

A Landowners Guide to Erosion & Sediment Control  
For Single Family Residences  
Disturbing over 10,000 sq. ft.



Grayson County, Virginia

Prepared by:

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# **Erosion & Sediment Control Minimum Standards for a Single Family Dwelling Disturbing over 10,000 sq.ft.**

## **General**

The following are considered minimum standards and additional requirements may be imposed if deemed necessary by the County to conform to the latest edition of the Virginia Erosion and Sediment Control Handbook. A construction entrance and perimeter control is to be established prior to beginning other clearing, grading, or construction activities. Erosion and sediment control measures are to be maintained in good condition until the site is vegetated and the measures are removed from the site. All temporary erosion and sediment control measures are to be removed within 30 days after permanent vegetation is established.

## **Construction Entrance**

The construction entrance is to be stabilized with crushed stone or aggregated base material. Location, width and length will be dictated by site conditions. Generally, the width shall not be less than 12 feet or greater than 20 feet. The length shall be sufficient to eliminate the tracking of mud onto the public streets. Generally the length will not be less than 70 feet. Sediment shall be removed from roads at the end of each workday by shoveling or sweeping and transported to an area designated by the County Inspector. Street washing will be allowed only after sediment is removed in this manner. The construction entrance is to be utilized by all vehicular traffic entering or leaving the site.

## **Perimeter Control**

To prevent silt from leaving the site, a silt fence or berm is to be installed along the entire perimeter, excluding the construction entrance. The County may waive the installation of silt fence in those areas where it is apparent that the fence would serve no useful purpose. Where properly lined swales are to be installed, the fence should be located so as to prevent silt from entering the swale. The silt fence should be installed across the swale near the downstream end. Silt fence and its installation is to conform to pages III-25 of the Virginia Erosion and Sediment Control Handbook, Third Edition (1992).

## **Vegetation**

A temporary vegetative cover will be established on all disturbed areas, including stockpiles, etc. which will not be brought to final grade within 14 days. Soil preparation and seeding will be accomplished immediately after the removing vegetative cover or stockpiling. A fast germinating seed will be used. Temporary seeding is to conform to pages III-285 thru III-288 of the Virginia Erosion and Sediment Control Handbook, Third Edition (1992).

All areas disturbed by construction shall be stabilized with permanent seeding immediately following finish grading. Mulch (straw or fiber) will be used to stabilize the areas until permanent vegetation is established. Seed, fertilizer and lime will be applied to mulching. Permanent seeding is to conform to pages III-293 thru III-309 of the Virginia Erosion and Sediment Control Handbook, Third Edition (1992).

## **Maintenance**

The silt fence shall be checked for undermining and deterioration following each rainfall event or weedy if no rainfall has occurred. The seeded areas will be checked regularly to ensure that a good stand is maintained. Areas will be fertilized and reseeded as needed.

**For Technical Assistance Contact:**

Grayson County Building Department Office: 276-773-2322

New River Soil & Water Conservation District: 276-236-7191

Virginia Department of Environmental Qualities: Phone: 1-276-676-4800 Fax: 1-276-676-4899  
(Southwest Regional Office: Abingdon, VA)

**Temporary Stone Construction Entrance**

**Ref. form Standard and Specifications 3.02 of the Virginia ESC Handbook**

**Definition:** A stabilized stone pad with a filter fabric under liner located at points of vehicular ingress and egress on a construction site.

**Purpose:** To reduce the amount of mud transported onto paved roads by motor vehicles or run off.

**Condition where practice applies:** Wherever traffic will be leaving a construction site and move directly onto a public road or other paved area.

**Planning Considerations:** Construction entrances provide an area where a significant amount of mud can be removed from construction vehicle tires before they enter a public road. A filter fabric liner is used as a “separator” to minimize the dissipation of aggregate into the underlying soil due to construction traffic loads. If the action of the vehicles traveling over the gravel pad is not sufficient to remove the majority of the mud or there exists an especially sensitive traffic situation on the adjacent paved road, the tires must be washed before the vehicle enters the public road. If washing is necessary, provisions must be made to intercept the wash water and trap the sediment so it can be collected and stabilized.

