

ACS CE - TEMPORARY STONE CONSTRUCTION ENTRANCE
Refer to and comply with the Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications of the Virginia Frosion & Sedimental Standards and Specifications and Specific Refer to and comply with the Standards and Specifications of the Virginia Erosion & Sediment Control Handbook, latest edition. This information is based on and modeled after it and is provided as a quick reference. DESIGN WWW. ACSDESIGNUC. COM - ENGINEERING - SURVEYING - LANDSCAPE ARCHITECTURE - CONSTRUCTION MANAGEMENT

CULVERT PIPE -ROADWAY EDGE OF PAVEMENT -ROADWAY EDGE OF PAVEMENT **CULVERT INLET** SILT FENCE **FLOW PLAN** NOT TO SCALE CLASS I RIP-RAP **VDOT #3, #357 OR #5 COARSE** AGGREGATE TO REPLACE SILT FENCE IN HORSESHOE WHEN HIGH VELOCITY FLOW IS EXPECTED SECTION OPTIONAL STONE COMBINATION NOT TO SCALE SPECIFICATIONS 1. The height of the silt fence (in front of the culvert opening) shall be a minimum of 16 in. and shall not exceed 34 in.

2. Extra strength filter fabric with a minimum spacing of stakes of 3 ft. shall be used to construct the measure. 3. The placement of silt fence should be approximately 6 ft. from the culvert in the direction of incoming flow, creating a

"horseshoe" shape as shown in detail. 4. If the silt fence cannot be installed properly or the flow and/or velocity of flow to the culvert protection is excessive and may breach the structure, the stone combination noted in detail should be utilized.

MAINTENANCE

1. The structure shall be inspected after each rain and repairs made as needed. 2. Aggregate shall be replaced or cleaned when inspection reveals that clogged voids are causing ponding problems which interfere with on-site construction.

s. Sediment shall be removed and the impoundment restored to its original dimensions when sediment has accumulated to one-half the design depth. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode and cause sedimentation problems. 4. Temporary structures shall be removed when they have served their useful purpose, but not before the upslope area has

been permanently stabilized. I - SILT FENCE CULVERT INLET PROTECTION

Refer to and comply with the Standards and Specifications of the Virginia Erosion & Sediment Control Handbook,

**DESIGN** www.acsbesignllc.com = engineering = surveying = landscape architecture = construction nanagement

atest edition. This information is based on and modeled after it and is provided as a quick reference.

TEMPORARY FILL DIVERSION TEMPORARY RIGHT-OF-WAY DIVERSION DIVERSION DD - DIVERSION DIKES

Refer to and comply with the Standards and Specifications of the Virginia Erosion & Sediment Control Handbook latest edition. This information is based on and modeled after it and is provided as a quick reference.

WWW.ACSDESIGNLIC.COM = ENGINEERING = SURVEYING = LANDSCAPE ARCHITECTURE = CONSTRUCTION MANAGEMENT

4'-6" MIN.

**CROSS-SECTION** 

NOT TO SCALE

ORGANIC MULCH MATERIALS AND APPLICATION RATES Rate per acre Mulches 1000SF Free from weeds and coarse matter. Must be anchored. Spread with  $1\frac{1}{2}$  - 2 tons (min. 2 Straw or hay mulch blower or by hand. tons for winter cover) Do not use as mulch for winter cover or during hot, dry periods.\* Fiber mulch minimum 1500 lbs. Apply as slurry. Cut or shredded in 4-6" lengths. Air-dried. Do not use in fine turf Corn stalks 4 - 6 tons areas. Apply with mulch blower or by hand. 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 Wood chips 4 - 6 tons handler, or by hand. Bark chips or | 50 - 70 cu.yds. Free of coarse matter. Air-dried. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand. shredded bark \* 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.

COMPACTED SOIL

**FLOW** 

Before mulching, complete required grading and install needed sediment control practices. Lime and fertilizer should be incorporated and surface roughening accomplished as needed. Seed should be applied

before mulching except in the following cases: a. Where seed is to be applied as part of a hydroseeder slurry containing fiber mulch.

b. Where seed is to be applied following a straw mulch spread during winter months. Application. Mulch material shall be spread uniformly, by hand or machine. When spreading straw by hand, divide the area to be mulched into approximately 1,000 SF 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. Other organic mulches listed in table do not require anchoring. The following methods of anchoring straw may be used:

a. Mulch anchoring tool (often referred to as a krimper or krimper tool). This is a tractor-drawn implement designed to punch mulch into the soil surface. This method provides good erosion control with straw. It is limited to use on slopes no steeper than 3:1 where equipment can operate safely. Machinery shall be operated along the contours.

