

**BASIC EROSION  
CONTROL GUIDELINES  
FOR ROAD DITCH  
MAINTENANCE**

Developed by  
Androscoggin Valley Council of Governments

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*Excerpts taken from the  
Runoff and Erosion Control Guidelines for  
Highway Crew Leaders  
(1994)*

## INTRODUCTION

Good road drainage is important to preserve the base of roads and hence preserve pavement. Good ditching practices will also assure protection of our water resources. Municipal road crews face numerous constraints in providing adequate drainage - tight budgets, heavy workload during construction season, equipment not designed for ditching, and inadequate space along many roads.

While good drainage provides the opportunity to improve the life of roads and decrease maintenance costs, poor ditching practices can lead to increased maintenance costs and environmental damage. Constructing or cleaning road ditches, or both, without conservation considerations leads to accelerated soil erosion. Eroded ditch banks and clogged culverts often reduce the effective life of road improvements, and sediment causes severe changes in aquatic habitat.

## ENVIRONMENTAL IMPACTS

Sediment is the single greatest pollutant, by volume, in Maine waters. Sediment can clog streams, cover fish feeding and breeding habitat and destroy important wetland habitat. Sediment also carries phosphorus, a nutrient, with it. When sediment is deposited in lakes, phosphorus increases algae growth which in turn leads to advanced aging of lakes (and you thought only you were getting old too quickly). Work in Maine has indicated that activities throughout a watershed (not just along the lakeshore) have caused significant phosphorous level increases in lakes and, therefore, have lead to significant water quality degradation.

The use of good conservation practices can reduce the rate of erosion to the point at which streams, wetlands, and lakes can assimilate the sediment and phosphorus with little impact on water quality and wildlife habitat.

## ENVIRONMENTAL PRINCIPALS

There are 3 major principals to consider during ditching operations in order to prevent erosion and phosphorous transport:

1. **Stabilize disturbed areas quickly.**  
Ditches should be seeded and mulched and special fabrics or rip rap applied as soon as possible after ditching is done.
2. **Keep runoff velocities low.**  
In ditches, this is generally accomplished by using frequent ditch turnouts in order to minimize flows. Ditch turnouts into natural vegetated areas also help to provide assimilation of phosphorus prior to runoff reaching a stream or lake.

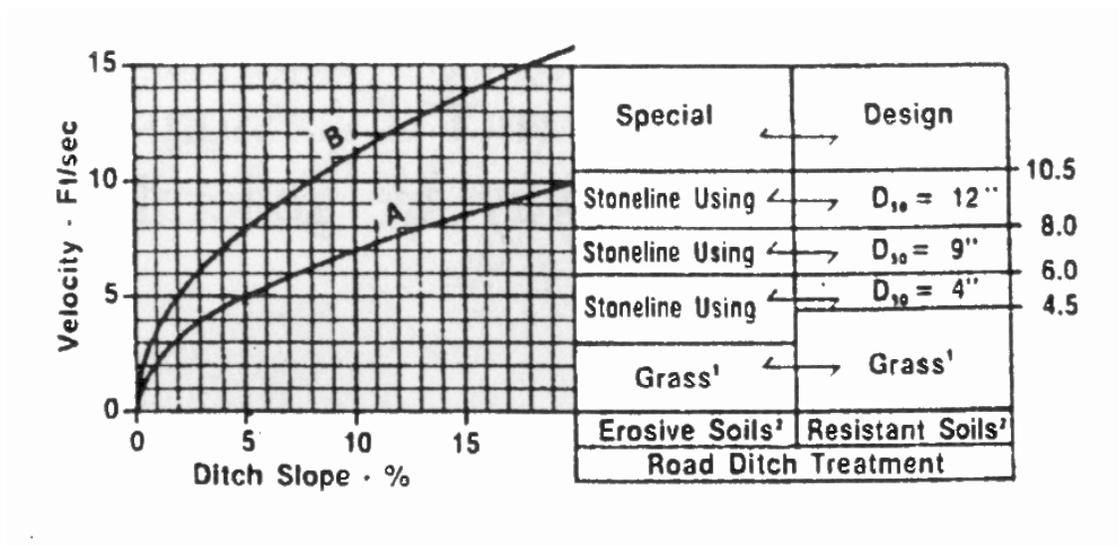
3. **Use appropriate mechanical control practices.**

Use of hay bales around culvert inlets is one simple method. Use of siltation fencing and erosion control matting or stone lining (rip rap) are others.