**Design Criteria:**

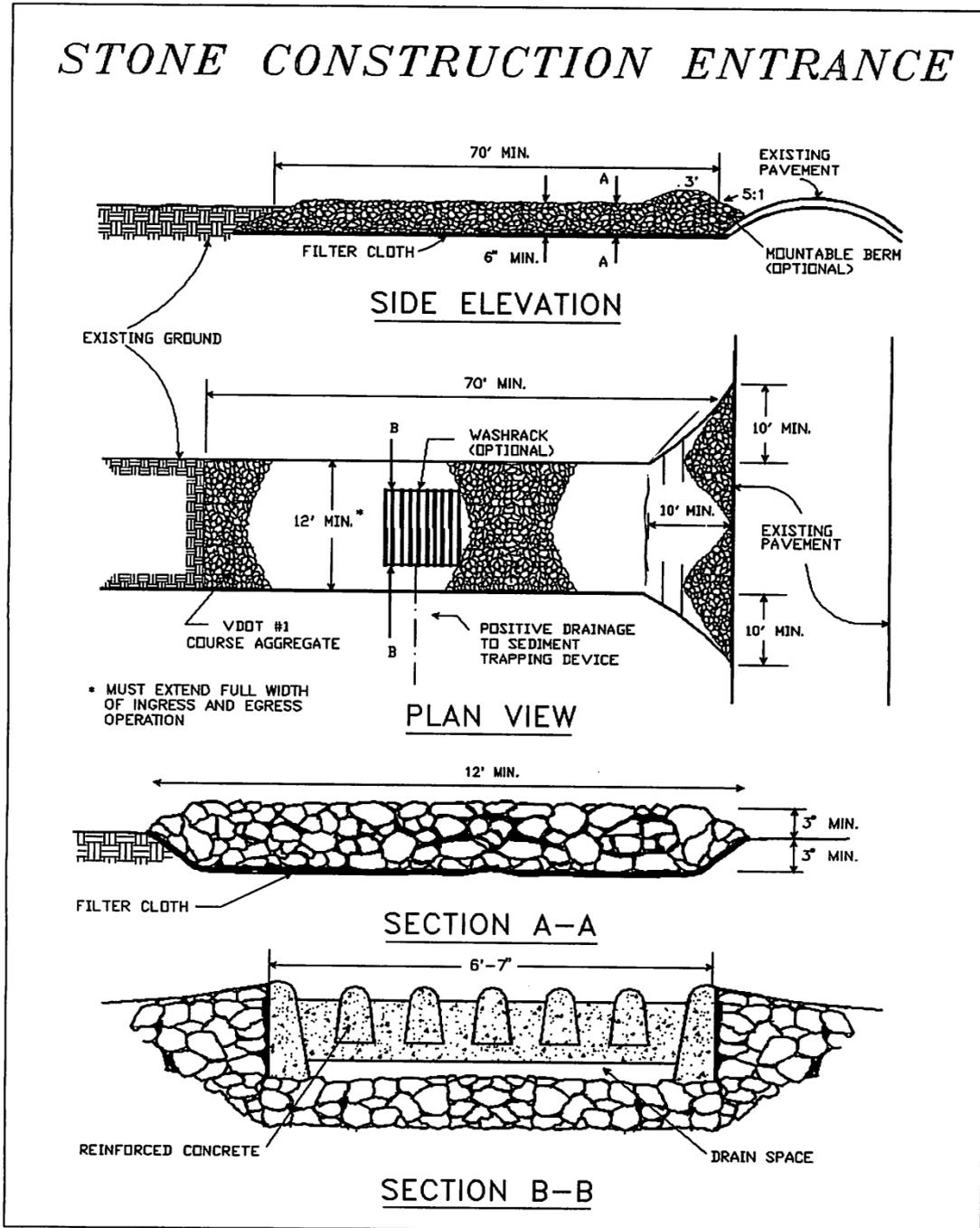
*Aggregate Size:* VDOT 31 Coarse Aggregate (2to3 inch stone) should be used.

*Entrance Dimensions:* The aggregate layer must be at least 6 inches thick. It must extend the full width of the vehicular ingress and egress area and have a minimum 12-foot width. Generally, the length will not be less than 30-feet and 70-feet on larger sites.

*Location:* The entrance should be located to provide for maximum utilization by all construction vehicles.

*Construction Specifications:* The area of the entrance must be excavated a minimum of 3 inches and must be cleared of all vegetation, roots, and other objectionable material. The filter fabric under liner will then be placed the full width and length of the entrance. The filter cloth utilized shall be a woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. Following the installation of the filter cloth, the stone shall be placed to the specified dimensions.

*Maintenance:* The entrance shall be maintained in condition which will prevent tracking of flow of mud onto public right-of-ways. This may require periodic top dressing with additional stone or the washing and reworking of existing stone as conditions demand and repair and/or cleanout of any structures used to trap sediment. All materials spilled, dropped, washed, or tracked from vehicles into roadways or into storm drains must be removed immediately.



Source: Adapted from 1983 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC

Plate 3.02-1

## Silt Fence

### **Ref. from Standard & Specifications 3.05 of Virginia ESC Handbook**

**Definition:** A temporary sediment barrier consisting of a synthetic filter fabric stretched across and attached to supporting posts and entrenched.

**Purpose:** The intercept and detain small amounts of sediment from disturbed areas during construction operations in order to prevent from leaving the site; to decrease the velocity of sheet flows and lower moderate level channel flows.

**Conditions where practice applies:** Below disturbed areas where erosion would occur in the form of sheet and rill erosion, where the size of the drainage area is no greater than one-fourth of an acre per 100 feet of barrier length, the maximum slope length behind the barrier is 100 feet; and the maximum slope gradient behind the barrier is 50 percent (2:1); in minor swales or ditch lines where the maximum contributing drainage area is no greater than 1 percent and flow is no greater than 1 cfs.

**Design Criteria:** No formal design is required. An effort should be made to locate silt fence at least 5 feet to 7 feet beyond the base of disturbed slopes with grades greater than 7%; the use of silt fences, because they have such a slow permeability, is limited to situations in which only sheet or overland flows are expected and where concentrated flows originate from drainage areas of 1 acre or less; field experience had demonstrated that, in many instances, silt fence is installed too short (less than 16 inches above ground elevation). The short fence is subject to breaching even small storm events and will require maintenance "clean out" ore often. Properly supported silt fence which stands 24 to 34 inches above the existing grade tends to promote more effective sediment control.

#### **Construction Specifications: Materials**

Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn, and shall be certified by the manufacture of supplier as conforming to the Virginia E&S Control requirements. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months or expected usable construction life at a temperature range of 0 degrees F to 120 degrees F. If wooden stales are utilized for silt fence construction, they must have a diameter of 2 inches when oak is used and 4 inches when pine is used. Wooden stales must have a minimum length of 5 feet. If steel posts (standard "U" or "T" section) are utilized for silt fence construction they must have a minimum weight of 1.33 pounds per linear foot and shall have a minimum length of 5 feet. Wire fence reinforcement for silt fences using standard-strength filter cloth shall be a minimum of 14 gauge and shall have a maximum mesh spacing of 6 inches.