b. Fiber mulch, Apply fiber mulch by means of a hydroseeder at a rate of 500-750 lbs./ acre over top of straw mulch or hay. It has an added benefit of providing additional mulch to the newly seeded area. c. Liquid mulch binders. Application of liquid mulch binders and tackifiers should be heaviest at the edges of areas

and at crests of ridges and banks, to prevent displacement. The remainder of the area should have binder applied uniformly. Binder may be applied after mulch is spread or may be sprayed into mulch as it is being blown onto the

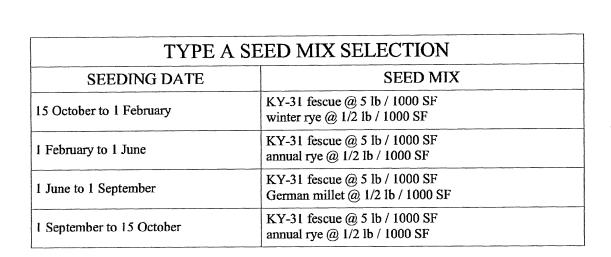
Mulch nettings. Lightweight plastic, cotton, or paper nets may be stapled over the mulch according to manufacturer's

Peg and twine. Because it is labor-intensive, this method is feasible only in small areas where other methods cannot be used. Drive 8-10 inch wooden pegs to within 3 inches of the soil surface, every 4 feet in all directions. Stakes may be driven before or after straw is spread. Secure mulch by stretching twine between pegs in a criss-cross-within-a square. Turn twine 2 or more times around each peg.

Chemical mulches, synthetic binders, and asphalt binders may be used in situations as described in VESCH, latest

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. Nets and mats should be inspected after rainstorms for dislocation or failure. If washouts or breakage occur, re-install netting or matting as necessary after repairing damage to the slope or ditch. Inspections should take place up until grasses are firmly established. Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface; repair as needed.

MU - MULCHING Refer to and comply with the Standards and Specifications of the Virginia Erosion & Sediment Control Handbook, latest edition. This information is based on and modeled after it and is provided as a quick reference. DESIGN WWW.ACSDESIGNLLC.COM = ENGINEERING = SURVEYING = LANDSCAPE ARCHITECTURE = CONSTRUCTION MANAGEMENT



TYPE B (SLOPES 3:1 OR STEEPER) SEED MIX SELECTION SEEDING DATE SEED MIX crown vetch @ 1/2 lb / 1000 SF perennial ryegrass @ 1/2 lb / 1000 SF 15 March to 1 May red top @ 1/8 lb / 1000 SF crown vetch @ 1/2 lb / 1000 SF perennial ryegrass @ 1/2 lb / 1000 SF 15 August to 1 October

red top @ 1/8 lb / 1000 SF

140 lb / 1000 SF pulverized agricultural limestone

FERTILIZER: 5-20-10 @ 25 lb / 1000 SF 38-0-0 @ 7 lb / 1000 SF

MULCH:

Shall be used over all seeded areas and shall be applied in accordance with Standard and Specification 3.35 of the Virginia Erosion and Sediment Control Handbook, latest edition.

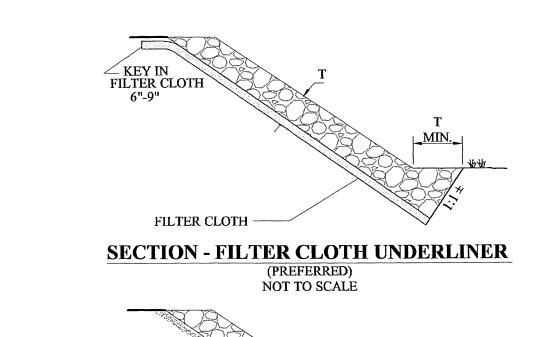
Incorporation of lime and fertilizer, selection of certified seed, mulching, maintenance of new seedlings, and reseeding shall be in accordance with specifications contained within the Virginia Erosion and Sediment Control Handbook, latest edition.

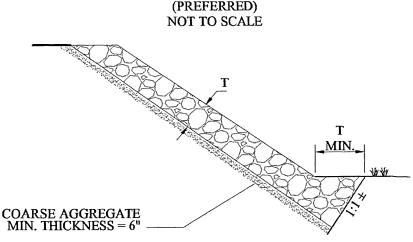
Additional seeding to be performed as required by the inspector.

SEED APPLICATION: Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder, or hydroseeder on a firm, friable, seedbed. Maximum seeding depth shall be 1/4 inch.

PS - PERMANENT SEEDING Refer to and comply with the Standards and Specifications of the Virginia Erosion & Sediment Control Handbook, latest edition. This information is based on and modeled after it and is provided as a quick reference.

