Small Projects Erosion and Sediment Control Packet

Overview:

Erosion and Sediment Pollution have an impact on the waters of the commonwealth of Pennsylvania and the waters downstream. Sediment pollution causes significant damage to streams and creeks negatively impacting things from macroinvertebrates and trout to creating obstructions in commercial shipping lanes in our bays and harbors. As a result of the significant impacts of erosion and consequential sediment pollution the PA Department of Environmental Protection(DEP) has adopted Chapter 102 to address Erosion and Sediment Pollution.

Regulatory Requirements:

A written Erosion and Sediment(E&S) control plan must be present on site for any projects involving more than 5,000 square feet of disturbance in Pennsylvania. A written E&S Plan must be present on site for any project in a Special Protection Watershed(HQ or EV Waters). About 94% of Wayne County is Special Protection Watershed.

Erosion and Sediment Control Plan

An E&S Plan is a written plan which describes the project in a step by step way and describes how the project will minimize erosion and sediment pollution. It does so by following these considerations:

1. Minimize the disturbed area and time of exposure: In PA when active work is completed, disturbed areas are required to be stabilized within four days. A project prioritizing and isolating areas of disturbance to be stabilized as they are finished is ideal.

2. Save Existing Vegetation: By minimizing the work area and saving existing vegetation Erosion can be minimized and sediment pollution reduced. Sensitive areas should be marked off and not disturbed.

3. Save Topsoil for Revegetation: Topsoil is rich in organic nutrients and takes hundreds of years to form. The preservation and utilization of this soil is essential in an effective E&S plan.

4. Avoid Steep Slopes: Steep slopes worsen erosion issues.

5. Protect ditches, streams, lakes, wetlands, and other bodies of water: Try to maintain at least a 150' riparian buffer between the work area and waters of the commonwealth.

6. Implement and Maintain Effect Best Manage Practices: Best Management Practices (BMP's) are things or practices that are implemented to reduce erosion and sediment pollution. An action could be not working in the rain. A physical BMP could be a silt fence, compost filter sock, rock construction entrance, etc. BMP's used on a site should be described in a construction detail in the E&S Plan and have their maintenance described in the plan.

Small Project Packet:

The Small Project Packet is designed to be used to provide guidance for plans that meet the following characteristics:

1. Disturbance less than once acre and there are no steep slopes in excess of 10%. Projects disturbing over one acre will require an NPDES Permit.

2. No streams or major drainage courses.

3. Applied for during a Chapter 105 General Permit Application.

Erosion and Sediment Plan Components:

1. Existing topography of the site. The slope/grade of the land, location of any waters to include streams, ponds, wetlands, springs, etc., and any other significant features of the site.

2. A description of the proposed alterations to the site.

3. The staging of earth disturbance activities. Determine the sequence in which the disturbance will occur keeping in mind the most effective way to control erosion is to disturb only areas necessary for construction. Disturbed areas should be stabilized immediately after disturbance has been completed.

4. Best Management Practices(BMP's) These are types of control measures such as silt fence, compost filter sock, rock construction entrances, or working in the dry.

5. A maintenance plan for all control measures used.

Suggested Sequence of Construction:

1. Install tire cleaning rock construction entrance.

2. Install temporary perimeter BMP's such as compost filter socks, silt fence, etc.

3. Grade site and stockpile topsoil. Install temporary protection(silt fence or compost filter sock) around or downslope of stockpiles of topsoil and the stockpiles stabilized with seed and mulch.

4. Install and immediately stabilize and watercourse with appropriate lining. Construct building

5. Finish grade and permanently stabilize(seed and mulch, sod, stone, etc.) the site.

Seeding and Mulching:

1. <u>Time of seeding:</u> The best time to seed is as soon as you're done working the soil. The longer a disturbed area is exposed to the elements the more soil will erode and the harder it will be to grow seed. Check for recommended seasonal plantings in your area.

2. <u>Surface Preparation:</u> Refer to BMP manual for surface preparation. A soil test is recommended to determine the proper amount of lime and fertilizer. Feel free to contact WCD or Penn State Extension for more guidance.

3. <u>Seeding methods and mulching:</u> Applying seed and mulch is the best way to stabilize disturbed soils from erosion. Mulch, a generic term for organic material like straw, pine mulch, etc., helps to protect soil from erosive rain. Gras seed growing into the soil will hold the soil and protect it from the erosion of rain and runoff. Mulch should be applied at about 3 tons per acre.

Small Project E & S Control Plan Narrative

Applicant/Owner Name:_____Date_____Phone#:_____

Home/Mailing Address:_____

City:_____ State:_____Zip Code:_____Email:_____

Other Contact Person:_____Phone#_____

Site Location *(Include Map)*:_____

Name of nearest receiving water:_____Township:_____

Estimated project start and end dates:Start:_____ End_____

Type of Project *(house, addition, store, fill site, etc)*:_____

Project Acres *(entire property)*:_____Disturbed acres:_____

Present Site Conditions *(vegetative cover, existing disturbance, type of land use etc)*:_____

_____

Soil Type(s) *(include soil map)*:_____

Wetlands, streams, ponds, etc. on site or within 150' of the work area?:_____

Narrative *(Give a detailed description of proposed work.)*

_____

_____

_____

_____

Sequence of Construction *(Label each step in numerical order as it relates to E&S)*

1._____

2._____

3._____

4._____

5._____

6._____

7._____

8._____

Temporary Controls
Detail any temporary E&S practices such as silt fence, compost filter socks, rock construction entrance, temporary seeding and mulching, etc. Any temporary best management practices(BMP's) should have details showing their construction in the plan.

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Permanent Controls
List all permanent controls for the project site. Permanent controls are those that permanently stabilize disturbed soils such as seed and mulch for vegetative growth, gravel cover, paving, concrete, etc. Descriptions for revegetation should include seed mixture to be used, top soil application, and soil amendments such as lime and fertilizer.

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Maintenance Program
All BMP's(best management practices) require maintenance to function properly. Straw bales deteriorate. Newly seeded areas may fail to germinate or wash out with rain. Silt fence and compost filter socks should be cleaned out before they're at half capacity. Please describe the how and when of how you will be maintaining BMP's from installation to completion and stabilization of the project. Typically BMP's should be checked once a week and after each rain event, and inspections should be documented to verify maintenance.