#### **Installation:**

The height of a silt fence shall be a minimum of 16 inches above the original ground surface and shall not exceed 34 inches above ground elevation; the filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and securely sealed. A trench shall be excavated approximately 4-inches wide and 4-inches deep in the upslope location of the measure. When wire support is used, standard-strength filter cloth may be used. Posts for this type installation shall be placed a maximum of 10-feet apart. The wire mesh fence must be fastened securely to the upslope side of the posts using a heavy duty wire staples at least one inch long, tie wires or hog rings. The wire shall extend into the trench a minimum of two inches and

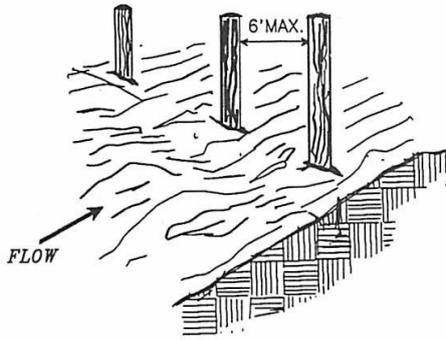
shall not exceed more than 34 inches above the original ground surface. The standard-strength fabric shall be stapled or wired to the wire fence, and 8 inches of the fabric shall be extended into the trench. The fabric shall not be stapled to existing trees. When wire support is not used, extra-strength filter cloth shall be used. Posts for this type of fabric shall be placed a maximum of 6-feet apart. The filter fabric shall be fastened securely to the upslope side of the posts using one inch long (minimum) heavy-duty wire staples or tie wires and eight inches of the fabric shall be extended into the trench. The fabric shall not be stapled to existing trees. If a silt fence is to be constructed across a ditch line or swale, the measure must be sufficient length to eliminate end flow, and the plan configuration shall resemble an arc or horseshoe with the ends oriented upslope. (See Plate 30.5-2). Extra-Strength filter fabric shall be used for this application with maximum 3-foot spacing of posts. The 4-inch by 4-inch trench shall be backfilled and the soil compacted over the filter fabric. Silt fence shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.

**Maintenance:**

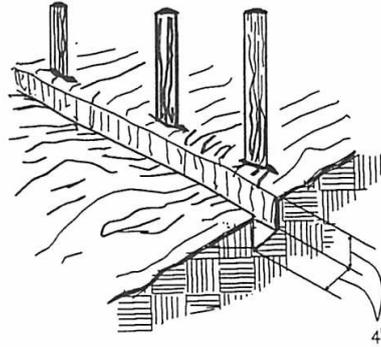
Silt fence shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective prior to the end of the expected usable life and the barrier still be necessary, the fabric shall be replaced promptly. Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half the height of the barrier. 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.

### CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)

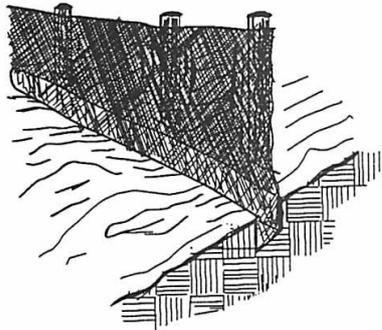
1. SET THE STAKES.



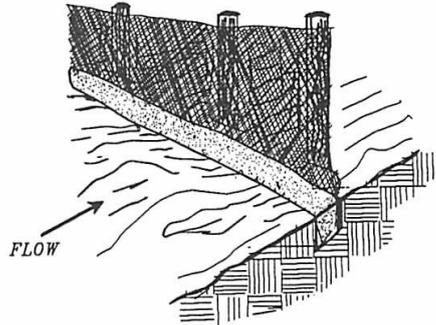
2. EXCAVATE A 4" X 4" TRENCH UPSLOPE ALONG THE LINE OF STAKES.



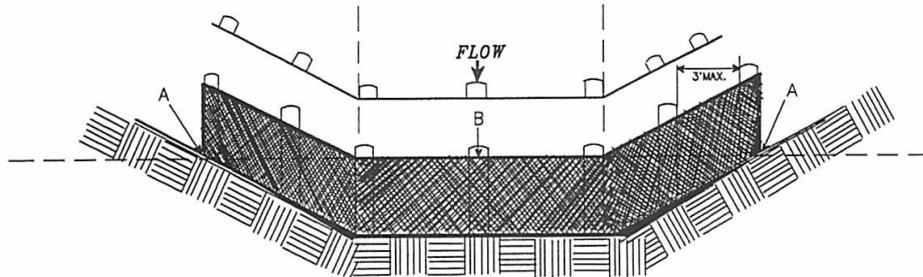
3. STAPLE FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



SHEET FLOW INSTALLATION  
(PERSPECTIVE VIEW)



POINTS A SHOULD BE HIGHER THAN POINT B.

DRAINAGEWAY INSTALLATION  
(FRONT ELEVATION)

Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant

Plate 3.05-2

## **Brush Barrier**

### **Ref. From Standard and Specifications 3.06 Virginia ESC Handbook**

**Definition:** A temporary sediment barrier constructed at the perimeter of a disturbed area from the residue materials available from clearing and grubbing the site.

