

Filter Berms

Description

A gravel or stone filter berm is a temporary ridge made up of loose gravel, stone, or crushed rock. It slows and filters flow and diverts it from an open traffic area. It acts as an efficient form of sediment control. One type of filter berm is the continuous berm, a geosynthetic fabric berm that captures sand, rock, and soil.

Applicability

Gravel or stone filter berms are most suitable in areas where traffic needs to be rerouted because roads are under construction, or in traffic areas within a construction site.

Siting and Design Considerations

Consider the following guidelines when building a berm:

Use well-graded gravel or crushed rock to build the berm, with rock size ranging from 3/4 inches to 3 inches in diameter containing less than 5 percent fines (Massachusetts DEP, 2003).

Space berms according to the steepness of the slope. Space them closer together as the slope increases.

Remove and dispose of sediment that builds up, and replace the filter material. Regular inspection should indicate how often sediment needs to be removed.

Limitations

Berms are intended to be used only in gently sloping areas (less than 10 percent). They do not last very long unless they are maintained regularly because they are prone to clogging with mud and soil from vehicle tires.

Maintenance Considerations

Inspect the berm after every rainfall to make sure sediment has not built up and that vehicles have not damaged it. It is important to make repairs at the first sign of deterioration to keep the berm functioning properly.

Effectiveness

The effectiveness of a rock filter berm depends on rock size, slope, soil and rainfall amount. The continuous berm is not staked into the ground, and no trenching is required. Effectiveness has been rated at up to 95 percent for sediment removal. Effectiveness depends on local conditions such as hydrologic, hydraulic, topographic, and sediment characteristics.

Cost Considerations

Construction materials for filter berms (mainly gravel) are relatively low in cost. Installing a berm and regularly cleaning and maintaining it can result in substantial labor costs. Costs are lower in areas of less traffic, gentler slopes, and low rainfall.

References

Fifield, S.J. 1997. *Field Manual for Effective Sediment and Erosion Control Methods*. Hydrodynamics, Inc., Parker, CO.

Massachusetts Department of Environmental Protection. 2003. *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers and Municipal Officials*.
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