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## **VERMONT DRAINAGE GUIDE (APPENDIX 14G)**

## **PREFACE**

The purpose of this guide is to present some of the basic criteria required for the planning of drainage improvements on the wet soils of Vermont. The information presented is based on the best currently available research data and experience of many NRCS technicians.

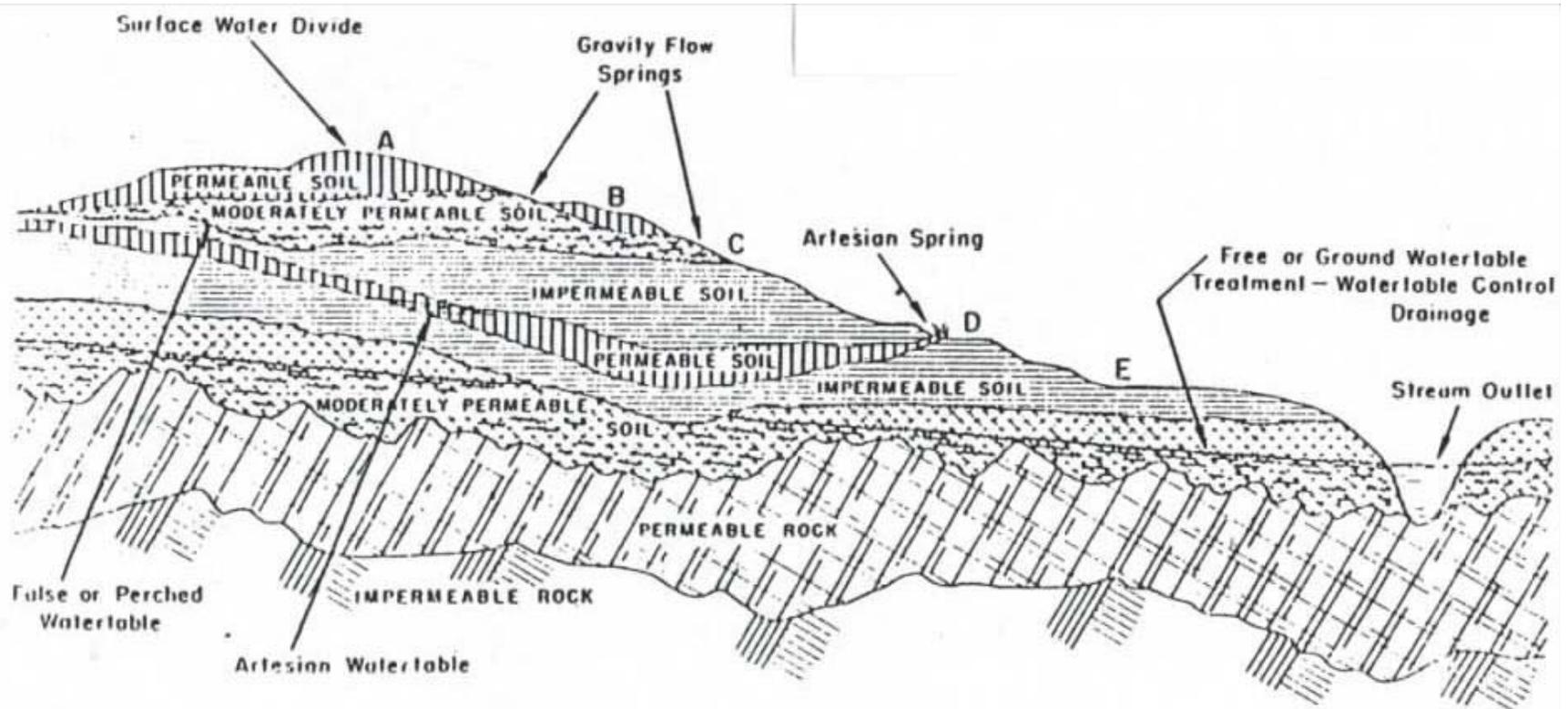
This guide does not contain complete specifications for the design and construction of drainage works. It covers field drainage only and assumes that an adequate outlet exists or will be provided. Detailed design criteria may be found in the Vermont Field Office Technical Guide and the Engineering Field Handbook.

To be successful, a drainage system must be designed to fit the topography, crops, soils to be drained and the conservation tillage pattern of the farm. Different soils, slopes and combinations thereof require different methods and procedures. Generally, site conditions will require a combination of several kinds of drains. Therefore, this should be used as a guide only and must be supplemented with judgement and a thorough understanding of the principle of good drainage. The recommendations included herein have been made for all soils where it is felt that drainage will be effective. The economic feasibility of each project is determined by many local factors and should be decided only after a very careful analysis.