**Purpose:** To intercept and retain sediment from disturbed areas of limited extent, preventing sediment from leaving the site.

**Conditions where practice applies:** Below disturbed areas subject to sheet and rill erosion, where enough residue material is available for construction of such a barrier; where the size of the drainage area is no greater than one-fourth of an acre per 100 feet of barrier length, the maximum slope length behind the barrier is 100 feet; and the maximum slope gradient behind the barrier is 50 percent (2:1).

**Planning Considerations:** Organic litter and spoil material from site clearing and operations is usually burned or hauled away to be dumped elsewhere. Much of this material can be used effectively on the construction site itself. During clearing and grubbing operations, equipment can push or dump the mixture of limbs, small vegetation and root mat along with minor amounts of rock into windrows along the toe of a slope where erosion and accelerated runoff are expected. Because brush barriers are fairly stable and composed of natural materials, maintenance requirements are small. Field experience has shown, however, that many brush barrier installations are not effective when there are large voids created by the use of material which is too large (such as tree stumps) to provide a compact, dense barrier. Therefore, it is necessary to use residual material under 6 inches in diameter which will create a more uniform barrier or utilize a filter fabric overlay to promote enhanced filtration of sediment laden runoff.

#### **Construction Specifications:**

##### Without Filter Cloth

The height of a brush barrier shall be a minimum of 3 feet. The width of a brush barrier shall be a minimum of 5 feet at its base. The barrier shall be constructed by piling brush, stone, root mat and other material from the clearing process into a mounded row on the contour. Material larger than 6 inches in diameter should not be used.

##### If a Filter is Used

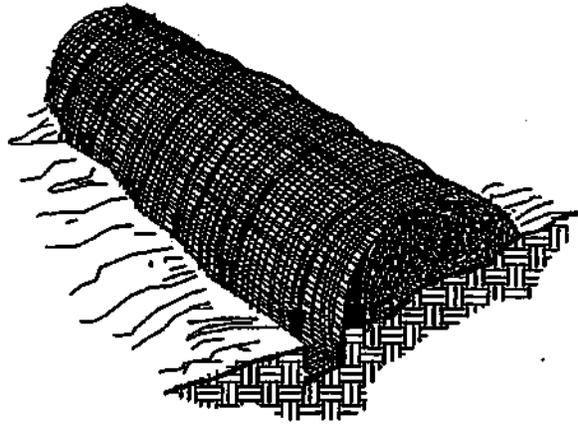
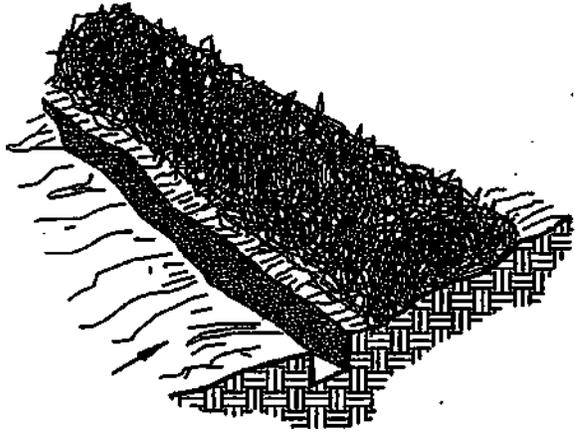
Filter fabric must meet the minimum physical requirements noted in Table 3.05-B. The filter fabric shall be cut into lengths sufficient to lay across the barrier from its up-slope base to just beyond its peak. Where joints are necessary, the fabric shall be spliced together with a minimum 6-inch overlap and securely sealed. A trench shall be excavated 6-inches wide and 4-inches deep along the length of the barrier and immediately uphill from the barrier. The lengths of filter fabric shall be draped across the width of the barrier with the uphill edge placed in the trench and the edges of adjacent pieces overlapping each other. The filter fabric shall be secured in the trench with stakes set approximately 36 inches on center. The trench shall be backfilled and the soil compacted over the filter fabric. Set stakes into the ground along the downhill edge of the brush barrier, and anchor the fabric by tying twine from the fabric to the stakes.

#### **Maintenance:**

Brush barriers shall be inspected after each rainfall and necessary repairs shall be made promptly. Sediment deposits must be removed when they reach approximately one-half the height of the barrier.

CONSTRUCTION OF A BRUSH BARRIER COVERED BY FILTER FABRIC  
(TREE/RESIDUAL MATERIAL WITH DIAMETER > 6)

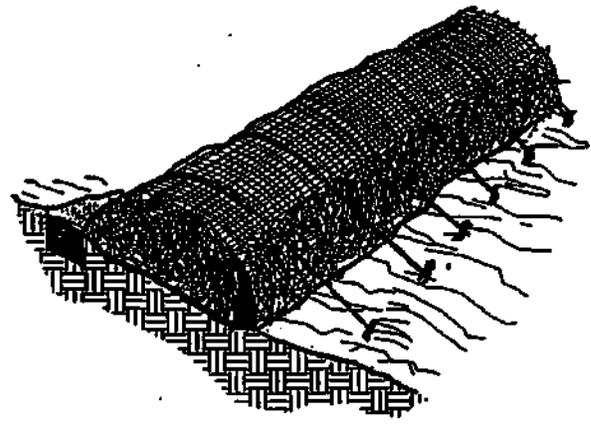
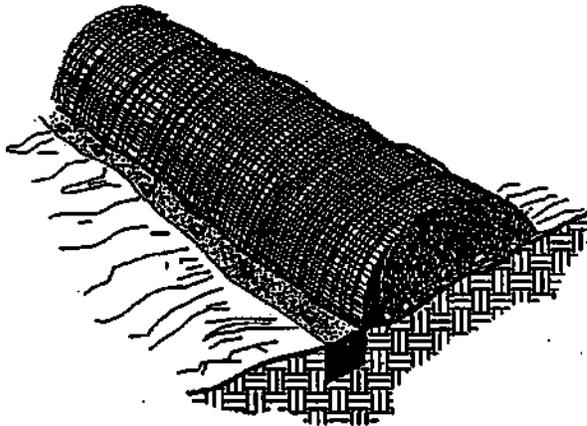
3.06