WWW.ACSDESIGNILC.COM = ENGINEERING = SURVEYING = LANDSCAPE ARCHITECTURE = CONSTRUCTION MANAGEMENT





**SECTION - GRANULAR FILTER** (ALTERNATE)

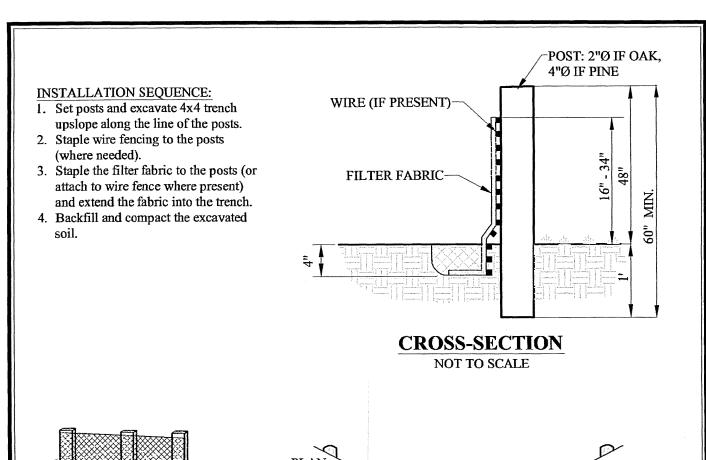
NOT TO SCALE

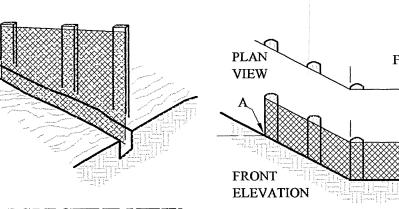
Subgrade preparation: The subgrade for the riprap or filter ahsll be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density approximately that of the surrounding undisturbed material. Brush, trees, stumps and other objetionable material shall be removed Filter Fabric or Granular Filter: Placement of the filter fabric should be done immediately after slope preparation. For

granular filters, the stone should be spread in a uniform layer to the specified depth (normally 6 inches). Where more than one layer of filter material is used, the layer should be spread so that there is minimal mixing of the layers. When installing geotextile filter cloths, the cloth should be placed directly on the prepared slop. The edges of the sheets should overlap by at least 12 inches. Anchor pins, 15 inches long, should be space every 3 feet of the overlap. The upper and lower ends of the cloth should be buried at least 12 inches. Care should be taken not to damage the cloth when placing the riprap. If damage occurs, that sheet should be removed and replaced. For large stone (Class II or grater), a 6-inch layer of granular filter will be necessary to prevent damage to the cloth.

Stone Placement: Placement of riprap should follow immediately after placement of the filter. The riprap should be placed so that it produces a dense well-graded mass of stone with a minimum of voids. The desired distribution of stones throughout the mass may be obtained by selective loading at the quarry, controlled dumping of successive loads during final placing, or a combination of these methods. The riprap should be placed to its full thickness in one operation. The riprap should not be placed in layers. The riprap should not be placed by dumping into chutes or similar methods which are likely to cause segregation of the various stone sizes. Care should be taken not to dislodge the underlying material when placing the stones.

Refer to and comply with the Standards and Specifications of the Virginia Erosion & Sediment Control Handbook. latest edition. This information is based on and modeled after it and is provided as a quick reference. DESIGN WWW.ACSDESIGNLLC.COM = ENGINEERING = SURVEYING = LANDSCAPE ARCHITECTURE = CONSTRUCTION MANAGEMENT





PERSPECTIVE VIEW NOT TO SCALE

DESIGN

**DRAINAGEWAY INSTALLATION** POINTS 'A' SHOULD BE HIGHER THAN POINT 'B'

NOT TO SCALE Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the requirements noted in VESCH Table 3.05-B, latest edition. 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 on the upslope side of the proposed location of the measure. When wire support is used, standard-strength filter cloth may be used. Wire fence reinforcement for silt fence using standard-strength filter cloth shall be a minimum of 14 gauge and shall have a minimum mesh spacing of 6 inches.

Posts for this type of installation shall be placed a maximum of 10 feet apart. When wire support is not used, extra-strength filter cloth must be used. Posts for this type of installation shall be placed a maximum of 6 feet apart. Inspect all silt fencing each week and after every significant runoff producing event, and repair the fence as needed.

