SEDIMENT FENCE (Silt Fence)

Purpose
To retain sediment from small, sloping disturbed areas by reducing the velocity of sheet flow (Figure 6.62a).

Figure 6.62a
Sediment trapped behind well supported sediment fence.

Minimum Requirements

- Drainage area: limited to 1/4 acre per 100 ft of fence. Area is further restricted by slope steepness as shown in Table 6.62a.

Table 6.62a
Maximum Land Slope and Distance for Which Sediment Fence is Applicable

<table>
<thead>
<tr>
<th>Land Slope (%)</th>
<th>Maximum Slope Distance Above Fence (ft)¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 2</td>
<td>100</td>
</tr>
<tr>
<td>2 to 5</td>
<td>75</td>
</tr>
<tr>
<td>5 to 10</td>
<td>50</td>
</tr>
<tr>
<td>10 to 20</td>
<td>25</td>
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<tr>
<td>&gt; 20</td>
<td>15</td>
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</tbody>
</table>

¹Slope distance may be increased if design is supported by appropriate runoff calculations.
**Location:** Fence should be nearly level and at least 10 ft from the toe of slopes to provide a broad, shallow sediment pool (Figure 6.62b).

**Spacing of support posts:** 8 ft maximum if fence is supported by wire, 6 ft maximum for extra-strength fabric without support-wire backing.

**Trench:** bottom 1 ft of fence must be buried 8 inches deep minimum.

**Fence height:** depth of impounded water should not exceed 1.5 ft at any point along the fence.

**Support posts:** 4-inch diameter pine or 1.33 lb/linear ft steel, buried or driven to depth of 18 inches. Steel posts should have projections for fastening fabric.

**Support wire:** wire fence (14 ga with 6-inch mesh) is required to support standard-strength fabric.

**Reinforced, stabilized outlets** (Figure 6.62c): located to limit water depth to 1.5 ft measured at lowest point along fenceline. Outlet allows safe storm flow bypass.

- Crest height—1 ft maximum
- Width of splash pad—5 ft minimum
- Length of splash pad—5 ft minimum

**Fence fabric:** synthetic filter fabric conforming to specifications in Table 6.62b, and containing UV inhibitors and stabilizers to provide a life of 6 months minimum at temperatures from 0° to 120° F. (Burlap may be used for short periods, not exceeding 60 days.)

<table>
<thead>
<tr>
<th>Physical Properties</th>
<th>Minimum Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filtering efficiency</td>
<td>85%</td>
</tr>
<tr>
<td>Tensile strength at 20% (max) elongation:</td>
<td>30 lb/linear inch</td>
</tr>
<tr>
<td>Standard strength</td>
<td>50 lb/linear inch</td>
</tr>
<tr>
<td>Extra strength</td>
<td></td>
</tr>
<tr>
<td>Slurry flow rate</td>
<td>0.3 gpm/ft²</td>
</tr>
</tbody>
</table>

6.62.2
Installation

NOTE: Sediment fence captures sediment by backing up water to allow deposition. It is relatively ineffective for filtration because it clogs too rapidly. The sedimentation pool behind the fence is very effective and may reduce the need for expensive sediment basins and traps.

To use sediment fence effectively, provide access to the locations where sediment accumulates and provide reinforced, stabilized outlets for emergency overflow (Figure 6.62c).

Sediment fence is most effective when used in conjunction with other practices such as perimeter dikes or diversions.

Location

Locate the fence at least 10 ft from the toe of steep slopes to provide sediment storage and access for cleanout (Figure 6.62b).

The fence line should be nearly level through most of its length to impound a broad, temporary pool. Stabilized outlets are required for bypass flow, unless fence is designed to retain all runoff from the 10-yr storm (Figure 6.62b).

The fence line may run slightly off level (grade less than 1%) if it terminates in a level section with a stabilized outlet, diversion, basin, or sediment trap. There must be no gullyling along the fence or at the ends. Sediment fence should not be used as a diversion.
Reinforced, Stabilized Outlets

Any outlet where storm flow bypass occurs must be stabilized against erosion.

Set outlet elevation so that water depth cannot exceed 1.5 ft at the lowest point along the fenceline (Figure 6.62c).

Set fabric height at 1 ft maximum between support posts spaced no more than 4 ft apart. Install a horizontal brace between the support posts to serve as an overflow weir and to support top of fabric. Provide a riprap splash pad as shown in Figure 6.62c.

Excavate foundation for the splash pad a minimum 5 ft wide, 1 ft deep, and 5 ft long on level grade. The finished surface of the riprap should blend with surrounding area, allowing no overfall. The area around the pad must be stable.

![Diagram showing reinforced, stabilized outlet for sediment fence.](image)

Figure 6.62c Perspective of reinforced, stabilized outlet for sediment fence.

Construction

Dig a trench approximately 8 inches deep and 4 inches wide, or a V-trench, in the line of the fence as shown in Figure 6.62d.

Drive posts securely, at least 18 inches into the ground, on the downslope side of the trench. Space posts a maximum of 8 ft if fence is supported by wire, 6 ft if extra-strength fabric is used without support wire. Adjust spacing to place posts at low points along the fenceline.

Fasten support wire fence to upslope side of posts, extending 6 inches into the trench as shown in Figure 6.62d.

Attach continuous length of fabric to upslope side of fence posts. Avoid joints, particularly at low points in the fence line. Where joints are necessary, fasten fabric securely to support posts and overlap to the next post.

6.62.4
Figure 6.62d Detail of sediment fence installation.

Place the bottom 1 ft of fabric in 8-inch deep trench lapping toward the upslope side. Backfill with compacted earth or gravel as shown in Figure 6.62d.

To reduce maintenance, excavate a shallow sediment storage area on upslope side of fence where sedimentation is expected. Provide good access to deposition areas for cleanout and maintenance.

Allow for safe bypass of storm flow to prevent overtopping failure of fence.

DO NOT install sediment fence across intermittent or permanent streams, channels, or any location where concentrated flow is anticipated.
Common Trouble Points

Fence sags or collapses—common causes are:
- drainage area too large,
- too much sediment accumulation allowed before cleanout,
- approach too steep, or
- fence not adequately supported.

Fence fails from undercutting—common causes are:
- bottom of fence not buried at least 8 inches at all points,
- trench not backfilled with compacted earth or gravel,
- fence installed on excessive slope, or
- fence located across drainageway.

Fence is overtopped—common causes are:
- storage capacity inadequate, or
- no provision made for safe bypass of storm flow.
- Do not locate fence across drainage way.

Erosion occurs around end of fence—common causes are:
- fence terminates at elevation below the top of the temporary pool,
- fence terminates at unstabilized area, or
- fence located on excessive slope.

Maintenance

Sediment fence requires a great deal of maintenance. Inspect sediment fences periodically and after each rainfall event.

Should fabric tear, decompose, or in any way become ineffective, replace it immediately. Replace burlap at least every 60 days.

Remove sediment deposits promptly to provide adequate storage volume for the next rain and to reduce pressure on fence. Take care to avoid undermining fence during clean out.

Remove all fencing materials and unstable sediment deposits after the contributing drainage area has been properly stabilized, inspected, and approved. Bring the disturbed area to grade and stabilize as shown in the vegetation plan.

6.62.6