FLOW

1. EXCAVATE A 4"X 4" TRENCH  
ALONG THE UPHILL EDGE OF THE  
BRUSH BARRIER.

2. DRAPE FILTER FABRIC OVER  
THE BRUSH BARRIER AND INTO  
THE TRENCH. FABRIC SHOULD BE  
SECURED IN THE TRENCH WITH  
STAKES SET APPROXIMATELY 36"  
O.C.



3. BACKFILL AND COMPACT  
THE EXCAVATED SOIL.

4. SET STAKES ALONG THE  
DOWNHILL EDGE OF THE BRUSH  
BARRIER, AND ANCHOR BY TYING  
TWINE FROM THE FABRIC TO  
THE STAKES.

## Mulching

### **Ref. from Standard & Specifications 3.35 Virginia ESC Handbook**

**Definition:** Application of plant residues or other suitable materials to the soil surface.

**Purpose:** To prevent erosion by protecting the soil surface from raindrop impact and reducing the velocity of overland flow; to foster the growth of vegetation by increasing available moisture and providing insulation against extreme heat and cold.

**Conditions where practice applies:** Areas which have been permanently seeded (see Std. & Spec. 3.32 PERMANENT SEEDING) should be mulched immediately following seeding. Areas which cannot be seeded because of the season should be mulched to provide some protection to the soil surface. Mulch shall be used in conjunction with temporary seeding operations as specified in TEMPORARY SEEDING, Std. & Spec. 3.31.

#### **Planning Considerations:**

Mulches are applied to the soil to conserve a desirable soil property or to promote plant growth. A surface mulch is one of the most effective means of controlling runoff and erosion on disturbed land.

#### **Specifications:**

Organic mulches may be used in any area where mulch is required, subject to the restrictions noted in Table 3.35-A.

#### **Application:**

Mulch materials shall be spread uniformly, by hand or machine. When spreading straw mulch by hand, divide the area to be mulched into approximately 1,000 sq. ft. sections and place 70-90 lbs. (1 1/2 to 2 bales) of straw in each section to facilitate uniform distribution.

Mulch anchoring: Straw mulch must be anchored immediately after spreading to prevent displacement. The following methods of anchoring straw may be used:

- Mulch anchoring tool- This is a tractor-drawn implement designed to punch mulch into the soil surface.
- Fiber mulch- Apply fiber mulch by means of a hydorseeder at a rate of 500-750 lbs/acre over top of straw mulch or hay.
- Liquid mulch binders- Application of liquid mulch binders and tackifiers should be heaviest at edges of areas and at crests of ridges and banks, to prevent displacement.
- Mulch nettings and Peg and twine

#### **Maintenance:**

All mulches and soil coverings should be inspected periodically (particularly after rainstorms) to check for erosion. Where erosion is observed in mulched areas, additional mulch should be applied. Inspections should take place up until grasses are firmly established.

<b>TABLE 3.35-A</b>			
<b>ORGANIC MULCH MATERIALS AND APPLICATIONS RATES</b>			
<b>Organic Mulch Materials and Application Rates</b>			
MULCHES:	RATES:		NOTES:
	Per Acre	Per 1000 sq. ft.	
Straw or Hay	1 1/2 - 2 tons (Minimum 2 tons for winter cover)	70 - 90 lbs.	Free from weeds and coarse matter. Must be anchored. Spread with mulch blower or by hand.
Fiber Mulch	Minimum 1500 lbs.	35 lbs.	Do not use as mulch for winter cover or during hot, dry periods.* Apply as slurry.
Cora Stalks	4-6 tons	185 - 275 lbs.	Cut or shredded in 4-6" lengths. Air-dried. Do not use in fine turf areas. Apply with mulch blower or by hand.
Wood Chips	4-6 tons	185 - 275 lbs.	Free of coarse matter. Air-dried. Treat with 12 lbs nitrogen per ton. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.
Bark Chips or Shredded Bark	50 - 70 cu. yds.	1-2 cu. yds.	Free of coarse matter. Air-dried. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.
* When fiber mulch is the only available mulch during periods when straw should be used, apply at a minimum rate of 2000 lbs./ac. or 45 lbs./1000 sq. ft.			

Source: Va. DSWC

III - 353

## **TEMPORARY SEEDING**

### **Ref. from Standards & Specifications 3.31 Virginia ESC Handbook**

**Definition:** The establishment of a temporary vegetative cover on disturbed areas by seeding with appropriate rapidly growing annual plants.

**Purposes:** To reduce erosion and sedimentation by stabilizing disturbed areas that will not be brought to final grade for a period of more than 14 days; to reduce damage from sediment and runoff to downstream or off-site areas, and to provide protection to bare soils exposed during construction until permanent vegetation or other erosion control measures can be established.