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_____

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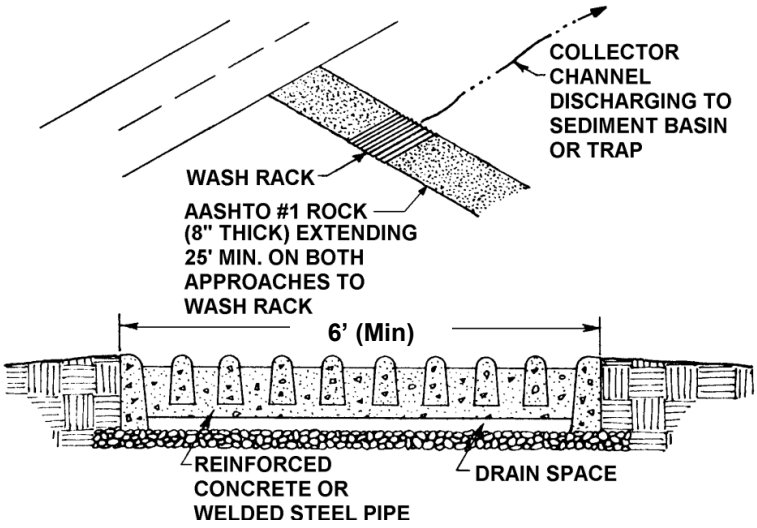
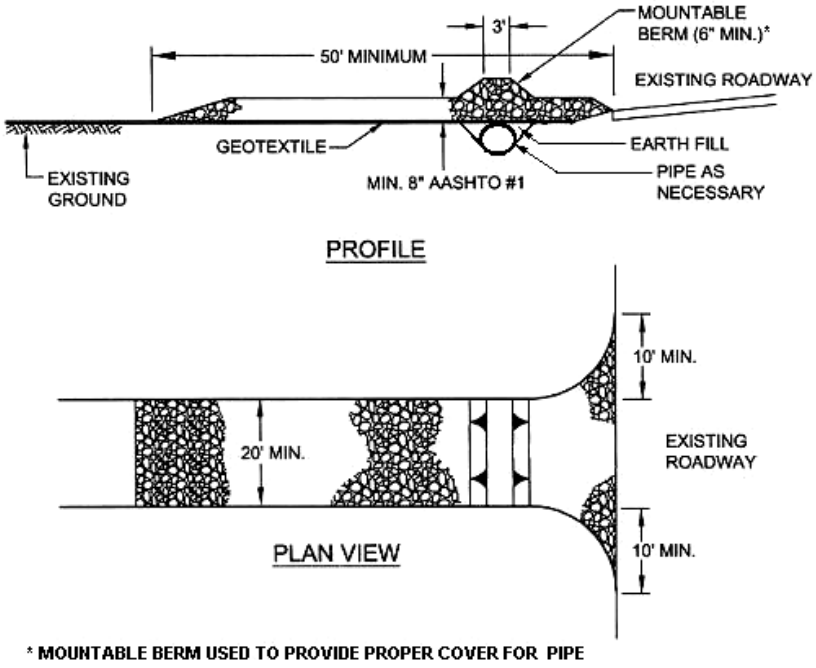
_____

Please keep a copy of this plan for your records and provide a copy for your contractor if applicable. This plan must be on site at all times during earth disturbance activities.

STANDARD CONSTRUCTION DETAIL # 3-2
Rock Construction Entrance with Wash Rack



Rock Construction Entrance



* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

Modified from Maryland DOE

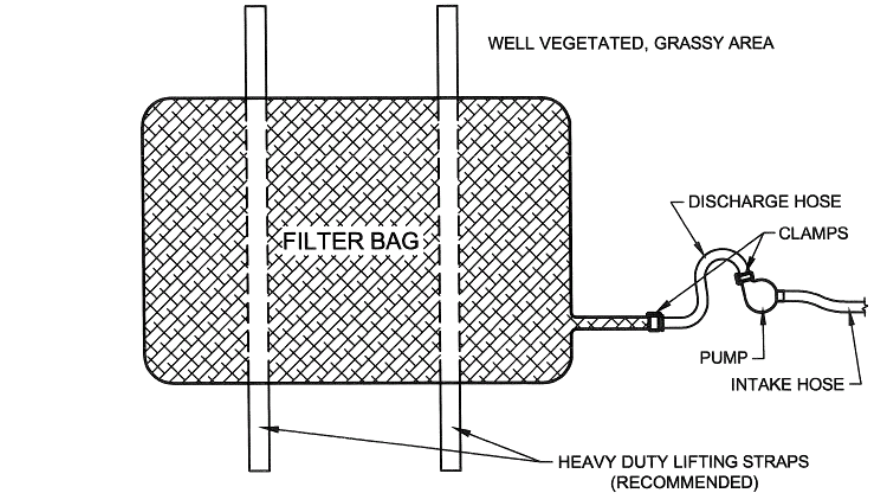
Remove topsoil prior to installation of rock construction entrance. Extend rock over full width of entrance.

Runoff shall be diverted from roadway to a suitable sediment removal BMP prior to entering rock construction entrance.

Mountable berm shall be installed wherever optional culvert pipe is used and proper pipe cover as specified by manufacturer is not otherwise provided. Pipe shall be sized appropriately for size of ditch being crossed.

MAINTENANCE: Rock construction entrance thickness shall be constantly maintained to the specified dimensions by adding rock. A stockpile shall be maintained on site for this purpose. All sediment deposited on paved roadways shall be removed and returned to the construction site immediately. If excessive amounts of sediment are being deposited on roadway, extend length of rock construction entrance by 50 foot increments until condition is alleviated or install wash rack. Washing the roadway or sweeping the deposits into roadway ditches, sewers, culverts, or other drainage courses is not acceptable.