## EXPLANATION OF CHARTS

- |                                     |   |
|-------------------------------------|---|
| (1) Drainage Group                  | Indicates grouping of soils having similar drainage characteristics. County soil legends must be used to correlate mapping unit numbers shown on soils maps with soils names.   |
| (2) Soil Series                     | A listing of each soil in the group, by name.   |
| (3) Unified Soil Classification     | Symbols shown represent the engineering classification, which most commonly occurs in the soil profile.   |
| (4) Subsurface Drainage Inflow Rate | The estimated amount of water which can be expected to enter the subsurface drain through the soil profile. Concentrated flows such as spring discharge, flow from open inlets, etc., must be added.  |
| (5) Velocities                      | For areas of 640 acres or less, the suggested maximum design velocities for bare and vegetated earth channels, respectively.  |
| (6) Major Problems or Hazards       | Comment regarding the usual cause of drainage impediments. Localized areas may present additional problems, with varying severity.  |
| (7) Percent Slope                   | Refers to the average land slope.   |
| (8) Drainage Method                 | Self Explanatory  |
| (9) Drainage Criteria               | Indicates the method of determining capacity, using procedures given by the Engineering Field Handbook. -- <u>Curve</u> indicates the recommended curve to be used for design capacity as shown on the drainage chart. Figures in inches are the recommended <u>drainage coefficients</u> for use in subsurface drainage system design, representing the amount of water in inches to be removed in a 24-hour period. <u>Q<sub>10</sub></u> indicates capacity design to carry the 10-year - 24-hour frequency peak runoff. |
| (10) Depth in Inches                | Depth of channel or subsurface drain invert expressed either as a range or a minimum.   |
| (11) Spacing Range – Feet           | Usual spacing of parallel surface or subsurface drains. <u>OSD</u> means on-site determination.   |
| (12) Recommended Side Slopes        | Side slope recommendations are self-explanatory. Earliest possible application of recommended mulching and establishment of recommended side slope and/or channel vegetation is essential to erosion and sediment reduction.  |

- A – Infiltration of precipitation accumulates over less permeable subsoil. Some is diverted through aquifers to wet weather seeps at B. Seeps may completely dry out during droughty periods.  
Treatment - Interception drainage.
- C – Outcrop of false or perched water table. Larger collecting area and more complete interception by impermeable soil gives longer flow to springs.  
Treatment - Interception drainage. Occasionally, spring development.
- D – Pressure head gives year-round even flow. Water can come from adjacent or remote watersheds. If this pressure flow is covered by a mantle of moderately permeable soil, a large area may be saturated. Water source often difficult to locate and confine. The permeable soil is an aquifer.  
Treatment - Tile drainage.
- E – Often heavy soils with flattening grades. Wetness caused by surface accumulations.  
Treatment - Interception and surface drainage.



TYPICAL GROUND WATER MOVEMENT AND RECOMMENDED DRAINAGE PRACTICES

## OTHER TERMS

Subsurface Drain	A pipeline or tube constructed of materials such as clay or concrete, perforated bituminized fiber, plastic or corrugated polyethylene and placed in the soil profile to provide drainage.
Seep	The term indicates a significant wet zone (aquifer) which can be identified by test pits or augering. When depth is expressed by "seep + inches," the 4 inches is measured below the seep.
Pan	Or "hardpan," referring to the dense, impervious soil layer of surface which may occur at shallow depth in many glaciated areas.
Permeability	Permeability is estimated for the soil as it occurs in place and is the saturated flow. The permeability listed is for the most restrictive layer in the soil profile. The classes are as follows:

<u>Permeability Class</u>	<u>Range in Inches Per Hour</u>
Very rapid	Over 20.0
Rapid	6.0 to 20.0
Moderately Rapid	2.0 to 6.0
Moderate	0.6 to 2.0
Moderately Slow	0.2 to 0.6
Slow	0.06 to 0.2
Very Slow	Less than 0.06