### PRACTICES

The following erosion control practices will help to control erosion during and after the ditch construction or maintenance.

- ☒ All outlets should be developed and stabilized before improvement of the ditch.
- ☒ Ditches should be V-shaped wherever possible.
- ☒ Side slopes should be 3:1 wherever possible. Side slopes greater than 2:1 are difficult to stabilize and usually require special treatment (rip rap).
- ☒ The bottom of ditches on slopes over 2% should be lined with erosion netting.
- ☒ Ditches on slopes over 5% should be rip rapped. The following graph can be used to determine the appropriate erosion control treatment.



**Notes:**

A - Curve for a flow depth of 1 ft. in a V-ditch with 2.5:1 SS, Flow Area = 2.5 SF.  
 B - Curve for a flow depth of 2 ft. in a V-ditch with 2.5:1 SS, Flow Area = 10.0 SF.  
 $D_{50}$  - Size of rock for which 50% of the stone is larger, 50% is smaller.

<sup>1</sup> Erosion netting may be used along with grass.

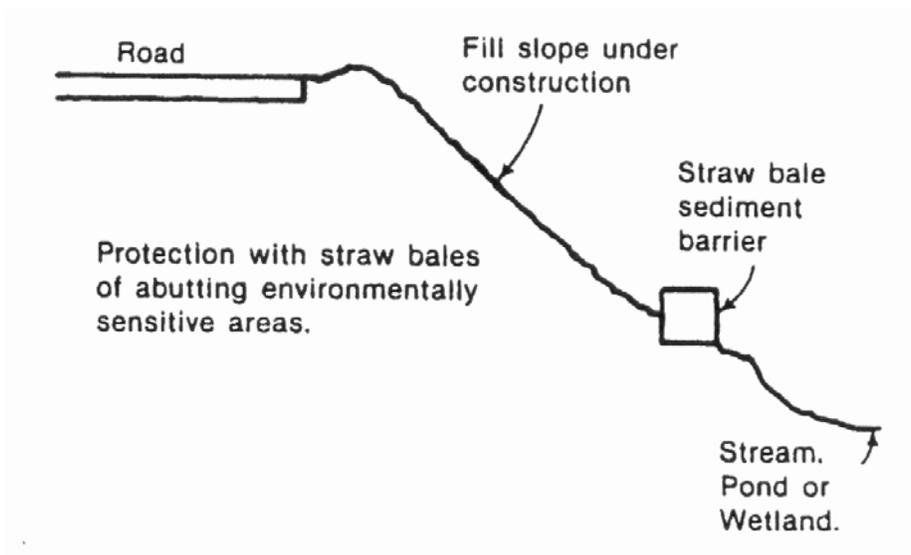
<sup>2</sup> Erosive soils are predominately silt or fine sand and resistant soils have a high concentration of clay or a gravelly texture.

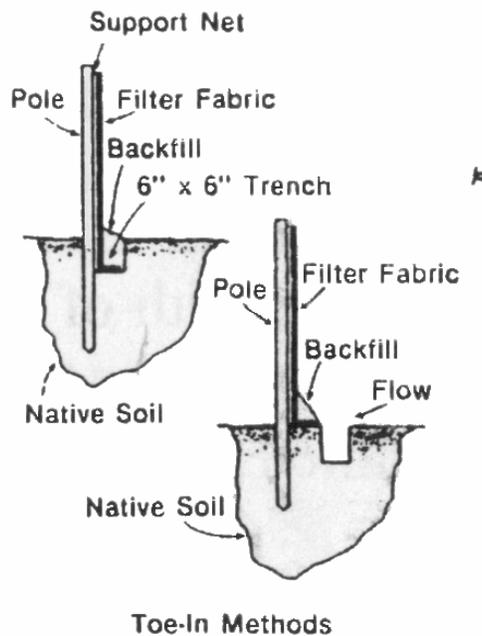
- ☒ The lower 1 foot of a ditch is the critical area needing protection by netting or stone lining.