STANDARD CONSTRUCTION DETAIL # 3-16
Pumped Water Filter Bag



PLAN VIEW

ELEVATION VIEW

PA DEP

Low volume filter bags shall be made from non-woven geotextile material sewn with high strength, double stitched "J" type seams. They shall be capable of trapping particles larger than 150 microns. High volume filter bags shall be made from woven geotextiles that meet the following standards:

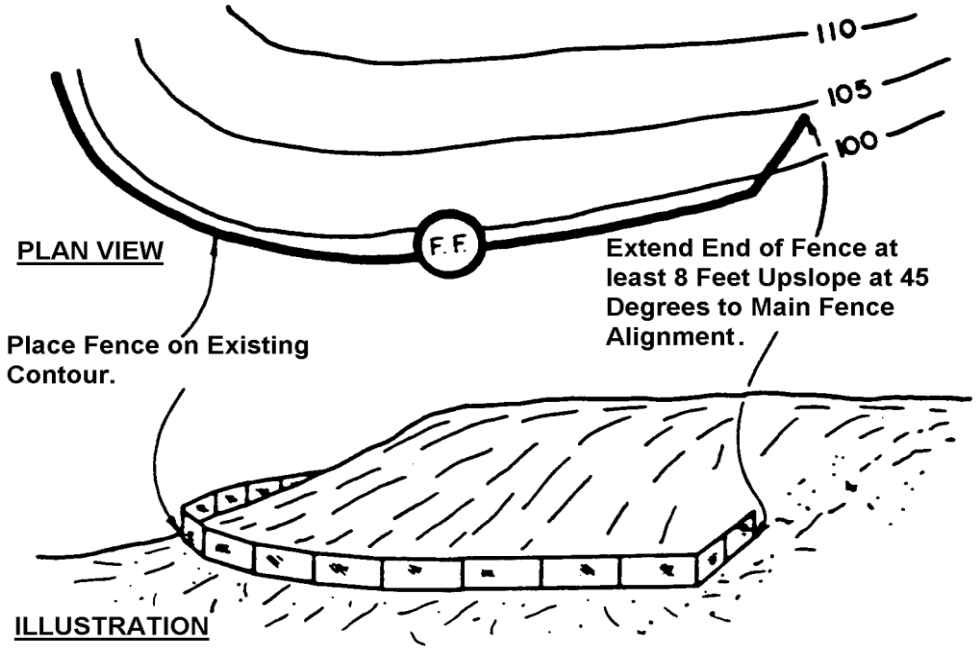
Property	Test Method	Minimum Standard
Avg. Wide Width Strength	ASTM D-4884	60 lb/in
Grab Tensile	ASTM D-4632	205 lb
Puncture	ASTM D-4833	110 lb
Mullen Burst	ASTM D-3786	350 psi
UV Resistance	ASTM D-4355	70%
AOS % Retained	ASTM D-4751	80 Sieve

A suitable means of accessing the bag with machinery required for disposal purposes shall be provided. Filter bags shall be replaced when they become ½ full of sediment. Spare bags shall be kept available for replacement of those that have failed or are filled. Bags shall be placed on straps to facilitate removal unless bags come with lifting straps already attached.

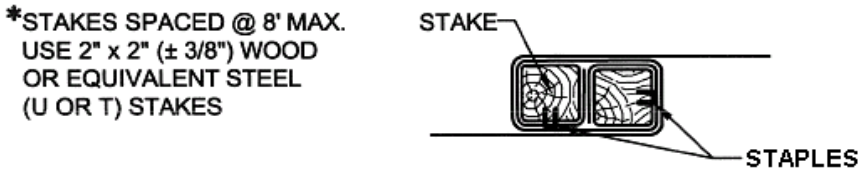
Bags shall be located in well-vegetated (grassy) area, and discharge onto stable, erosion resistant areas. Where this is not possible, a geotextile underlayment and flow path shall be provided. Bags may be placed on filter stone to increase discharge capacity. Bags shall not be placed on slopes greater than 5%. For slopes exceeding 5%, clean rock or other non-erodible and non-polluting material may be placed under the bag to reduce slope steepness.

No downslope sediment barrier is required for most installations. Compost berm or compost filter sock shall be installed below bags located in HQ or EV watersheds, within 50 feet of any receiving surface water or where grassy area is not available.

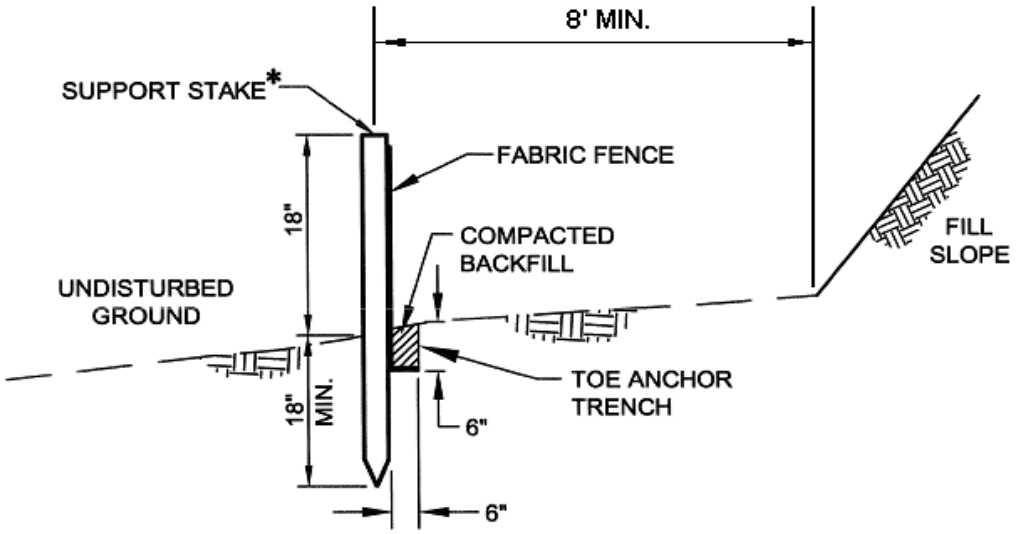
Sediment Barrier Alignment



Standard Silt Fence (18" High)



JOINING FENCE SECTIONS



Fabric shall have the minimum properties as shown in Table 4.3.

Fabric width shall be 30" minimum. Stakes shall be hardwood or equivalent steel (U or T) stakes.