## Natural Drainage Classes

Moderately Well Drained	Water is removed from the soil slowly enough so that the soil is wet for a short but significant time, usually during fall or spring. These soils commonly have a slow or very slow permeability, a seasonal high water table, additions of water through seepage, or a combination of these conditions. Mottling occurs at 15 to 40 inches below the surface.
Somewhat Poorly Drained	Soils in this class are intermediate in drainage between the moderately well drained and poorly drained. Water is removed slowly enough so that the soil remains wet for a moderate period of time, usually during the spring and fall. These soils have a slow or very slow permeability, a seasonal high or perched water table, additions of water through seepage, or a combination of these conditions. Mottling commonly occurs within the surface layer and the upper part of the subsoil is grayish colored in places.
Poorly Drained	Water is removed so slowly that the soil remains wet for a long time. The water table or excess seepage water is commonly at or near the surface for 7 to 9 months of the year. The poorly drained condition is due to a high water table, a slow or very slow permeability, seepage, or a combination of these conditions. The subsoil is commonly gray and mottled. Since the soils are wet for a long time, the excess wetness inhibits the growth of field crops. Artificial drainage generally is needed for satisfactory crop production.
Very Poorly Drained	Water is removed from the soil so slowly that the soil is saturated throughout most of the year and the water table is at or near the surface. Soils in this class usually occupy depressional areas and are frequently ponded. Mucky surface layers are present in many areas and the subsoil is dominantly gray.

**INDEX TO SOIL NAMES AND DRAINAGE GROUPS**

<b>SOIL NAMES</b>	<b>DRAINAGE GROUP</b>	<b>SOIL NAMES</b>	<b>DRAINAGE GROUP</b>	<b>SOIL NAMES</b>	<b>DRAINAGE GROUP</b>
Adrian	R	Histosols, loamy substratum	R	Podunk	L
Amenia	B	Houghton	R	Podunk Variant	L
AuGres	M	Humic Haplaquepts	E	Potsdam	A
Aquepts	D	Kendaia	D	Raynham	D
Balch	R	Kingsbury	G	Raynham Variant	D
Belgrade	B	Leicester	D	Ridgebury	C
Biddeford	H	Leicester Variant	D	Rippowam	M
Binghamville	D	Limerick	P	Roundabout	D
Binghamville Variant	D	Limerick Variant	P	Rumney	M
Birdsall	E	Linwood	R	Rumney Variant	M
Boothbay	B	Livingston	H	Saco	Q
Borochemists, deep	R	Lovewell	O	Saco Variant	Q
Borochemists, over loamy substrate	R	Lupton	R	Sadawga	A
Buckland	A	Lyme	D	Scantic	G
Buxton	F	Lyons	E	Scantic Variant	G
Cabot	C	Machias	L	Scarboro	N
Canadaigua	D	Madawaska	L	Schroon	B
Carlisle	R	Mansfield	E	Scio	B
Castile	L	Markey	R	Searsport	N
Charles	P	Marsh	R	Sheepscot	L
Chocorua	R	Massena	D	Stissing	C
Conesus	A	Medomack	Q	Sudbury	L
Cornish	O	Middlebury	O	Sunapee	B
Covington	G	Moosilauke	M	Sutton	B
Croghan	L	Muck	R	Swanton	J
Deerfield	L	Muck and Peat	R	Swanville	D
Dixmont	B	Muck deep	R	Tawas	R
Duane	L	Muck over loams	R	Teel	O
Eldridge	I	Muck over sands	R	Terric Medisaprist	R
Eldridge Variant	J	Mundal	B	Tisbury	L
Elmridge	I	Munson	D	Vergennes	F
Elmwood	I	Nicholville	B	Walkill	R
Elmwood, Coarse Variant	I	Ninigret	L	Walpole	M
Elvers	R	Ossipee	R	Wareham	M
Enosburg	J	Palms	R	Wayland	P
Fragiaquepts and Haplaquepts	C	Panton	G	Wayland Variant	M
Fredon	M	Pawlet	L	Westbury	A
Fresh Water Marsh	R	Pawling	L	Whately	K
Georgia	B	Peacham	E	Whitman	E
Halsey	N	Peru	A	Wilmington	D
Hemic Borosaprist	R	Peru Variant	A	Winooski	O
Hero	L	Pittstown	A	Winooski Variant	L
Histic Fluvaquepts	Q	Pittstown Variant	A	Woodbridge	A
Histosols	R			Worden	A

**Notes:** For placement of soils name not included in this list consult the soil survey staff. Positive identification of the soil name must be made during on-site study and evaluation.