- ☒ Proper bedding of the stone with a layer of bank-run gravel at least 6 inches thick or a suitable filter fabric provides additional stability to stone-lined areas.
- ☒ Diversions (or upslope relief ditches) should be used where large areas drain to road ditches (easements may be needed to construct diversions since road rights-of-way are generally not large enough).
- ☒ Ditch length should be no longer than distances recommended in the table:

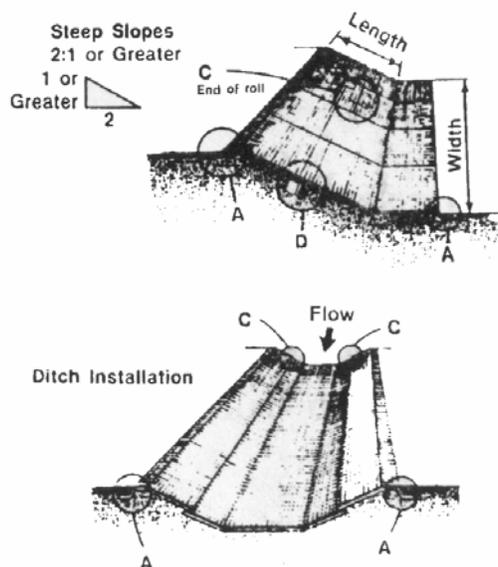
Slope	Maximum Length
0-3%	300 ft.
3-5%	200 ft.
5-10%	150 ft.
10%	100 ft.

- ☒ Siltation (or hay bale) fence should be installed along contours to prevent erosion and sedimentation during road construction activities.

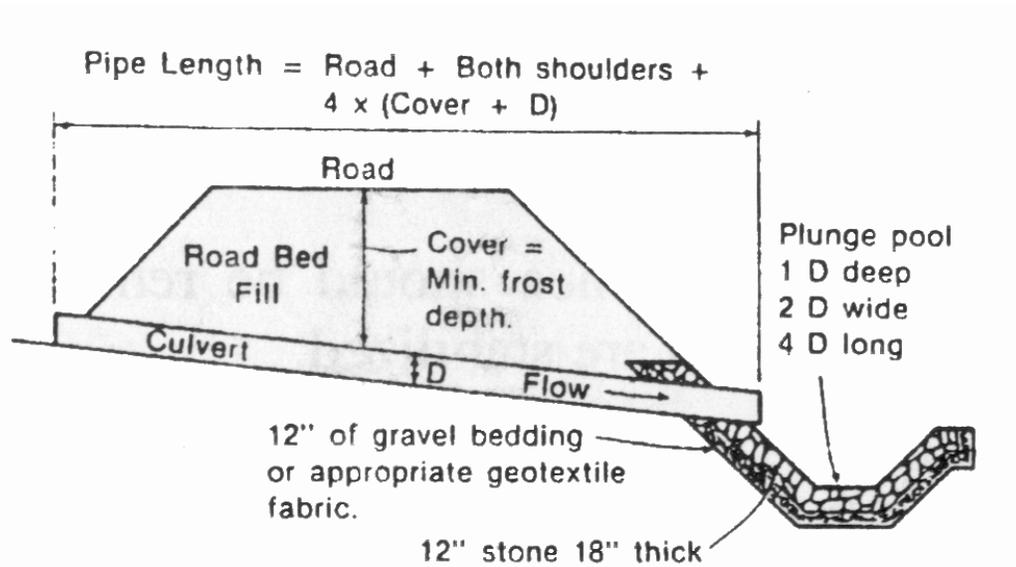




- ☒ Siltation fence must be entrenched at least 6" and the trench backfilled.
- ☒ Siltation fence should be removed once areas are stabilized.
- ☒ Use siltation fence or hay bale barriers to protect drop inlets and culvert inlets.
- ☒ Erosion netting and mats should be anchored.



- ☒ Install rock-lined plunge pools at culvert outlets. At minimum, install rip rap twice the width of the culvert diameter and four times the length of the culvert diameter.



- ☒ Generally, only ditches on sandy soil require the application of a loam or topsoil to support vegetation. Seeding on glacial tills and many silts and clays can be accomplished directly with proper fertilization.
- ☒ Specific seed mixtures work best (see your SCS office for help). Otherwise, use two pounds per 1,000 sq. ft. of conservation mix or roadside mix (166 feet of 6' wide ditch is 1,000 sq. ft.).
- ☒ Mulch with hay (straw is better) at the rate of two bales per 1,000 sq. ft. immediately after seeding.
- ☒ Soil should be loosened prior to seeding. Hydroseeding is best, but hand seeding may allow a quicker treatment of disturbed areas.
- ☒ Add 2 pounds per acre of winter rye to seeding after September 1.
- ☒ If seeding after October 1, seed at a 50% higher rate.
- ☒ Anchor mulch by lightly compacting with tractor or use water spray or netting.