**Conditions where practice applies:** Where exposed soil surfaces are not to be fine-graded for periods longer than 30 days. A permanent vegetative cover shall be applied to areas that will be left dormant for a period of more than 1 year.

**Plant Selection:** Select plants appropriate to the season and site conditions from Tables 2.21-B.

**Seedbed Preparation:** Seedbed preparation is essential.

*Liming-* An evaluation should be conducted to determine if lime is necessary for temporary seeding.

*Fertilizer-* Shall be applied as 600 lbs/Vacre of 10-20-10 (14 lbs. /l, 000 ft.) of equivalent nutrients. Lime and fertilizer shall be incorporated into the top 2 to 4 inches of the soil if possible.

*Surface Roughening-* When the area is compacted, crusted, or hardened, the soil surface shall be loosened by disking, raking, harrowing, or other acceptable means.

**Seeding:** Seed shall be evenly applied with a broadcast seeder, drill, cultipacker seeder or hydroseeder.

**Mulching:** Seedings made in fall or winter cover and during hot and dry summer months shall be mulched. Straw mulch should be used during these periods.

**Re-seeding:** Areas which fail to establish vegetative cover adequate to prevent rill erosion will be re-seeded as soon as such areas are identified.

## **PERMANENT SEEDING**

### **Ref. From Standard & Specifications 3.32 Virginia ESC Handbook**

**Definition:** The establishment of perennial vegetative cover on disturbed areas by planting seed.

**Purpose:** To reduce erosion and decrease sediment yield from disturbed areas; to permanently stabilize disturbed areas in a manner that is economical, adaptable to site conditions, and allows selection of the most appropriate plant materials; to improve wildlife habitat; to enhance natural beauty.

**Conditions where practice applies:** Disturbed areas where permanent, long-lived vegetative cover is needed to stabilize the soil. Rough graded areas which will not be brought to final grade for a year or more.

**Planning Considerations:** Vegetation controls erosion by reducing the velocity and the volume of overland flow and protecting the bare soil from raindrop impact. Advantages of seeding over other means of establishing plants include the small initial establishment cost, the wide variety of grasses and legumes available, low labor requirement, and ease of establishment in difficult areas. Disadvantages which must be dealt with are the potential for erosion during the establishment stage, a need to reseed areas which fail to reestablish, limited periods during the year suitable for seeding, the potential need for weed control during the establishment phase, and a need for water and appropriate climatic conditions during germination. Selection of the right plant materials for the site, good seedbed preparation, and conscientious maintenance are important.

**Selecting plant materials:** The factors affecting plant growth are climate, soils, and topography. In selecting appropriate plant materials, one should take into account the characteristics of the physiographic region in which the project is located.

#### **Physiographic Regions:**

**Appalachian and Blue Ridge Region** - This region is divided into plateaus, mountains, and narrow valleys. Soils tend to be shallow and acid, and may erode rapidly on steep slopes. Shaley slopes are often unstable and droughty. This area is colder and drier than the rest of the State. The rugged topography makes plant establishment difficult. Cool season grasses are normally specified in this region.

**Soils** - On the whole, soils in Virginia always require some nitrogen (N) fertilization to establish plants. Phosphorus (P) and potassium (K) are usually needed. Soils can be modified with lime and fertilizer, but climate cannot be controlled. Microclimate, or localized climate conditions, can affect plant growth. A south-facing slope is drier and hotter than a north-facing slope, and may require drought-tolerant plants.

**Land Use** - A prime consideration in selecting which plants to establish is the intended use of the land. All of these uses - residential, industrial, commercial, and recreational - can be separated into two major categories: high-maintenance and low-maintenance.

High maintenance areas will be mowed frequently, limed and fertilized regularly, and will either receive intense use (e.g., athletics) or require maintaining to an aesthetic standard (home lawns). Grasses used for these situations must be fine-leaved and attractive in appearance, able to form tight sod, and be long-lived perennials. They must be well-adapted to the geographic area where they are planted, because constant mowing puts turf under great stress.

Low maintenance areas will be mowed infrequently or not at all; lime and fertilizer may not be applied on a regular basis; the areas will not be subjected to intense use, nor required to have a uniform appearance. These plants must be able to persist with little maintenance over long periods of time. Grass and legume mixtures are favored for these sites because legumes are capable of fixing nitrogen from the air for their own use, and the use of the plants around them.

Seedbed Preparation - The soil on a disturbed site must be modified to provide an optimum environment for seed germination and seedling growth. The surface soil must be loose enough for water infiltration and root penetration. The pH (acidity and alkalinity) of the soil must be such that it is not toxic and nutrients are available, usually between pH 6.0-7.0 sufficient nutrients (added as fertilizer) must be present. After seed is in place, it must be protected with a mulch to hold moisture and modify temperature extremes, and to prevent erosion while seedlings are growing.

The addition of lime is equally as important as applying fertilizer. Lime is best known as a pH, or acidity, modifier, but it also supplies calcium and magnesium which are plant nutrients. Its effect on pH makes other nutrients more available to the plant.

Maintenance: Even with careful, well-planned seeding operations, failures can occur. When it is clear that plants have not germinated on an area or have died these areas must be reseeded immediately to prevent erosion damage. However it is extremely important to determine for what reason germination did not take place and make any corrective action necessary prior to reseeding the area. Healthy vegetation is the most effective erosion control available.

### **Specifications:**

#### Selection of Plant Materials

Selection of plant materials is based on climate, topography, soils, land use, and planting season. To determine which plant materials are best adapted to a specific site, use Tables 3.32-A and 3.22-B which describe plant characteristics and list recommended varieties.

