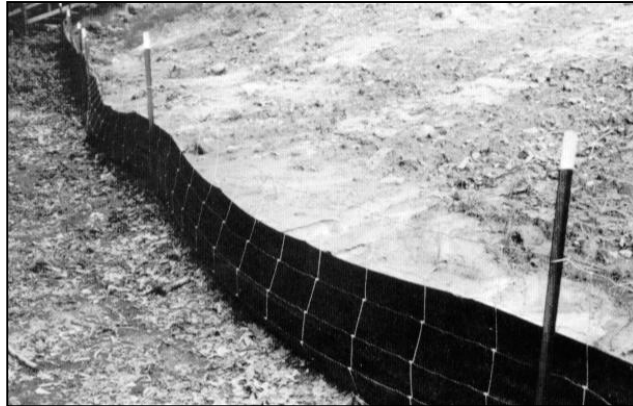


NATURAL RESOURCES CONSERVATION SERVICE  
ILLINOIS URBAN MANUAL  
PRACTICE STANDARD

## SILT FENCE

(ft.)  
CODE 920



(Source: NC Erosion and Sediment Control Field Manual)

### 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 lengths contributing runoff to a silt fence are listed in the following table:

Slope (%)	Maximum Spacing (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; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Where effectiveness is required for more than one construction season or 6 months, whichever is less.
6. As protection for a storm drain inlet refer to practice standard INLET PROTECTION - FABRIC DROP 860.
7. As protection for a culvert inlet refer to practice standard CULVERT INLET PROTECTION 808.

## CRITERIA

All silt fences shall be placed as close to the contour as possible, with the ends extending upslope. The area below the fence must be undisturbed or stabilized.

Silt fence fabric shall meet the requirements in material specification 592 GEOTEXTILE Table 1 or 2, Class I with an minimum apparent opening size (AOS) of 30 for non-woven and 50 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 3.0 square inches. Steel posts shall be standard T and U sections weighing not less than 1.33 pound per linear foot or other steel posts having equivalent strength and bending resistance. The maximum spacing shall be 5 feet. When wire or other form 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 that posts are located in low areas where water may pond.

Wire fence shall be a minimum 12-gauge wire with a maximum 6-inch mesh opening. All other forms of support, such as polymeric mesh, shall be approved by the engineer/inspector.

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 with a minimum 6-inch overlap, folded over and securely fastened so that 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 and shall not exceed a height of 30 inches above the ground surface. Wire or another form of approved support mesh backing shall be used on silt fences 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. When wire or another form of support mesh backing is used, the wire or other approved support mesh shall extend into the trench a minimum of 3 inches. The trench shall be backfilled and the soil compacted over the fabric.

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 not be stapled or wired to the wire support or to existing trees.

If the silt fence must cross contours, with the exception of the ends of the fence, gravel check dams placed perpendicular to the back of the fence shall be used to minimize concentrated flow and erosion along the back of the fence. The gravel check dams shall be approximately 1 foot deep at the back of the fence and be continued perpendicular to the fence at the same elevation until the top of the check dam intercepts the ground surface behind the fence. The gravel check dams shall consist of appropriately sized and specified rock for the fence line grade and contributing drainage area. The gravel check dams shall be located

every 10 feet along the fence where the fence must cross contours. The fence line grade and slope length in combination shall be stable after the installation of the check dams.

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

### **CONSIDERATIONS**

Silt fences should be considered for trapping sediment where sheet and rill erosion may be expected to occur in small drainage areas. Silt fences should not be placed in areas of concentrated flows.

Research has shown that silt fences can trap a much higher percentage of suspended sediments than can 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 fences have, in many instances, significantly decreased the effectiveness of this practice.

While both woven and non-woven fabrics are commercially available, the woven fabric generally displays higher strength than the non-woven fabrics do. When tested under acid and alkaline water conditions, most of the woven fabrics increase in strength. There are a variety of reactions among non-woven fabrics. The same is true of testing under extensive ultra violet radiation. Permeability rates demonstrate very high filtering efficiencies for sandy sediments, there is considerable variation among both woven and non-woven fabrics when filtering the finer silt and clay particles.

### **PLANS AND SPECIFICATIONS**

Plans and specifications for installing silt fences 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 where the silt fence is to be installed.
2. The type, size, and spacing 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 fencing support.
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 fences shall be removed when they have served their usefulness, but not before the upslope areas have been permanently stabilized.

Silt fences shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.

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 should be removed after each rainfall. They 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. 3<sup>rd</sup> ed., VA

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

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