**(1) DRAINAGE GROUP A**

Moderately well drained, loamy soils with a compact hardpan at less than 3 1/2 feet. Slow to very slow permeability in hardpan. Glacial till.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Buckland	ML	0.09	3.0	5.0	Seasonal high perched water table because of hardpan.
Conesus	ML, CL	0.09	3.0	5.0	
Peru	SM, ML	0.09	3.5	5.0	
Peru Variant	SM, ML	0.09	3.5	5.0	
Pittstown	SM, ML	0.09	3.5	5.0	
Pittstown Variant	ML, CL	0.09	3.0	5.0	
Potsdam	SM, ML	0.09	3.5	5.0	
Sadawga	SM	0.09	3.5	5.0	
Westbury	SM	0.09	3.5	5.0	
Woodbridge	SM, ML	0.09	3.5	5.0	
Worden	SM	0.09	3.5	5.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
1 - 15	Diversion	Q <sub>10</sub>	Pan plus 4 inches	OSD	3:1 or flatter
1 - 3	Ditch - Interceptor	B Curve	Pan plus 4 inches	OSD	3:1 uphill, 1.5:1 downhill
3 - 15	Ditch - Interceptor	Q <sub>10</sub>	Pan plus 4 inches	OSD	3:1 uphill, 1.5:1 downhill
1 - 15	Subsurface Drain - Interceptor	See Column 4	Down to pan, but minimum of 30 inches	OSD	3:1 uphill, 1.5:1 downhill

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

**(1) DRAINAGE GROUP B**

Moderately well drained, loamy and silty soils without a hardpan. Moderate to moderately slow permeability. Glacial till and lake sediments.

<u>(2) SOIL SERIES</u>	<u>(3) UNIFIED CLASSIFICATION</u>	<u>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</u>	<u>(5) VELOCITIES Ft/Sec.</u>		<u>(6) MAJOR PROBLEMS OR HAZARDS</u>
			<u>Bare</u>	<u>Vegetated *</u>	
Amenia	ML	0.07	3.0	5.0	Seep areas and seasonal high fluctuating water table.
Belgrade	ML	0.09	2.0	4.0	
Boothbay	ML	0.09	2.0	4.0	
Dixmont	ML	0.07	3.0	5.0	
Georgia	ML	0.09	3.5	5.0	
Mundal	SM, ML	0.09	3.5	5.0	
Nicholville	ML	0.09	2.0	4.0	
Schroon	SM, ML	0.09	3.5	5.0	
Scio	ML	0.09	2.0	4.0	
Sunapee	SM, ML	0.09	3.5	5.0	

<u>(7) PERCENT SLOPE</u>	<u>(8) DRAINAGE METHOD</u>	<u>(9) DRAINAGE CRITERIA</u>	<u>(10) DEPTH IN INCHES</u>	<u>(11) SPACING RANGE-FEET</u>	<u>(12) RECOMMENDED SIDE SLOPES</u>
1 – 3	Ditch – Interceptor	B Curve	Seep plus 4 inches	OSD	3:1 Uphill, 1:1 Downhill
1 – 15	- Interceptor	Q <sub>10</sub>	Seep plus 4 inches	OSD	3:1 Uphill, 1:1 Downhill
3 – 15	Diversion	Q <sub>10</sub>	Seep plus 4 inches	OSD	3:1 or flatter
1 – 3	Ditch – Random	C Curve	> 24 inches	OSD	1:1
1 – 3	- Surface Drainage	None	> 12 inches	OSD	4:1 or flatter
1 – 3	Land Smoothing	- - -	Cut and fill for grade to outlet	- - -	- - - - - - - - -
1 – 2	Subsurface Drain				
	- System	3/8"	30" – 42"	80 - 300	- - - - - - - - -
1 – 2	- Random	See Column 4	30" – 42"	OSD	- - - - - - - - -
1 - 15	- Interceptor **	See Column 4	Intercept seep, Minimum 30"	OSD	- - - - - - - - -

Remarks: The Belgrade and Scio series have a low liquid limit and the silty and very fine sandy loam material flows readily when wet. Subsurface drain trenches and ditch banks slough readily when wet. The soil material may flow into and plug subsurface drains. Installation of subsurface drains during drier periods of the year reduces the hazard of sloughing of trench walls.

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

\*\* Backfill trench with porous material to seep.

**(1) DRAINAGE GROUP C**

Somewhat poorly and poorly drained loamy soils with a compact, slowly permeable hardpan at less than 3 1/2 feet. Glacial till.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Cabot	ML, SM	0.09	3.5	5.0	Seasonal high perched water table because of hard pan. Ponding in depressional areas.
Fragiquepts and Haplaquepts	ML, SM	0.09	3.5	5.0	
Ridgebury	ML, SM	0.09	3.5	5.0	
Stissing	ML, SM	0.09	3.5	5.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 - 3	Ditch - Interceptor	B Curve	Pan plus 4 inches up to 36 inch.	Perimeter	1.5:1
	- Random	B Curve	Pan plus 4 inches up to 36 inch.	OSD	1.5:1 or flatter
	- Surface Drainage	None	> 12 inches	OSD	4:1 or flatter
	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----
	Subsurface Drain				
3 - 15	- System	3/8"	30 inches	40 - 80	-----
	- Random	0.09 cfs/1000 feet	30 inches	OSD	-----
	- Interceptor **	0.09 cfs/1000 feet	Down to pan, Minimum 30 inches	OSD	-----
	Diversion	Q <sub>10</sub>	Pan plus 4 inches	OSD	3:1 or flatter
	Ditch - Interceptor	Q <sub>10</sub>	Pan plus 4 inches	OSD	3:1 Uphill, 1.5:1 Downhill
	Subsurface Drain				
	- Interceptor	See Column 4	Down to pan, Minimum 30 inches	OSD	-----

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

\*\* Backfill trench with porous material to seep.