Silt fence shall be placed at level existing grade. Both ends of the fence shall be extended at least 8 feet up slope at 45 degrees to the main fence alignment (see Figure 4.1).

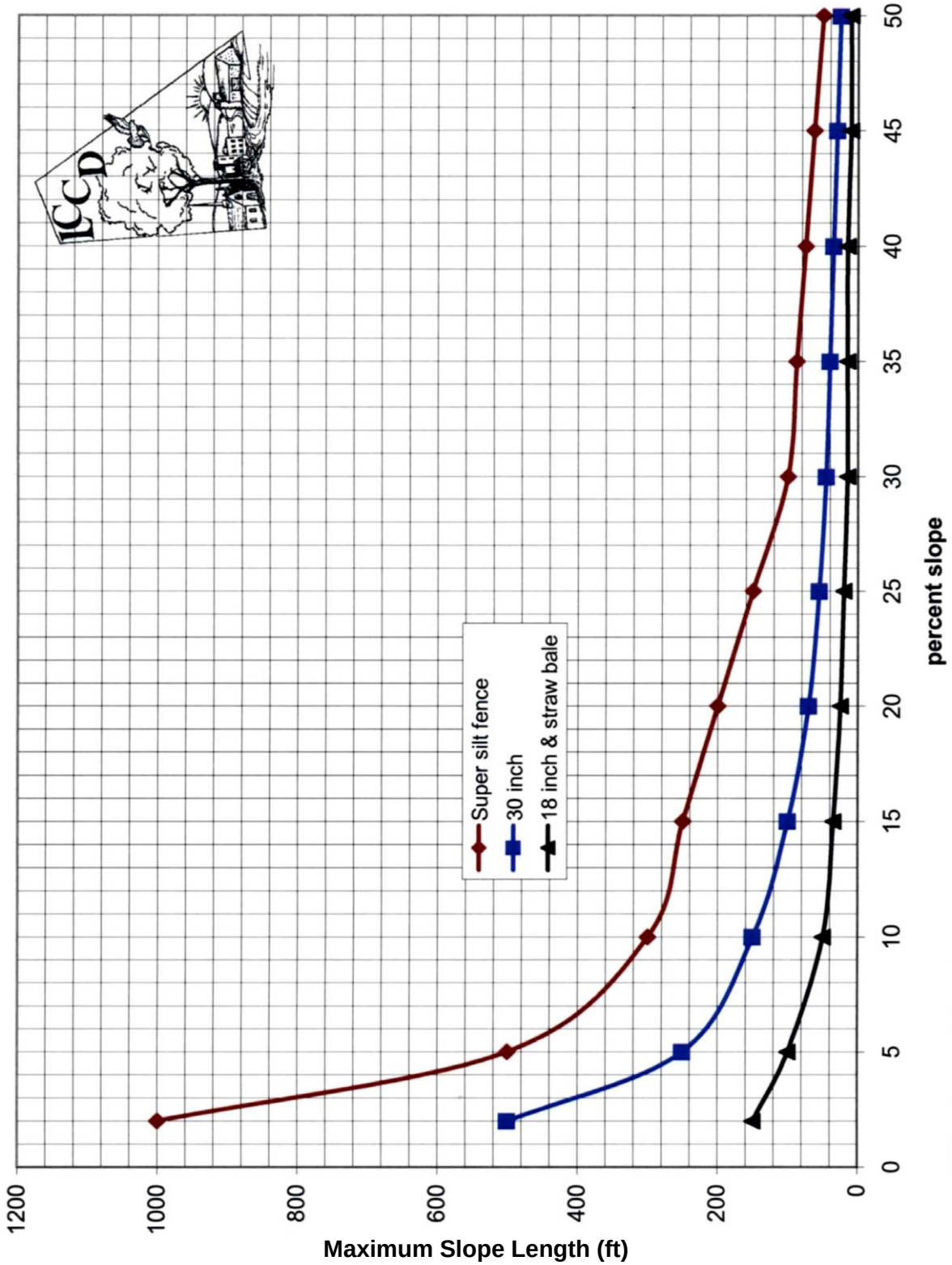
Sediment shall be removed when accumulations reach half the aboveground height of the fence.

Any section of silt fence which has been undermined or topped shall be immediately replaced with a rock filter outlet (Standard Construction Detail # 4-6).

Fence shall be removed and properly disposed of when tributary area is permanently stabilized.

