

Erosion & Sediment Control for Construction Sites



Cuyahoga
Soil & Water
Conservation
District

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Technical Note: Silt Fence

Silt fence is a geotextile screen used to trap sediment. The screen is used as a trapping device in conjunction with topography to cause sediment deposition.

Silt fence can be an effective sediment control measure. It is designed to slow the flow of water, not stop it. To be effective, it needs to be placed on the contour above the area being protected, anchored properly with the ends brought up slope. Sufficient room is required behind the silt fence to pond the sediment-laden water. Where sections of silt fence are joined, the ends must be rolled together to provide a continuous screen.



Silt fence should be placed on the contour as much as possible. Inappropriate installation can result in concentration of flow and may cause the practice to fail.

Silt fence installed at the property line or at the base of a slope may not be effective.



Silt fence can be an effective sediment control practice on individual lots during the house construction phase. They keep sediment from getting into the streets and street inlets, and from damaging neighboring lots.

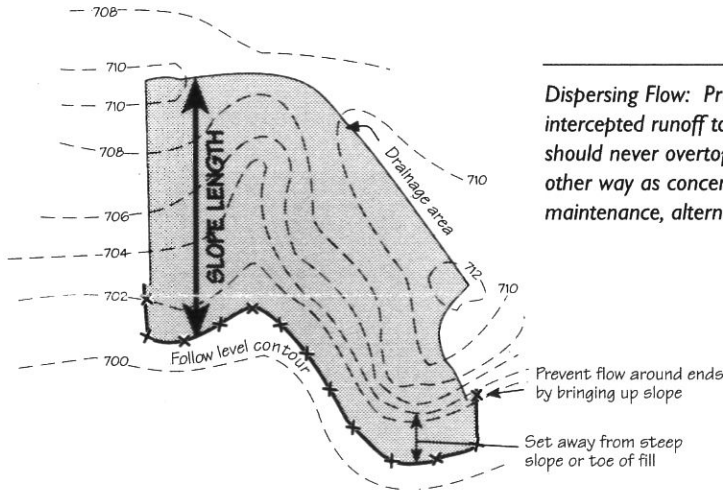
Silt fence may be used at the top of a streambank to protect the sideslope and to contain sediment before it reaches the stream channel.



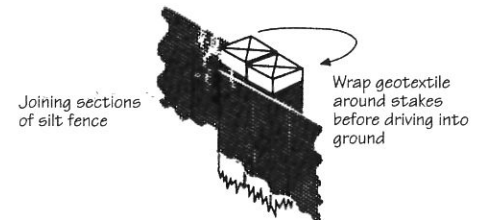
Design Criteria: Silt Fence

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G. David Gillock, Mayor
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Silt fence as a sediment control practice is dependent not only on the fence itself, but, just as importantly, topography. This is a critical consideration because sediment is removed by ponding run-off water upslope behind the fence. This allows sufficient time for the sediment to settle out of suspension, not by filtering it through the screen, as often is assumed. However, if silt fence is installed without regard to a site's topography, it will typically concentrate runoff. This increases the flowing water's ability to transport sediment and results in failure of the silt fence practice.



Dispersing Flow: Proper applications of silt fence will allow all the intercepted runoff to pass as diffused flow through the geotextile. Runoff should never overtop silt fence, flow around the ends, or move in any other way as concentrated flow from the practice. If this does occur, maintenance, alternative silt fence layout, or other practices are needed.



Installation

Silt Fence needs to be:

- Installed on the contour.
- Trenched to a depth of 6".
- Stretched until tight.
- All joining sections rolled.
- Stakes on downslope side.
- Top of fence 16" above ground.
- Ends of fence elevated.

Level Contour

For silt fence to enhance sediment deposition, it must be:

- Placed on the level contour of the land to dissipate runoff into uniform sheet flow.
- Able to pond water behind the full length of the fence.

Nearly Level Slopes

For silt fence to enhance sediment deposition, it must be:

- Placed on the flattest areas available.
- Placed at least five feet away from the toe of the slope.

Slope greatly influences water's ability to transport sediment. Using the flattest area of the slope increases the ponding area and maximizes the space available for sediment to be deposited.

Maintenance

Regular maintenance is needed to assure that the silt fence continues to function properly:

- Re-anchor where needed.
- Removing accumulated sediment to restore its capacity.
- Inspect regularly, and after each heavy rain.

End of Fence

To prevent ponded water from flowing around the ends of the silt fence:

- Each end must be placed up slope from the rest of the fence.
- The bottom of each end must be higher than the top of any part of the silt fence.

Silt Fence Maximum Drainage Area Based on Slope and Slope Length

Slope		Slope Length (ft.)
0% - 2%	Flatter than 50:1	250
2% - 10%	50:1 - 10:1	125
10% - 20%	10:1 - 5:1	100
20% - 33%	5:1 - 3:1	75
33% - 50%	3:1 - 2:1	50
>50%	>2:1	25

Note: For larger drainage areas, see standards for temporary diversions, sediment traps and sediment basins.

Vegetation

- Dense vegetation will decrease the energy of flowing water. This will cause sediment to be dropped out.
- A dense stand of vegetation on either or both sides of the silt fence will greatly enhance the trapping efficiency of this practice.

Improper Uses

- Silt fence should never be placed in flowing channels, streams or waterways. The silt fence is not designed for the velocity and volume of water in these concentrated flows and will fail quickly.

Rule of Thumb: This is a sediment control practice. If it doesn't pond water, it doesn't work.