SF - SILT FENCE BARRIER Refer to and comply with the Standards and Specifications of the Virginia Erosion & Sediment Control Handbook, latest edition. This information is based on and modeled after it and is provided as a quick reference. DESIGN WWW.ACSDESIGNILG.COM = ENGINEERING = SURVEYING = LANDSCAPE ARCHITECTURE = CONSTRUCTION MANAGEMENT

Cuts, fills and graded area which will not be moved 1. Cut or fill slopes with a grade steeper than 3:1 shall be stair-step graded or grooved

Grading Stair-step grading may be carried out on any material soft enough to be ripped with a bulldozer. Slopes consisting of soft rock with some subsoil are particularly suited to stair-step grading. The ratio of vertical cut distance to the horizontal distance shall be less than 1:1 and the horizontal

portion of the "step" shall slope toward the vertical Individual vertical cuts shall not be more than 30 inches on soft materials and not more than 40 inches

in rocky materials. Grooving

Grooving consists of using machinery to create a series of ridges and depressions which run perpendicular to slope (on contour) Grooves may be made with any appropriate

implement which can be safely operated on the slope and which will not cause undue compaction. Suggested implements include discs, tillers, spring harrows and the teeth on a front-end loader bucket. Such grooves shall not be less than 3 inches deep nor further than 15 inches apart.

As lifts of fill are constructed, soil and rock materials may be allowed to fall naturally onto the slope

Colluvial materials (soil deposits at the base of slopes or from old stream beds) shall not be used in fills as they flow when saturated.

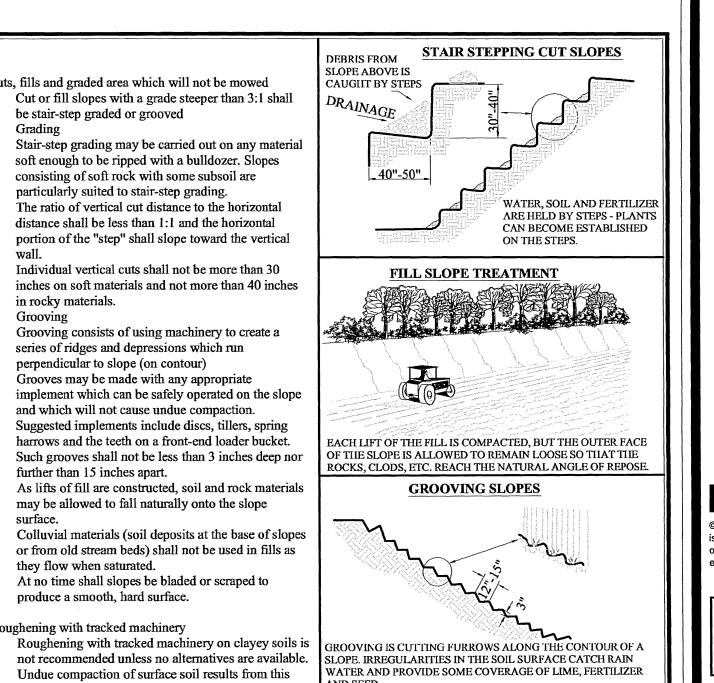
At no time shall slopes be bladed or scraped to produce a smooth, hard surface.

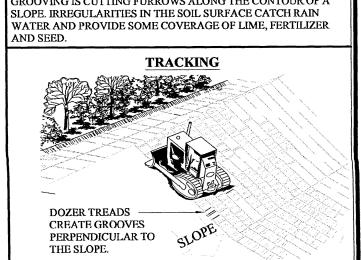
Roughening with tracked machinery

Undue compaction of surface soil results from this practice. Sandy soils do not compact severely, and may be tracked. In no case is tracking as effective as other roughening methods described When tracking is the chosen surface roughening technique, it shall be done by operating tracked machinery up and down the slope to leave horizontal

depressions in the soil. As few passes of the machinery should be made as possible to minimize compaction.

Roughened areas shall be seeded and mulched as soon as possible to obtain optimum seed germination and seedling growth.





SR - SURFACE ROUGHENING Refer to and comply with the Standards and Specifications of the Virginia Erosion & Sediment Control Handbook, latest edition. This information is based on and modeled after it and is provided as a quick reference. DESIGN WWW. ACSDESIGNILG. CON - ENGINEERING - SURVEYING - LANDSCAPE ARCHITECTURE - CONSTRUCTION MANAGEMENT Lic. No. 031787 16 JAN 2009

ENGINEERING - SURVEYIN LANDSCAPE ARCHITECTUR CONSTRUCTION MANAGEMENT

2203 PETERS CREEK ROAD ROANOKE, VIRGINIA 24017 P 540.562.2345 F 562.2344 INFO@ ACSDESIGNLLC.COM WWW . ACSDESIGNLLC.COM

© ACS DESIGN, LLC - Material included herein is covered by copyright. Use of this work in whole or in part is strictly forbidden without the expressed written consent of ACS DESIGN, LLC.

DESIGNED BY: CHECKED BY: 16 JAN 2009 JOB NUMBER: **REVISIONS:** 

C2.2

**EROSION CONTROL** NOTES AND DETAILS