**(1) DRAINAGE GROUP D**

Somewhat poorly to poorly drained, loamy and silty soils with a hardpan. Glacial till and lake sediments.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Aquepts	ML, SM	0.07	3.0	5.0	High water table in poorly drained, very poorly drained, and somewhat poorly drained soil.
Binghamville	ML	0.08	2.0	4.0	
Binghamville Variant	ML, CL	0.05	2.5	4.0	
Canadaigua	ML, CL	0.05	2.5	4.0	
Kendaia	ML, SM	0.07	3.0	5.0	
Leicester & Leicester Variant	ML, SM	0.09	3.5	5.0	
Lyme	SM, ML	0.07	3.0	5.0	
Massena	ML, SM	0.07	3.0	5.0	
Munson	ML over CH	0.05	2.0	4.0	
Raynham & Raynham Variant	ML	0.08	2.0	4.0	
Roundabout	ML	0.08	2.0	4.0	
Swanville	ML	0.09	2.0	4.0	
Wilmington	ML, SM	0.07	3.0	5.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
2 – 15	Diversion	Q <sub>10</sub>	Minimum 12 inches	OSD	3:1 or flatter
1 – 3	Ditch - Interceptor	B Curve	Seep plus 4 inches or Min. 24"	OSD	3:1 Uphill, 1.5:1 Downhill
3 – 15	- Interceptor	Q <sub>10</sub>	Seep plus 4 inches or Min. 24"	OSD	3:1 Uphill, 1.5:1 Downhill
1 – 3	- Surface Drainage	None	12 inches	OSD	4:1 or flatter
1 – 3	Land Smoothing	---	Cut and fill for grade to outlet	---	-----
1 – 3	Subsurface Drain				
	- Random	See Column 4	30 inches Minimum	OSD	-----
1 - 15	- Interceptor **	See Column 4	In aquifer, Minimum 30"	OSD	-----

Remarks: The Canadaigua and Raynham series have a low liquid limit and the silty and very fine sandy loam material flows readily when wet. Subsurface drain trenches and ditch banks slough readily when wet and the soil material may flow into and plug subsurface drains. Installation of subsurface drains during drier periods of year reduces the hazard of sloughing of trench walls.

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

\*\* Backfill trench with porous material to seep.

**(1) DRAINAGE GROUP E**

Very poorly drained loamy and silty soils. Peacham has a hardpan within 2 feet of surface. Glacial till and lake sediments.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Birdsall	ML-CL, ML	0.08	2.0	4.0	High-water table and ponding of water.
Humic Haplaquepts	ML, OL	0.07	3.0	4.0	
Lyons	ML, CL, OL	0.07	3.0	4.0	
Mansfield	ML, SM, OL	0.09	3.5	5.0	
Peacham	ML, SM, SP-SM, OH	0.09	3.5	5.0	
Whitman	ML, SM, OL	0.09	3.5	5.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 - 1	Ditch - Water table control	C Curve	Pan plus 4 inches, minimum 30"	100-300	1.5:1
	- Random	C Curve	24 inches	OSD	1.5:1
> 1	Subsurface Drain - Random	See Column 4	30 inches minimum	OSD	-----
	Ditch - Interceptor	C Curve	30 inches	OSD	1.5:1
	Subsurface Drain - Interceptor **	See Column 4	Pan plus 4 inches, minimum 30"	OSD	-----

Remarks: The Birdsall series has a low liquid limit, and the silty and very fine sandy loam material flows readily when wet. Subsurface drain trenches and ditch banks slough readily when wet and the soil material may flow into and plug subsurface drains. Installation of subsurface drains during the drier periods of the year reduces the hazard of sloughing of trench walls.

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

\*\* Backfill trench with porous material to the surface.