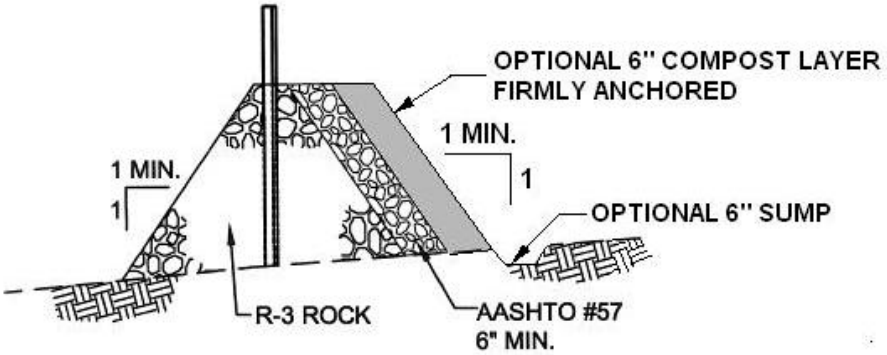
FIGURE 4.3

Maximum Permissible Slope Length above Silt Fence and Straw Bale Barriers

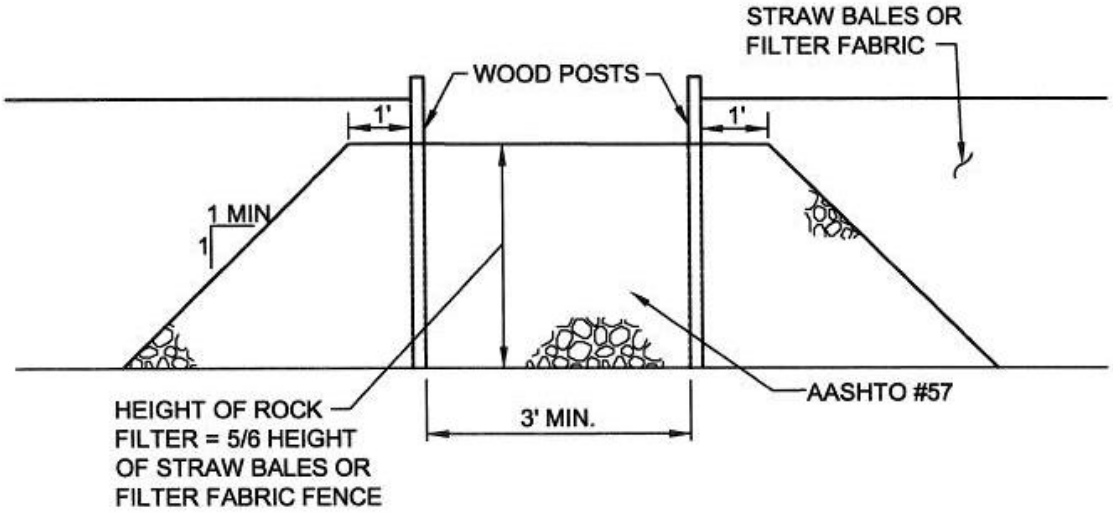


Lebanon County Conservation District

STANDARD CONSTRUCTION DETAIL # 4-6
Rock Filter Outlet



OUTLET CROSS-SECTION



UP-SLOPE FACE

PA DEP

A rock filter outlet shall be installed where failure of a silt fence or straw bale barrier has occurred due to concentrated flow. Anchored compost layer shall be used on upslope face in HQ and EV watersheds.

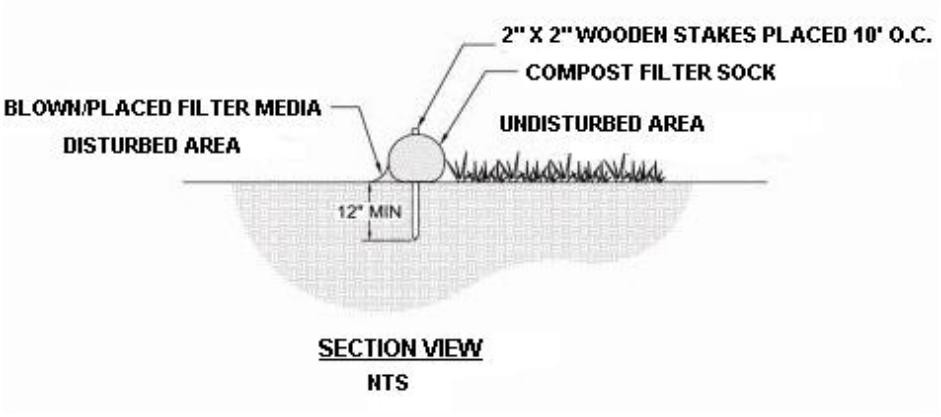
Sediment shall be removed when accumulations reach 1/3 the height of the outlet.

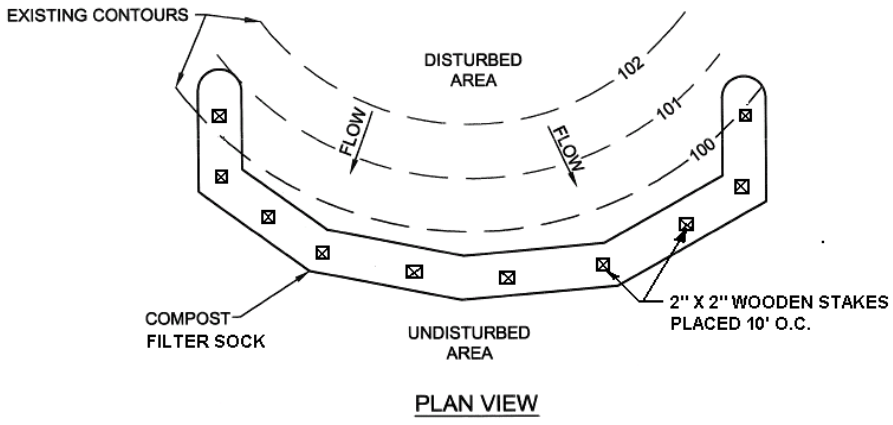
TABLE 4.4
Maximum Slope Length for Silt Fence

Slope - Percent	Maximum Slope Length (ft) Above Fence		
	Standard (18" High) Silt Fence	Reinforced (30" High) Silt Fence	Super Silt Fence
2 (or less)	150	500	1000
5	100	250	550
10	50	150	325
15	35	100	215
20	25	70	175
25	20	55	135
30	15	45	100
35	15	40	85
40	15	35	75
45	10	30	60
50	10	25	50

PA DEP

STANDARD CONSTRUCTION DETAIL #4-1
COMPOST FILTER SOCK





Filtrexx **NTS**

Sock fabric shall meet standards of Table 4.1. Compost shall meet the standards of Table 4.2.

Compost filter sock shall be placed at existing level grade. Both ends of the sock shall be extended at least 8 feet up slope at 45 degrees to the main sock alignment (Figure 4.1). Maximum slope length above any sock shall not exceed that shown on Figure 4.2. Stakes may be installed immediately downslope of the sock if so specified by the manufacturer.

Traffic shall not be permitted to cross filter socks.

