Ditching Techniques *for Erosion & Sediment control*

Seed species vary with selection (example Mix #6, NYS DEC Blue book)

Seed mixture	Variety	lbs/ acre	lbs/1000 sq.ft.
Creeping red fescue	Ensylva, Pennlawn, Boreal	20	0.45
Tall fescue	KY 31, Rebel	20	0.45
Perennial ryegrass	Pennfine, Pardee	5	0.10
Birdsfoot trefoil	Empire, Pardee	10	0.45

Before you start your project, consider the following questions:

- Do I know the Site/Soil conditions?
- Have I taken the proper ESC Measure(s)?
- Have I chosen the right product for the job?
- Did I install it to Manufacturers specification?
- Have I solved the problem or moved it elsewhere?
- Will I be able to access/maintain the site?
- Have I called Dig Safe, 811?

For more information about roadside ditching or erosion and sediment control, contact:

Warren County SWCD	394 Schroon River Road Warrensburg	518.623.3119
USDA –Natural Resource Conservation Service	2350 State Route 40 Greenwich	518.692.9940
NYS Department of Environmental Conservation	232 Golf Course Road Warrensburg	518.623.1200

"This project was funded by an agreement awarded by the Great Lakes Fishery Commission to the New England Interstate Water Pollution Control Commission in Partnership with the Lake Champlain Basin Program. NEIWPCC manages LCBP's personnel, contract, grant, and budget tasks and provided input on the program's activities through a partnership with the LCBP Steering Committee." "The viewpoints expressed here do not necessarily represent those of NEIWPCC, the LCBP Steering Committee, or GLFC, nor does mention of trade names, commercials products, or causes constitute endorsement or recommendations for use."

ROAD DITCHES

"ditch your drainage problems!"

Ditching Techniques *for Erosion & Sediment control*

When it comes to managing storm water, proper ditch design and maintenance can lengthen the life of roadways and their infrastructure.

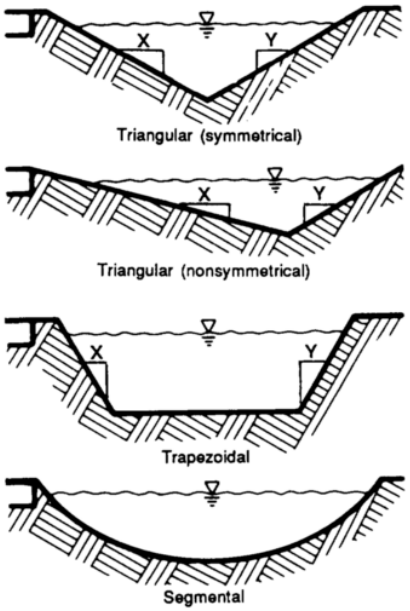


Figure 6-23. Ditch cross sections

Proper ditching techniques are a key component to any project that requires surface water transport. Properly designed, ditches serve three main purposes for water transport:

- Convey
- Slow velocities
- Infiltrate

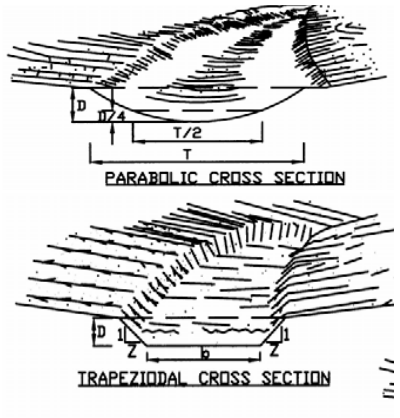
The technique and design chosen is usually based on the anticipated volume and velocity of water to be transported. Design falls into one of two main categories; vegetative or structural.

<u>Advantages to Ditching:</u>

- Minimal excavation
- Low material costs
- Warren County SWCD hydroseeding program available to municipalities at low or no cost
- Considered as ***Low Impact Development***

Hydroseeding can be a cost effective E&SC measure !

Ditching Techniques *for Vegetative measures*



Grassed swales are vegetated hydraulic conveyance channels that help to slow runoff and facilitate infiltration. The suitability of grassed swales depends on: land use, soil type, slope, and watershed conditions. In general, grassed swales can be used to manage runoff from drainage areas that are less than 10 acres in size, with slopes no greater than 5 percent. Vegetative or grassed waterways can be a natural or man-made channel. The ditch can be either parabolic or trapezoidal in design and is lower than the adjacent land. It is often stabilized by suitable vegetation (see, back page). The flow channel is normally wide and shallow allowing runoff to flow at a lower velocity. The bottom of the ditch should be above the high water mark and may require a stabilized outlet.

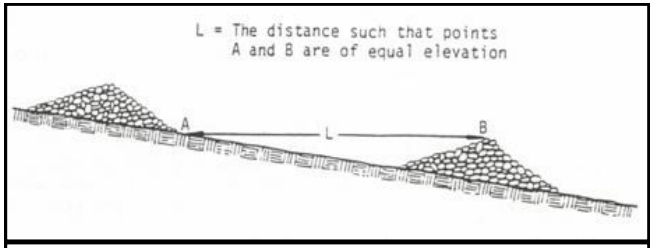
Channel Grade	Flow < 5Ac.	Flow 5-10Ac.
0.5-3%	Seed & Straw, Mulch	Seed & Straw, Mulch
3.1%-5%	Seed & Straw, Mulch	• Seed n cover with RECP • Sod • Line with 2" stone
5.1-8%	• Seed and cover with RECP • Sod • Line with 2" stone	• Line with 4-8" stone • Recycled concrete • Geotextile
8.1%-20%	• Line with 4-8" stone • Recycled concrete • Geotextile	Site Specific Engineering Design

Ditching Technique *for Structural measures*

A structural or more permanent waterway (or outlet) is typically lined with concrete, stone or other permanent material. This material typically extends up the sides to a designed depth. Vegetation established above the permanent lining should be maintained in good condition to prevent scouring if the structure is overtopped. Structural lined channels are designed to accommodate the velocities achieved from flooding and concentrated flows that grassed waterways can not tolerate. Geotextiles and stone can be used in combination to maximize effect. In steep slope or high velocity conditions check dams may assist in achieving your objective. Other resources on the market include fiber rolls, triangular silt dikes, silt fence and compost blankets to name a few.

Proper stone sizing

Geo-textile lining (above high flow)



Chapter 8: Structural Measures for Erosion and Sediment Control R. Pitt 2003

Alternatives The following is a list of typical applications for straw and hay bales and some alternative practices that have proven to be more effective.

Common uses of straw bales	Alternative to straw or hay bales
Perimeter controls	Silt fence
Check dams	Rock check dams, Fiber Rolls
Slope protection	Geotextiles, Compost blankets
Storm drain inlet protection	Filter fabric, gravel bags, and other designs
Concrete washout structures	Prefabricated concrete washout containers

Source: *US EPA. NPDES BMP for stormwater*