**(1) DRAINAGE GROUP F**

Moderately well drained clayey soils with slow to very slow permeability. Lake sediments.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Buxton	ML over CH or MH	0.05	2.0	4.0	Slow or very slow permeability.
Vergennes	MH, CH	0.02	1.5	4.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 - 2	Ditch - Interceptor	B Curve	Seep plus 4 inches, or depth for capacity	Perimeter	2:1 or flatter
	- Surface Drainage	None	12 inches	300	4:1 or flatter
	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----
	Subsurface Drain				
	- System	3/8"	30 inches	30 - 70	-----
	- Random	See Column 4	30 inches Minimum	OSD	-----
2 - 15	Diversion	Q <sub>10</sub>	Depth for Capacity	200 - 600	3:1 or flatter
2 - 3	Ditch - Surface Drainage	None	12 inches	OSD	4:1 or flatter
2 - 3	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----
2 - 15	Subsurface Drain				
	- Interceptor **		30 inches Minimum	OSD	-----

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

\*\* Backfill trench with porous material to the surface.

**(1) DRAINAGE GROUP G**

Poorly drained, clayey soils with very slow or slow permeability. Lake sediments.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Covington	MH, CH	0.05	1.5	4.0	Slow or very slow permeability and ponding in places. High water table.
Kingsbury	MH, CH	0.05	1.5	4.0	
Panton	MH, CH	0.02	1.5	4.0	
Scantic and Scantic Variant	ML over CH or MH	0.05	2.0	4.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 - 2	Ditch – Interceptor	B Curve - Corn C Curve - Hay-Pasture	Seep plus 4 inches, or depth for capacity	Perimeter	2:1 or flatter
	- Surface Drainage	None	12 inches	300	4:1 or flatter
	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----
	Subsurface Drain				
2 - 15	- System	3/8"	30 inches	30 - 70	-----
	- Random	See Column 4	30 inches minimum	OSD	-----
	Diversion	Q <sub>10</sub>	Depth for capacity	200 - 600	3:1 or flatter
	Ditch - Surface Drainage	None	12 inches	OSD	4:1 or flatter
	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----
	Subsurface Drain				
	- Interceptor**	See Column 4	30 inches minimum	OSD	-----

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

\*\* Backfill trench with porous material to seep.

**(1) DRAINAGE GROUP H**

Very poorly drained clayey soils with very slow permeability. Lake sediments.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Biddeford	ML over CH or MH	0.05	2.0	4.0	Very slow permeability and ponding hazard. High water table.
Livingston	MH, CH, OH	0.02	1.5	4.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 - 1	Ditch - Interceptor	C Curve	To mineral soil plus 4 inches, with depth for capacity	Perimeter	1.5:1
	Ditch - Surface Drainage	None	12 inches	300	1.5:1
	Land Smoothing	----	Cut and fill for grade to outlet	---	-----
	Subsurface Drain - Random	See Column 4	30 inches	OSD	-----

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

**(1) DRAINAGE GROUP I**

Moderately well drained soils comprised of sandy or loamy material over clays or sandy material over loamy and silty material. Rapid or moderately rapid permeability in upper layers and slow or very slow in underlying layers. Lake sediments.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Eldridge	SP-SM, SM, ML	0.15	2.0	4.0	Seasonal high perched water table because of finer textured underlying material.
Elmridge	SM, ML over CL	0.10	2.0	4.0	
Elmwood	SM over CH or MH	0.10	2.0	4.0	
Elmwood, Coarse Variant	SP-SM, SM over CH, MH	0.10	2.0	4.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
1 - 15	Diversion	Q <sub>10</sub>	Silt or Clay plus 4 inches	300 - 500	3:1 or flatter
1 - 3	Ditch - Interceptor	B Curve	Silt or Clay plus 4 inches	OSD	3:1 Uphill, 1:1 Downhill
3 -15	- Interceptor	Q <sub>10</sub>	Silt or Clay plus 4 inches	OSD	3:1 Uphill, 1:1 Downhill
1 - 3	- Random	B Curve - corn C Curve - hay-pasture	Silt or Clay plus 4 inches or 36 inches	OSD	1:1 or flatter
1 - 3	- Surface Drainage	None	12 inches	OSD	4:1 or flatter
1 - 3	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----
1 - 3	Subsurface Drain				
	- Random	See Column 4	30 inches minimum	OSD	-----
	- Interceptor **	See Column 4	To silt or clay, minimum 30 inch.	OSD	-----

Remarks: The silty material underlying the Eldridge series has a low liquid limit and flows readily when wet. Subsurface drain trenches and ditch banks slough readily when wet and the soil material may flow into and plug subsurface drains. Installation of subsurface drains during drier periods of the year reduces the hazard of sloughing of trench walls.

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

\*\* Backfill trench with porous material to seep.