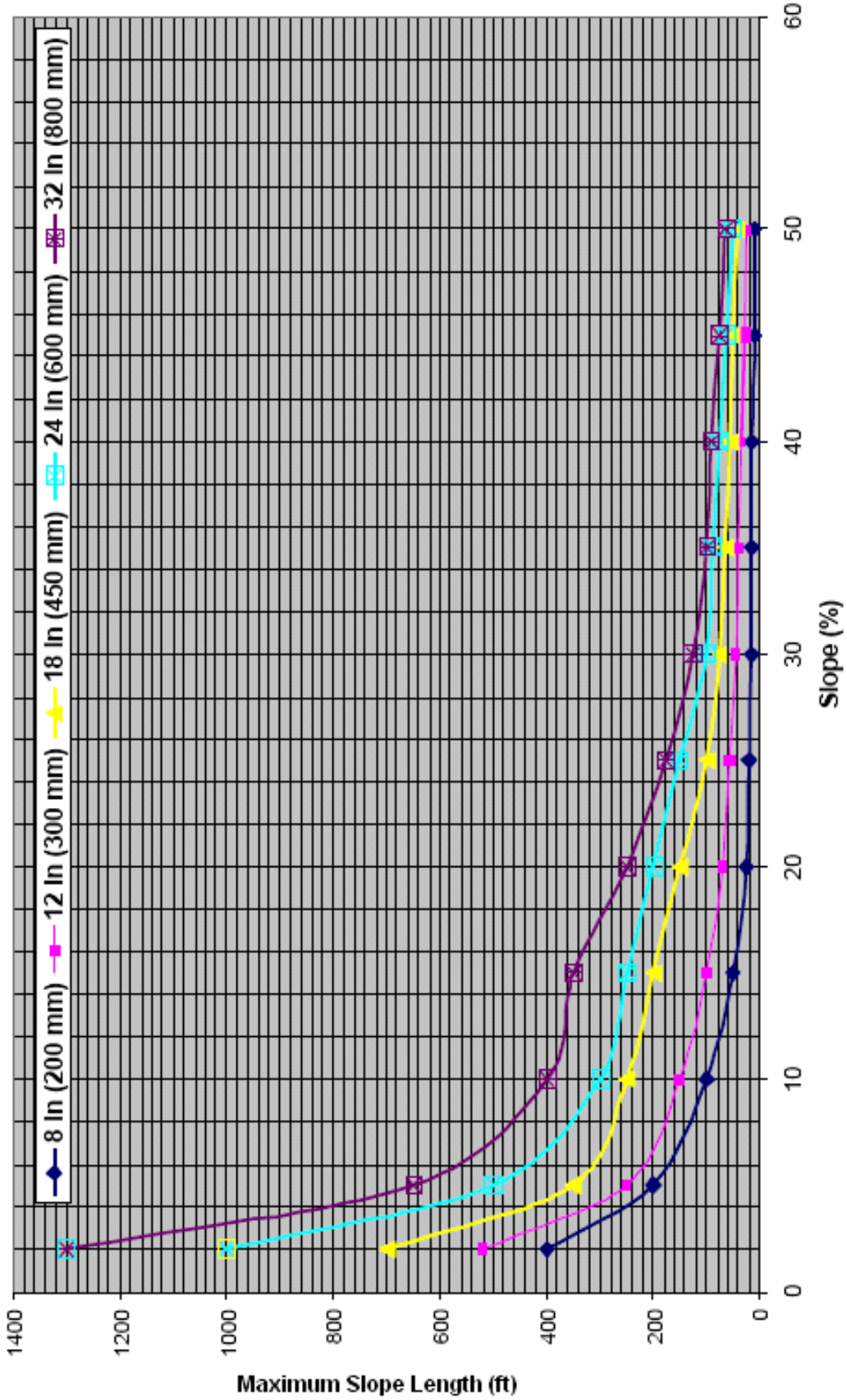
Accumulated sediment shall be removed when it reaches half the aboveground height of the sock and disposed in the manner described elsewhere in the plan.

Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired according to manufacturer's specifications or replaced within 24 hours of inspection.

Biodegradable filter socks shall be replaced after 6 months; photodegradable socks after 1 year. Polypropylene socks shall be replaced according to manufacturer's recommendations.

Upon stabilization of the area tributary to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed. In the latter case, the mesh shall be cut open and the mulch spread as a soil supplement.

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots).

Adapted from Filtrexx

Rock filters should be constructed with riprap sized as follows:

For channels with total depth > 3 feet, use R-4.
For channels with total depth between 2 and 3 feet, use R-3.

Rock filters should not be used in channels of less than 2 feet total depth.

The filter should be equal in height to **half** the total channel depth with a 6" depression in the center.

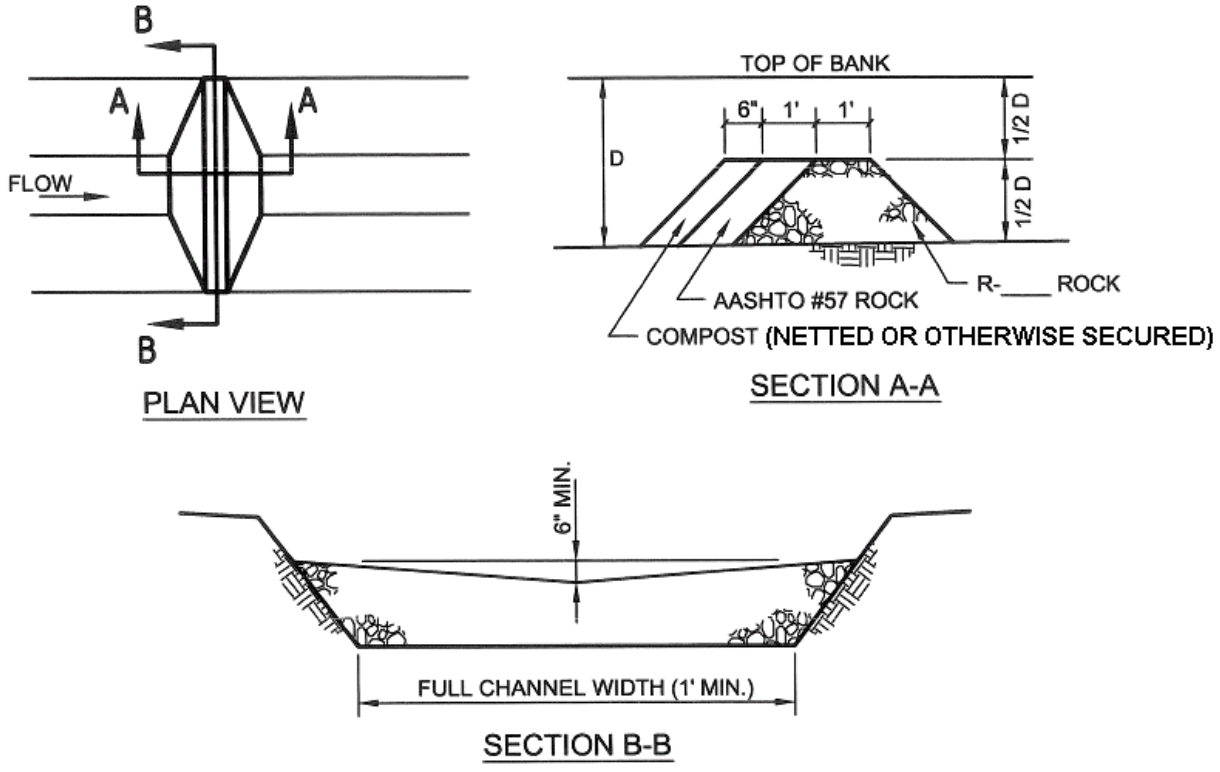
A one foot thick layer of AASHTO #57 (or smaller) stone should be placed on the upstream side of the filter. In special protection watersheds, a 6" layer of compost should be placed and anchored on top of the filter stone. NOTE: Filter fabric and straw bales should not be used in rock filters!