Appropriate seeding mixtures for various site conditions in Virginia are given in Tables 3.32-C, 3.32-D and 3.32E. These mixtures are designed for general use, and are known to perform well on the sites described.

#### Seedbed Requirements

Vegetation should not be established on slopes that are unsuitable due to inappropriate soil texture, poor internal structure or internal drainage, volume of overland flow or excessive steepness, until measures have been taken to correct these problems.

To maintain a good stand of vegetation, the soil must meet certain minimum requirements as a growth medium. The existing soil must have these characteristics - Enough fine grained material to maintain adequate moisture and nutrient supply. Sufficient pore space to permit root penetration. A bulk density of 1.2 to 1.5 indicates that sufficient pore space is present. A fine granular or crumb-like structure is also available. Sufficient depth of soil to provide an adequate root zone. The depth to rock or impermeable layers such as hardpans shall be 12 inches or more, except on slopes steeper than 2:1 where the addition of soil is not feasible. A favorable pH range for plant growth. Freedom from toxic amounts of materials harmful to plant growth. Freedom from excessive quantities of roots, branches, large stones, large clods of earth, or trash of any kind.

Necessary structural erosion and sediment control practices will be installed prior to seeding. Grading will be carried out according to the approved plan.

Surfaces will be roughened in accordance with SURFACE ROUGHENING, Std. & Spec. 3.29

### Lime and Fertilizer

Lime and fertilizer needs should be determined by soil tests. Soil tests may be performed by the Cooperative Extension Service Soil Testing Laboratory at VPI&SU, or by a reputable commercial laboratory. Information concerning the State Soil Testing Laboratory is available from county extension agents. Under unusual conditions where it is not possible to obtain a soil test, the following soil amendments will be applied:

Lime - Appalachian Region: 2 tons/acre pulverized agricultural grade limestone  
(901bs./1000ft.2)

Fertilizer — *Mixed grasses and legumes*: 1000 lbs. /acre 10-20-10 or equivalent Nutrients (23 lbs. /1000 ft).  
*Legume stands only*: 1000 lbs. /acre 5-20-10 (231bs. /1000 ft.) is preferred;  
However, 1000 lbs. /acre of 10-20-10 or equivalent may be used.  
*Grass stands only*: 1000 lbs. /acre 10-20-10 or equivalent nutrients, (23 lbs. /1000 ft.)

Incorporation - Lime and fertilizer shall be incorporated into the top 4-6- inches of the soil by disking or other means whenever possible. For erosion control, when applying lime and fertilizer with a hydroseeder, apply to a rough, loose surface.

### Seeding:

Certified seed will be used for all permanent seeding whenever possible. The seed must meet published state standards and bear an official "Certified Seed" label.

Legume seed should be inoculated with the inoculant appropriate to the species.

Apply seed uniformly with a broadcast spreader, drill, culti-packer seeder, or hydroseeder on a firm, friable seedbed. Seedling depth should be ¼ to ½ inch.

### Mulching

All permanent seeding must be mulched immediately upon completion of seed application. Refer to MULCHING, Std. & Spec. 3.35.

### Maintenance of New Seedings

In general, a stand of vegetation cannot be determined to be fully established until it has been maintained for one full year after planting.

### Re-seeding

Inspect seeded areas for failure and make necessary repairs and re-seedings within the same season, if possible.

### Fertilization

Cool season grasses should begin to be fertilized 90 days after planting to ensure proper stand and density. Apply maintenance levels of fertilizer as determined by soil test. In the absence of a soil test, fertilization should be as follows:

Cool season grasses - 4 lbs. nitrogen (N)

1 lb. phosphorus (P) > Per 1000 ft. per year

2 lbs. potash (K)

Seventy-five percent of the total requirements should be applied between September 1 and December 31<sup>st</sup>. The balance should be applied during the remainder of the year. More than 1 lb. of soluble nitrogen per 1000 ft. should not be applied at any one time.

## **KEYS TO SUCCESSFUL ESTABLISHMENT OF GRASSES AND LEGUMES**

### Planning

Where feasible, grading operations should be planned around optimal seeding dates for the particular region. If the time of year is not suitable for seeding a permanent cover (perennial species), a temporary cover crop should be planted. Temporary seeding of annual species (small grains, ryegrasses or millets) often succeeds during periods of the year that are unsuitable for seeding permanent (perennial) species.

### Selection

Seasonality must be considered when selecting species. Grasses and legumes are usually classified as warm or cool season in reference to their season of growth. Cool season plants realize most of their growth during the spring and fall and are relatively inactive or dormant during the hot summer months. Therefore, fall is the most favorable time to plant them. Warm season plants "green-up" late in the spring, grow most actively during the summer, and go dormant at the time of the first frost in fall. Spring and early summer are preferred planting times for warm season plants.

### Seed Mixtures

The addition of a "nurse" crop (quick growing annuals added to permanent mixtures) is a sound practice for soil stabilization, particularly on difficult sites - those with steep slopes; poor, rocky, erosive soils; those seeded out the optimum seeding periods; or in any situation where the development of permanent cover is likely to be slow. The nurse crop germinates and grows rapidly, holding the soil until the slower-growing perennial seedlings become established.