**(1) DRAINAGE GROUP J**

Poorly drained soils comprised of loamy material over clays or sandy material over silty material. Rapid or moderately rapid permeability in upper layers and slow to very slow in underlying material. Lake sediments.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Eldridge, variant	SM over ML	0.15	2.0	4.0	High water table and slow to very slow permeability in underlying material.
Enosburg	SP-SM, SM over ML	0.15	2.0	4.0	
Swanton	SM over CH, MH	0.10	2.0	4.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 - 1	Ditch - Interceptor	B Curve – corn C Curve - hay-pasture	Silt or Clay plus 4 inches	Perimeter	1:1
	- Random	B Curve – corn C Curve - hay-pasture	Silt or Clay plus 4 inches or 36 inches	OSD	1:1
	- Surface Drainage	None	12 inches	300	4:1 or flatter
	Land Smoothing	----	Cut and fill for grade to outlet	---	-----
	Subsurface Drain				
	- Random	See Column 4	30 inches	OSD	-----
1 - 15	Diversion	Q <sub>10</sub>	12 inches	300 - 500	3:1 or flatter
1 - 3	Ditch - Interceptor	B Curve – corn C Curve - hay-pasture	Silt or Clay plus 4 inches	OSD	1:1
3 - 15	- Interceptor	Q <sub>10</sub>	Silt or Clay plus 4 inches	OSD	3:1 Uphill, 1:1 Downhill
1 - 3	- Surface Drainage	None	12 inches	OSD	4:1 or flatter
1 - 3	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----
1 - 15	Subsurface Drain				
	- Interceptor **	See Column 4	To silt or clay, Minimum 30 inch.	OSD	-----

Remarks: The silty material underlying the Enosburg and Eldridge, variant series has a low liquid limit and flows readily when wet. Subsurface drain trenches and ditch banks slough readily when wet and the soil material may flow into and plug subsurface drains. Installation of subsurface drains during drier periods of the year reduces the hazard of sloughing of trench walls.

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

\*\* Backfill trench with porous material to seep.

**(1) DRAINAGE GROUP K**

Very poorly drained soils comprised of loamy materials over clays. Moderately rapid permeability in upper layers and very slow permeability in underlying material. Lake sediments.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Whately	SM over CH or MH	0.10	2.0	4.0	High water, ponding hazard, and very slow permeability in underlying material.

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 - 3	Ditch - Interceptor	C Curve	Silt or Clay plus 4 inches	OSD	1:1
	- Water table control	-----	Silt or Clay plus 4 inches or 30 inches	200 - 500	1:1
	- Random	D Curve	Silt or Clay plus 4 inches or 30 inches	OSD	1:1
	- Surface Drainage	None	12 inches	OSD	4:1 or flatter
	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

**(1) DRAINAGE GROUP L**

Moderately well drained sandy soils with rapid permeability. Water-deposited sandy and gravelly material and loamy alluvial soils.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Castile	GM, SM	0.15	2.5	5.0	Seasonal high water table or springs.
Croghan	SP, SM	0.15	2.5	5.0	
Deerfield	SP, SM, GP, GM	0.15	2.5	5.0	
Duane	SP, SM, GP, GM	0.15	2.5	5.0	
Hero	SM over SP, SP-SM	0.15	2.5	5.0	
Machias	SM, ML over SP, SP-SM, GP, GM	0.15	2.5	5.0	
Madawaska	SM, ML over SP, SP-SM, GP, GM	0.15	2.5	5.0	
Ninigret	SM over SP, SP-SM	0.15	2.5	5.0	
Pawlet	SM, ML over SP	0.15	2.0	4.0	
Pawling	SM, ML over SP	0.15	2.0	4.0	
Podunk	SM over SP-SM	0.15	2.5	5.0	
Podunk Variant	SM over SP, SM, GP, GM	0.15	2.5	5.0	
Sheepscot	GP, GM, SP, SM	0.15	2.5	5.0	
Sudbury	SM over SP, SP-SM	0.15	2.5	5.0	
Tisbury	ML over SP or GP	0.15	2.0	4.0	
Winooski Variant	ML over SP-SM	0.15	2.0	4.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 - 15	Diversion	Q <sub>10</sub>	Silt or clay plus 4 inches	300-500	3:1 or flatter
0 - 3	Ditch - Interceptor	B Curve – corn C Curve - hay-pasture	Seep plus 4 inches	OSD	3:1 Uphill, 1:1 Downhill
3 - 15	- Interceptor	Q <sub>10</sub>	Seep plus 4 inches	OSD	3:1 Uphill, 1:1 Downhill
0 - 3	- Random	B Curve – corn C Curve - hay-pasture	24 inches minimum to 48 inches	OSD	1:1
0 - 3	- Surface Drainage	None	12 inches	OSD	4:1 or flatter
0 - 3	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----
0 - 3	Subsurface Drain				
	- Random	See Column 4	30 inches	OSD	-----
	- Interceptor **	See Column 4	Intercept Seep, min. 30 inches	OSD	-----

Remarks: If underlying material is very gravelly or very coarse sands the subsurface drain inflow rate will probably be .25 to .30. On-site review essential.