Rock filters should be inspected weekly and after each runoff event.

Clogged filter stone (AASHTO # 57) should be replaced.

Needed repairs should be initiated immediately after the inspection.

STANDARD CONSTRUCTION DETAIL # 4-14
Rock Filter



PA DEP

FOR 3' ≤ D USE R-4
FOR 2' ≤ D < 3' USE R-3
NOT APPLICABLE FOR D < 2'

SEEDING MIXTURES

Species Mix	Pounds/Acre	Pounds/1000 sq.ft.

PERMANENT SEEDING

Slopes & Banks (non-mowed)
Well Drained/Sunny

Crownvetch, plus	10	0.2 (3 oz.)
Tall Fescue, or	20	0.5 (8 oz.)
Perennial Ryegrass	20	0.5 (8 oz.)
Flatpea, plus	20	0.5 (8 oz.)
Tall Fescue, or	20	0.5 (8 oz)
Perennial Ryegrass	20	0.5 (8 oz.)

Slopes & Banks (mowed)
Variable Drainage/Shaded

Birdsfoot Trefoil, plus	6	0.15 (3 oz.)
Tall Fescue, plus	30	0.7 (11 oz.)
Redtop	3	0.1 (2 oz.)
Tall Fescue, plus	60	1.4 (22 oz.)
Redtop	3	0.1 (2 oz.)

Slopes & Banks (mowed)
Well Drained/Shaded

Tall Fescue	60	1.4 (22 oz.)
Red (fine) Fescue, or	35	0.8 (13 oz.)
Kentucky Bluegrass, plus	25	0.6 (10 oz.)
Redtop, or	3	0.1 (2 oz.)
Perennial Ryegrass	15	0.3 (5 oz.)
Tall Fescue, plus	40	1.0 (16 oz.)
Red (fine) Fescue	10	0.2 (3 oz.)

TEMPORARY SEEDING

Spring Oats, or	96	2.2 (35 oz.)
Winter Wheat, or	180	4.1 (66 oz.)
Winter Rye, or	168	3.8 (62 oz.)
Annual Ryegrass	40	1/0 (16 oz.)

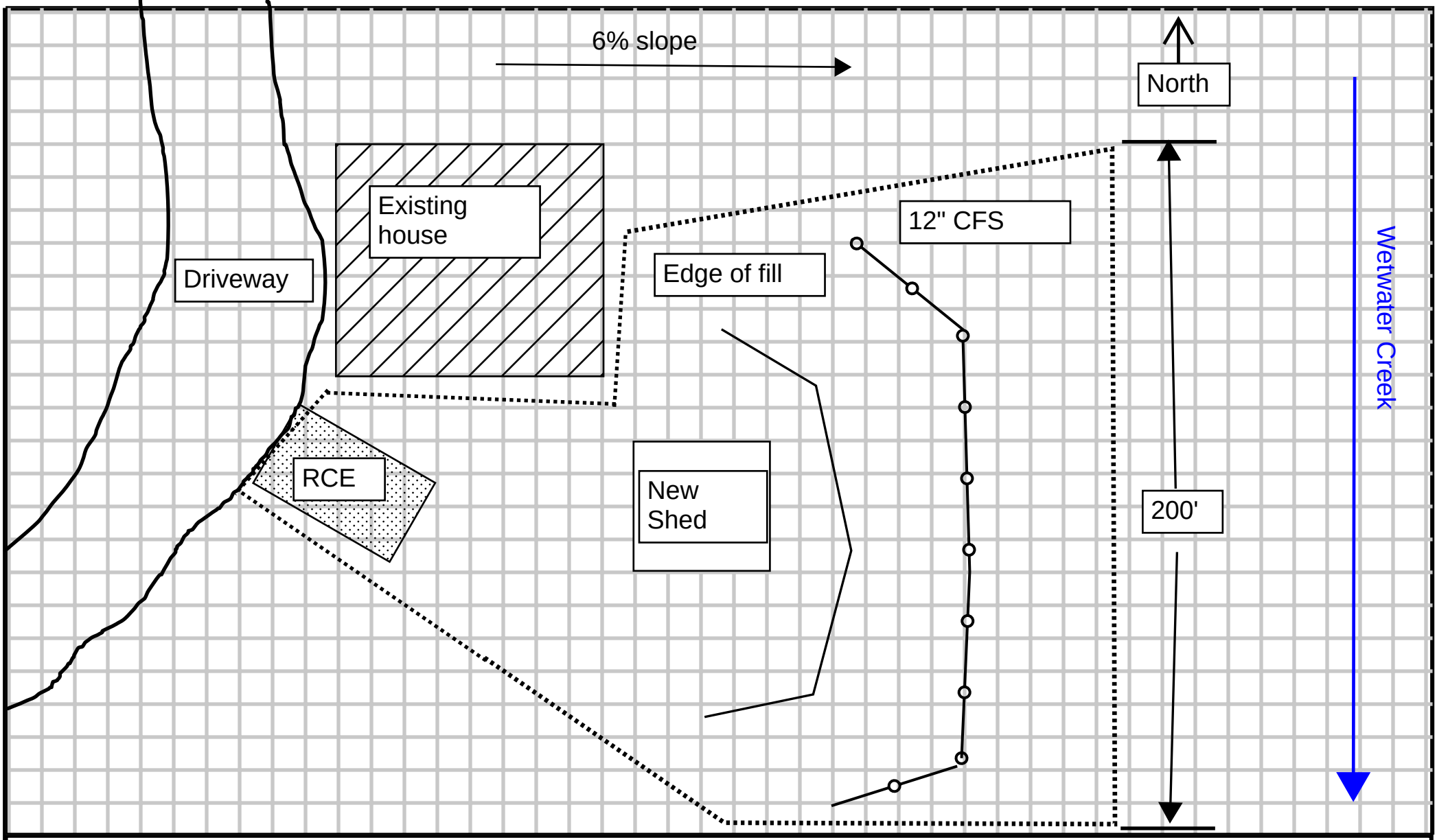
Soil Amendment Application Rate Equivalents

