SILT FENCE

(feet)
CODE 920

(Source: USDA Natural Resources Conservation Service - Illinois)

DEFINITION

A temporary barrier of entrenched geotextile fabric (filter fabric) stretched across and attached to supporting posts used to intercept sediment laden runoff from small drainage areas of disturbed soil.

PURPOSE

The purpose of this practice is to cause deposition of transported sediment load from sheet flows leaving disturbed areas.

CONDITIONS WHERE PRACTICE APPLIES

A silt fence may be used subject to the following conditions:

1. The maximum allowable slope distances contributing runoff to a silt fence are listed in the following table:

Slope (%)	Maximum Spacing along Slope (ft.)
25	50
20	75
15	125
10	175
Flatter than 10	200

2. The maximum drainage area for overland flow to a silt fence shall not exceed 1/2 acre per 100 feet of fence.
3. Where erosion occurs in the form of sheet erosion.
4. There is no concentration of water flowing to the barrier.
5. Where effectiveness is required for one construction season or 6 months, whichever is less.

CRITERIA

All silt fence shall be placed as close to the contour as possible, with the ends extending upslope. When only one row of fence is used, or it is the last in a series, the area below the fence must be undisturbed or stabilized.

Silt fence fabric shall meet the requirements in material specification **592 GEOTEXTILE** Table 1 , Class II with a minimum apparent opening size (AOS) of 30 for for woven.

Fence posts shall be a minimum of 48 inches long. Wood posts shall be of sound quality wood with a minimum cross sectional area of 1.5 x 1.5inch. Steel posts shall be standard T and U sections weighing not less than 1.33 pounds per linear foot or other steel posts having equivalent strength and

bending resistance. The maximum spacing shall be 5 feet. When wire or other forms of approved backing is used, the maximum spacing may be increased to 8 feet. The posts shall be driven a minimum of 18 inches into the ground or as approved by the engineer. Spacing may need to be adjusted so the posts are located in low areas where water may pond. Additional posts may be required at low areas.

Wire fence shall be a minimum 14-gauge wire with a maximum 6-inch mesh opening. The filter fabric shall be furnished in a continuous roll cut to the length of the silt fence needed to avoid splices.

When splices are necessary, the fabric shall be spliced at a support post and posts twisted together per drawing IUM-620BW so silt-laden water cannot escape through the fence.

The height of a silt fence shall be a minimum of 24 inches above the original ground surface. Wire or another form of approved support mesh backing shall be used on silt fence exceeding 24 inches in height.

The silt fence shall be entrenched to a minimum depth of 6 inches, with an additional 6 inches extending along the bottom of the trench in the upslope direction. The trench shall be backfilled, posts installed, and the soil compacted over the fabric,.

The silt fence may also be entrenched by static slicing. Static slicing consists of the insertion of a narrow custom-shaped blade approximately 8 inches into the ground, while simultaneously pulling the silt fence fabric into the opening created as the blade is pulled through the ground. The blade imparts no vibration or oscillatory motion. The tip of the blade is designed to slightly disrupt the soil upward, preventing horizontal compaction of the soil and creating optimum soil conditions for mechanical compaction. Compaction follows (2 passes typically) using a tire on the tractor to pull the slicing machine. Post-setting and driving, followed with tying the fabric to the post, finalizes the installation.

The filter fabric and wire support, if used, must be securely fastened to the upslope side of the posts using heavy duty wire staples at least one inch long or tie wires (10 gage minimum), or in accordance with manufacturer's recommendations. The fabric shall be attached to the wire support to prevent sagging of the fabric.

Silt fence shall not cross contours

Silt fence shall be used prior to the establishment of erosion controls and installed prior to the clearing of existing vegetation and grading work.

CONSIDERATIONS

Silt fence should be considered for trapping sediment where sheet and rill erosion may be expected to occur in small drainage areas. Silt fence should not be placed in areas of concentrated flows, such as streams or ditches.

Research has shown that silt fence can trap a much higher percentage of suspended sediments than straw bale barriers and in most cases is the preferred option. As with straw bale barriers, improper placement, as well as improper installation and maintenance, of silt fence will significantly decreases the effectiveness of this practice.

Silt fence may be sold with additional support systems including wire backing or polymeric mesh. Post spacing can be lengthened to 8 feet if wire or poly mesh backed silt fence is used. When traditional silt fence is used appropriately and as part of a suite of practices, wire or poly mesh fences are often not necessary. In each type of silt fence, the practice should be used as a last defense and not as a one-stop

solution to erosion and sediment problems.

For protection of storm drain inlets refer to practice standards **INLET PROTECTION – UNPAVED AREAS 863 or INLET PROTECTION – PAVED AREAS 861**.

For protection of culvert inlets refer to practice standard **CULVERT INLET PROTECTION 808**.

PLANS AND SPECIFICATIONS

Plans and specifications for installing silt fence shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. At a minimum include the following:

1. Location(s) where the silt fence is to be installed.
2. The type, size, spacing, and insertion depth of fence posts.
3. The type and size of wire or other approved support mesh backing, if used.
4. The type of filter fabric used.
5. The method of anchoring the filter fabric.
6. The method of fastening the filter fabric to the fence posts.
7. The rock size and location of gravel check dams, if used.

All plans shall include the installation, inspection, and maintenance schedules with the responsible party identified.

Standard Drawing **IL-620 SILT FENCE PLAN** or **IL-620W SILT FENCE WITH WIRE SUPPORT PLAN** can be used as the plan sheets.

OPERATION AND MAINTENANCE

Silt fence shall be removed when they have served their usefulness, but not before the upslope areas have been permanently stabilized.

Silt fence shall be inspected no less frequently than every week during construction. Should the fabric decompose or become ineffective prior to the end of the expected usable life and the fence still is necessary, the fabric or the entire system shall be replaced promptly.

Sediment deposits must be removed when the level of deposition reaches approximately one-half the height of the silt fence.

Any sediment deposits remaining in place after the silt fence is no longer required shall be dressed to conform to the existing grade, a seedbed prepared and the site vegetated.

REFERENCES

North Carolina Sedimentation Control Commission, 1988. Erosion and Sediment Control Planning and Design Manual. NC

Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1992. Virginia Erosion and Sediment Control Handbook. 3rd ed., VA

Washington State Department of Ecology, 2000. Stormwater Management Manual for Western Washington. WA

International Erosion Control Association, 2008, Silt Fence Installation Efficacy: Definitive Research Calls for Toughening Specifications and Introducing New Technology

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