4.4.1 Silt Fence

Definition

A temporary sediment barrier consisting of a filter fabric stretched across and attached to supporting posts and entrenched. Some silt fence is wire reinforced for support.

Purpose

The purpose of a silt fence is to slow the velocity of water and retain sediment onsite.

Conditions Where Practice Applies

A silt fence should only be installed for sediment capture under sheetflow conditions. It should not be installed for channel flow conditions or in live streams or waterways.

Planning Considerations

Silt fences can trap a much higher percentage of suspended sediments than straw bales and are preferable to straw barriers in many cases. The most effective application is to install two parallel silt fences spaced a minimum of three feet apart. The installation and maintenance methods outlined here can improve performance.

Silt fences composed of a wire support fence with attached synthetic filter fabric slow the flow rate significantly and have high filtering efficiency. Both woven and nonwoven synthetic fabrics are commercially available. The woven fabrics are generally stronger than the nonwoven fabrics. When tested under acid and alkaline water conditions, most of the woven fabrics increase in strength. There is a variety of reactions among the nonwoven fabrics. The same is true of testing under extensive ultraviolet radiation. Permeability rates vary regardless of fabric type. While all of the fabrics demonstrate high filtering efficiencies for sandy sediments, there is considerable variation among both woven and nonwoven fabrics when filtering finer silt and clay particles.

Design Criteria

1. *No formal design is required for many small projects and for minor and incidental applications.*
2. *Silt fences shall have an expected usable life of six months. They are applicable around perimeters and stockpiles, and at temporary locations where continuous construction changes the earth contour and runoff characteristics.*
3. *Silt fences have limited applicability to situations in which only sheet or overland flows are expected. They normally cannot filter the volumes of water generated by channel flows, and many fabrics do not have sufficient structural strength to support the weight of water ponded behind the fence line.*

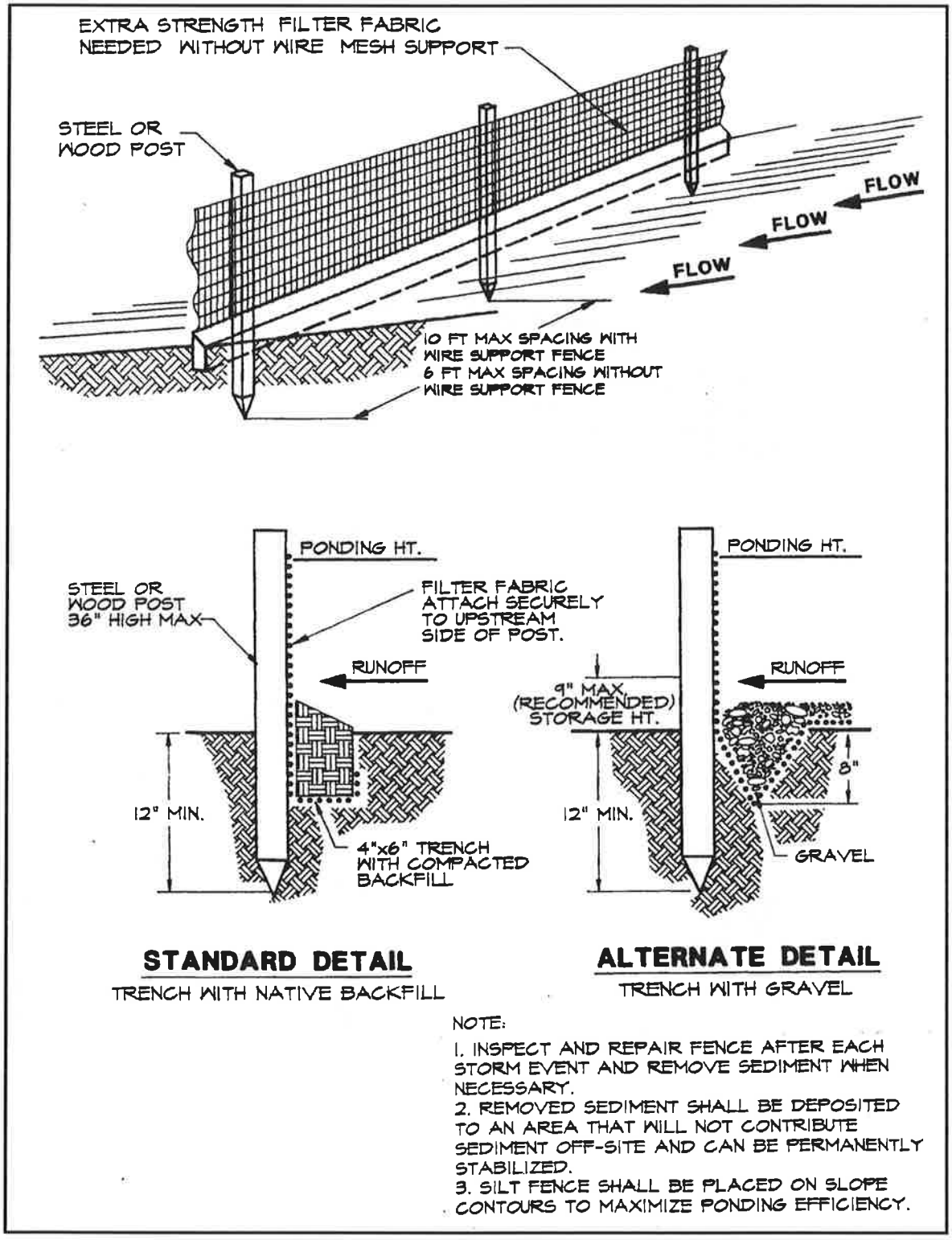

Figure 4.4a. Silt Fence

Source: Erosion Draw

8. *When attaching 2 silt fences together, place the end post of the second fence inside the end post of the first fence. Rotate both posts at least 180 degrees in a clockwise direction to create a tight seal with the filter fabric. Drive both posts into the ground and bury the flap (see* ***Figure 4.4b****).*
9. *The trench shall be backfilled and the soil compacted over the filter fabric.*
10. *The most effective application consists of a double row of silt fences spaced a minimum of 3 feet apart, so that if the first row collapses it will not fall on the second row. Wire or synthetic mesh may be used to reinforce the first row (see* ***Figure 4.4c****).*
11. *When used to control sediments from a steep slope, silt fences should be placed away from the toe of the slope for increased holding capacity (see* ***Figure 4.4d****).*
12. *Silt fences shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.*

Maintenance

1. *Silt fences shall be inspected within 24 hours after each ½-inch rainfall event and at least once a week. Any required repairs shall be made immediately.*
2. *Should the fabric on a silt fence decompose or become ineffective before the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.*
3. *Sediment deposits should be removed when deposits reach approximately one-half the height of the barrier.*
4. *Any sediment deposits remaining in place after the silt fence is no longer required shall be dressed to conform with the existing grade, prepared, and seeded.*