ILLINOIS URBAN MANUAL
PRACTICE STANDARD

SILT FENCE

CODE 920

DEFINITION

A temporary barrier of entrenched geotextile fabric (filter fabric) stretched across and attached to supporting posts used to intercept sediment laden sheet flow runoff from small drainage areas of disturbed soil so as to settle out suspended soil particles.

PURPOSE

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

CONDITIONS WHERE PRACTICE APPLIES

1. Where runoff occurs causing sheet erosion.

2. Downslope areas for perimeter protection from sheet flow.

3. Where adjacent areas are to be protected from silt laden runoff.

4. Where effectiveness is required until permanent stabilization of the disturbed areas

CRITERIA

The maximum drainage area for overland flow to a silt fence shall not exceed 1/2 acre per 100 feet of fence.

All silt fence shall be placed as close to the contour as possible, with the ends extending upslope.

Silt fence shall not be placed across, or in areas of concentrated flow such as; streams, swales, or ditches.

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

When 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 be, at a minimum, selected using material specification **IUM 592 GEOTEXTILE, Table 1,Class 2**.

Fence posts shall be a minimum of 48 inches long. Wood posts shall be of sound quality wood with a nominal cross sectional area of 2 x 2 inches. 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 between posts shall be 5 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.

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 around, or beneath the fence.

The height of a silt fence shall be a minimum of 24 inches above the original ground surface. 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 6 inch extension of fabric along the bottom may need to be cut where two fences are spliced per the method mentioned above.

The posts shall be set, fabric installed, trench backfilled, and the soil compacted over the fabric to 95%.

The silt fence may also be entrenched by static slicing. Static slicing consists of the insertion of a narrow custom-shaped blade approximately 10 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 shall impart no vibration or oscillatory motion. The tip of the blade shall be designed to slightly disrupt the soil upward, preventing horizontal compaction of the soil and creating optimum soil conditions for mechanical compaction. Compact (2 passes typically) using a tire on the tractor. Post driving followed by tying or stapling the fabric to the post shall finalize the installation.

The filter fabric shall be securely fastened to the upslope side of the wooden posts using heavy duty wire staples at least 1 inch long, or in accordance with manufacturer's recommendations. Fabric shall be attached to steel posts according to manufacturer’s recommendations.

If a silt fence crosses contours, J-Hooks shall be installed perpendicular to the upslope side of the fence in order to minimize concentrated flow and erosion along the upslope side of the fence and more broadly distribute sediment deposition

Silt fence shall be installed prior to the clearing of existing vegetation and grading work if the clearing results in the exposure of bare soil.

CONSIDERATIONS

Silt fence may be sold with additional support systems including wire backing or polymeric mesh. Post spacing can be lengthened to 10 feet if wire or poly mesh backed silt fence is used. When traditional silt fence is used appropriately along with multiple erosion & sediment control practices, wire or poly mesh fences are often not necessary.

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 wire fence needed to avoid

splices. The wire mesh shall not be buried and compacted in the anchor trench; the bottom level of mesh stops at ground level.

The filter fabric and wire support, if used, shall be securely fastened to the upslope side of the wooden posts using heavy duty wire staples at least one inch long or in accordance with manufacturer's recommendations. The fabric shall be attached to the wire support to prevent sagging of the fabric. Fabric shall be attached to steel posts according to manufacturer's recommendations.

Where space allows, silt fence at the end of a slope should be placed an adequate distance from the toe to allow for sediment storage.

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, material and insertion depth of fence posts.
3. Location and interval distance of J-hooks, if used.
4. The type and size of wire or other approved support mesh backing, if used.
5. The type of filter fabric used.
6. The method of anchoring the filter fabric.
7. The method of fastening the filter fabric to the fence posts.
8. 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-620A SILT FENCE PLAN** or **IL-620A(W) SILT FENCE WITH WIRE SUPPORT PLAN** can be used as the plan sheets.

OPERATION AND MAINTENANCE

Silt fence shall be removed once upslope areas have been permanently stabilized.

Silt fence shall be inspected no less frequently than every week during construction. Should any part of the silt fence installation (fabric, posts, backfill seal, etc.) become ineffective prior to the required duration of it's use, the individual part, or the entire system shall be replaced promptly.

Sediment deposits shall be removed when the level of deposition reaches no greater than 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. See **IUM STANDARD, PERMANENT VEGETATION 880**

REFERENCES

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

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 Tech.

October 2017 urbst920.doc