Soil Amendment	Permanent Seeding Application Rate			Notes
	Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yd.	
Agricultural lime	6 tons	240 lb.	2,460 lb.	Or as per soil test; may not be required in agricultural fields
10-10-20 fertilizer	1,000 lb.	25 lb.	210 lb.	Or as per soil test; may not be required in agricultural fields
	Temporary Seeding Application Rate			
Agricultural lime	1 ton	40 lb.	410 lb.	Typically not required for topsoil stockpiles
10-10-10 fertilizer	500 lb.	12.5 lb.	100 lb.	Typically not required for topsoil stockpiles

Adapted from Penn State, "Erosion Control and Conservation Plantings on Noncropland"

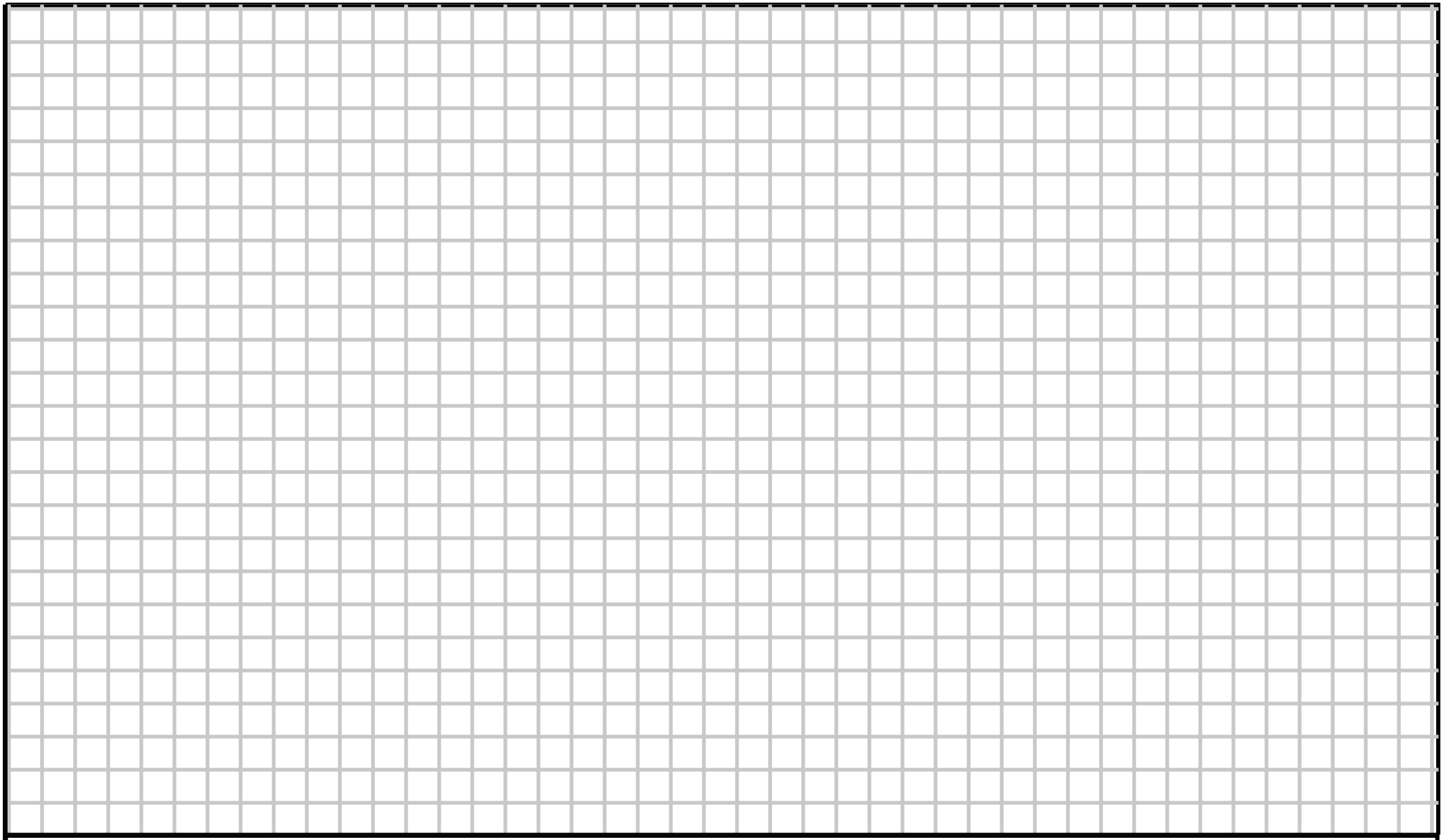
For more information about Erosion and Sediment Control contact:

Wayne Conservation District
648 Park Street
Honesdale, Pa 18431
Telephone: 570-253-0930
FAX: 570-253-9741
Email: waynecd@co.wayne.pa.us



Property Boundary
Limit of Disturbance
GAS
HW
Utilities
Existing/proposed Treeline
Culvert Pipe
Proposed Structures
Existing Structures
Rock Filter Berm
Hay Bales
Compost Filter Sock
Silt Fence
Wood Chip Berm
RCE
Rock Construction Entrance
A Creek
Receiving Waters
A Pond
% Slope
Slope Indicater

Property Owner:_____Project Name:_____ Municipality:_____ Date:_____ Scale:_____



Property Owner:_____Project Name:_____ Municipality:_____ Date:_____ Scale:_____