**TABLE 3.32-C  
SITE SPECIFIC SEEDING MIXTURES  
FOR APPALACHIAN/MOUNTAIN AREA**

	<i>Total Lbs. Per Acre</i>
<u>Minimum Care Lawn</u>	
- Commercial or Residential	200-250 lbs.
- Kentucky 31 or Turf-Type Tall Fescue	90-100%
- Improved Perennial Ryegrass *	0-10%
- Kentucky Bluegrass	0-10%
-	
<u>High-Maintenance Lawn</u>	
Minimum of three (3) up to five (5) varieties of bluegrass from approved list for use in Virginia.	125 lbs.
<u>General Slope (3:1 or less)</u>	
- Kentucky 31 Fescue	128 lbs.
- Red Top Grass	2 lbs.
- Seasonal Nurse Crop **	<u>20 lbs.</u>
	150lbs.
<u>Low-Maintenance Slope (Steeper than 3:1)</u>	
- Kentucky 31 Fescue	108 lbs.
- Red Top Grass	2 lbs.
- Seasonal Nurse Crop **	20 lbs.
- Crownvetch ***	<u>20 lbs.</u>
	150 lbs.

\* Perennial Ryegrass will germinate faster and at lower soil temperatures than fescue, thereby providing cover and erosion resistance for seedbed.

\*\* Use seasonal nurse crop in accordance with seeding dates as stated below:

March, April through May 15<sup>th</sup>..... Annual Rye  
 May 16<sup>th</sup> through August 15<sup>th</sup>..... Foxtail Millet  
 August 16<sup>th</sup> through September, October..... Annual Rye  
 November through February ..... Winter Rye

\*\*\* If Flatpea is used, increase to 30 lbs./acre. All legume seed must be properly inoculated. Weeping Lovegrass may also be included in any slope or low-maintenance mixture during warmer seeding periods; add 10-20 lbs/acre in mixes.

**TABLE 3.32-A**  
**CHARACTERISTICS OF COMMONLY SELECTED GRASSES**

Common Name (Botanical Name)	Life Cycle	Seasons	pH Range	Germination Time in Days	Optimum Germination Temperature °F	Winter Hardiness	Drought Tolerance	Fertility	Soil Drainage Tolerance	Seeds Per Pound	Maintenance Requirements	Remarks	Suggested Varieties for Virginia
Tall Fescue (Festuca-arundinacea)	P	C	5.5-6.2	10-14	60-85	F	F	M	SPD	225 K	Low when used for erosion control; high when used in lawn.	Better suited for erosion control and rough turf applications	Ky 31
Tall Fescue (Improved)	P	C	5.5-6.2	10-14	60-85	F	G	M	SPD	220 K	Responds well to high maintenance.	Excellent for lawn and fine turf.	See current VCIA list.
Kentucky Bluegrass (Poa pretense)	P	C	6.0-6.5	14	60-75	G	P	M	SPD	2.2 m	Needs fertile soil, favorable moisture. Requires several years to become well established.	Excellent for fine turfs-takes traffic, mowing. Poor drought/heat tolerance.	See current VCIA list.
Perennial Ryegrass (Lolium perenne)	P	C	5.8-6.2	7-10	60-75	F	F	M-H	SPD	227 K	Will tolerate traffic.	May be added to mixes. *Improved varieties will perform well all year.	See current VCIA list.

A = Annual P = Perennial C = Cool Season Plant W = Warm Season Plant G = Good F = Fair  
P = Poor VP = Very Poor H = High M = Medium L = Low SPD = Somewhat Poorly Drained  
MPD = Moderately Poorly Drained PD = Poorly Drained VDP = Very Poorly Drained

**AGREEMENT IN LIEU OF AN EROSION & SEDIMENT CONTROL PLAN FROM ES-1200**



GRAYSON COUNTY, VIRGINIA

***Agreement in lieu of an Erosion & Sediment Control Plan for a Single Family Residence in a Subdivision or a Single Family Residence disturbing over 10,000 square feet.***

Building Permit Number: \_\_\_\_\_

Subdivision Name: \_\_\_\_\_

Lot Number: \_\_\_\_\_

Location: \_\_\_\_\_

VA Certified Responsible Land Disturber: \_\_\_\_\_

VA RLD Certificate Number: \_\_\_\_\_

In lieu of submission of an Erosion & Sediment Control Plan for the construction of this single family dwelling, I agree to comply with any reasonable requirements determined necessary by the employees of the New River Soil and Water Conservation District and/or employees of Grayson County representing the Erosion and Sediment Control Program Administrator. Such requirements shall be based on the conservation standards contained in the Grayson County Erosion & Sediment Control Ordinance and shall represent the minimum practices necessary to provide adequate control of erosion and sedimentation on or resulting from this project.

As a minimum, all denuded areas on the lot shall be stabilized within seven (7) days of final grading with permanent vegetation or a protective ground cover suitable for the time of the year.

I further understand that failure to comply with such requirements within three working days following notice by the representatives of Grayson County could result in citation for violation of the Grayson County Erosion & Sediment Control Ordinance.

**Measures Specified by the Plan Approving Authority/Grayson County Building Official**

1. Install a construction entrance and install temporary erosion and sediment control devices as the first steps of the land disturbing activity
2. All sediment transported onto a paved or public road shall be removed at the end of each work day
3. Surface runoff from the disturbed areas need to be controlled by silt fence or other approved methods
4. Please contact the New River SWCD for details concerning the maintenance for each Erosion & Sediment Control practice/device used

Signature of Landowner: \_\_\_\_\_

Landowner Name (Print): \_\_\_\_\_

Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Approved by: \_\_\_\_\_

Date: \_\_\_\_\_

***\*This Agreement is not appropriate for churches, small businesses, or multi-home development***