashes. In Georgia, the Court found a contractor negligent and awarded a settlement of more than $1 million.

The ecological damage from a silt fence blowout during a storm can be severe. In light of increasingly stringent requirements, fines levied by State departments of environmental protection are growing, and the resulting project delays and shutdowns are of concern. Citations resulting in fines are becoming more widespread throughout the United States, with hundreds of thousands of dollars in unnecessary fines being incurred annually.

To minimize failure due to runoff, the fabric making up the silt fence must be properly anchored to the ground. The use of anchors with silt fence barriers has lately been a topic in erosion control design publications and best practices manuals. In "Watershed Protection Techniques," a publication of the Center for Watershed Protection, and in "Erosion Control," the journal of the International Erosion Control Association, silt fence anchors were cited as a means to prevent fabric from being pulled out of the ground, thus helping to prevent blowouts.



THE QUICK-GUARD SILT ANCHOR/ GAUGE BY ENVIRO-GUARD, LLC, BIRMINGHAM, AL

INSPECTION AND MAINTENANCE—AND PREVENTION

Silt fences require regular inspections and maintenance to repair storm or equipment damage. In addition, attention should be paid to preventing blowouts. The American Association of Highway and Transportation Officials' "Guidelines for Erosion and Sediment Control in Highway Construction," Volume III, 1992 (adopted by FHWA pursuant to the Intermodal Surface Transportation Efficiency Act of 1991), suggest that the bottom edge of the silt fence fabric be placed in a trench or otherwise securely anchored. Many State DOT specifications provide an option for the use of an anchor or stake to help secure the fence.

An innovative new device called the Quick-Guard Silt Anchor/Gauge has been developed that effectively anchors silt fences and thereby helps overcome the problem of silt fence blowout and its consequences. Clamped to the bottom of the filter fabric and buried in a 15-cm (6-in) trench, this self-locking device clamps securely to the bottom of the fence at midspan. After backfill material is placed, the device greatly increases the stability of the silt fence and provides significant resistance to pull-out force. With proper placement techniques (including attention to placement of stakes, trench depth, and backfill), Quick-Guard represents an effective alternative to embedding silt fence in earth, only. The top of Quick-Guard remains visible, providing easy visual proof that the filter fabric is properly in place, has adequate backfill coverage, and is performing as designed. Made of recyclable plastic, the product can be recycled with the filter fabric after removal of the fence.

Quick-Guard is manufactured by Enviro-Guard, LLC, of Birmingham, Alabama. After successful field tests by State DOTs, it has been added to those DOTs' Qualified Products lists. The product has been placed on the approved products lists of 29 State DOTs and has been used in municipal and State projects in approximately 100 locations throughout the country.

The product has proven in tests to improve performance of silt fences under heavy loading conditions. As water and sediment collect behind a silt fence, the anchors increase resistive forces of a containment trench that reduce the potential of blowouts. Inspection of the silt fence installation and maintenance becomes more effective, reducing the risk of fence failure.

FHWA supports the development of such new technologies and encourages State DOTs to investigate how this product can benefit them. The National Highway Institute offers a comprehensive training course that addresses tools and techniques for minimizing off-site sediment pollution from construction sites. See course 134054, Design and Implementation of Erosion and Sediment Control, at the Web site www.nhi.dot.gov/coursec.asp.

For more information on how to get involved, please contact your local FHWA division office or—

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