\* This is a minimum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

\*\* Backfill trench with porous material to seep.

**(1) DRAINAGE GROUP M**

Somewhat poorly to poorly drained sandy soils with rapid permeability. Water-deposited sand and gravel material and loamy alluvium.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
AuGres	SP, SP-SM	0.15	2.5	5.0	High water table or springs.
Fredon	SM over SP, SP-SM	0.15	2.5	5.0	
Moosilauke	SM over SP, SP-SM	0.15	2.5	5.0	
Rippowam	SM over SP-SM, SM	0.15	2.5	5.0	
Rumney	SM over SP-SM	0.15	2.5	5.0	
Rumney Variant	ML over SP-SM	0.15	2.0	4.0	
Walpole	SM over SP, SP-SM	0.15	2.5	5.0	
Wareham	SM over SP, SP-SM	0.15	2.5	5.0	
Wayland Variant	ML over SP, SP-SM	0.15	2.0	4.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 -3 Minor Areas	Ditch - Interceptor	C Curve	Seep plus 4 inches	OSD	3:1 Uphill, 1:1 Downhill
3 - 15	- Water table control	-----	24inches min. to 48 inches	200 – 500	1:1
	- Random	-----	24 inches min. to 48 inches	OSD	1:1
	- Surface Drainage	None	12 inches	OSD	4:1 or flatter
	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----
	Subsurface Drain				
	- System	C = 3/8"	30 inches minimum	100 – 120	-----
	- Random	See Column 4	30 inches minimum	OSD	-----
	- interceptor **	See Column 4	Intercept seep, minimum 30 inch.	OSD	-----

Remarks: If underlying material is very gravelly or coarse sands, the subsurface drain inflow rate will probably be 0.25 to 0.30. On-site review essential.

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

\*\* Backfill trench with porous material to seep.

**(1) DRAINAGE GROUP N**

Very poorly drained sandy soils with rapid permeability. Water-deposited sandy and gravelly material.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated</b>	
Halsey	SP-SM, SM, OL	0.15	2.5	5.0	High water table and ponding.
Scarboro	SP-SM, SM, SP, SW	0.15	2.5	5.0	
Searsport	PT, SP	0.15	2.5	5.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 - 3	Ditch - Interceptor	C Curve	Seep plus 4 inches	OSD	3:1 Uphill, 1:1 Downhill
	- Water table control	-----	24 inches min. to 48 inches	200 - 500	1:1
	- Random	-----	24 inches min. to 48 inches	OSD	1:1
	- Surface Drainage	None	12 inches	OSD	4:1 or flatter
	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----
	Subsurface Drain - System	C = 3/8"	30 inches minimum	100 - 120	-----
	- Random	See Column 4	30 inches minimum	OSD	-----
	- Interceptor	See Column 4	Intercept seep, minimum 30 inch.	OSD	-----

Remarks: If the underlying material is very gravelly or very coarse sands the subsurface drain inflow rate will probably be 0.25 to 0.30. On-site review is essential.

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

\*\* Backfill trench with porous material to seep.

**(1) DRAINAGE GROUP O**

Moderately well drained and somewhat poorly drained silty alluvial soils with moderate permeability. Subject to flooding.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Cornish	ML, CL-ML, CL	0.07	2.5	4.0	Seasonal high water table and occasional flooding hazard.
Lovewell	ML	0.07	2.5	4.0	
Middlebury	ML	0.07	2.5	5.0	
Teel	ML, CL-ML, CL, SM, SM-SC	0.07	2.5	4.0	
Winooski	ML	0.07	2.5	4.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 - 3	Ditch - Interceptor	B Curve – corn C Curve - hay-pasture	24 inches minimum to 48 inches	OSD	1:1
	- Random	B Curve – corn C Curve - hay-pasture	24 inches minimum to 48 inches	OSD	1:1
	- Surface Drainage	None	12 inches	OSD	4:1 or flatter
	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----
	Subsurface Drain - Random	See Column 4	30 inches minimum	OSD	-----

Remarks: The soils in this group have a low liquid limit and the silty and very fine sandy loamy material flows readily when wet. Subsurface drain trenches and ditch banks slough readily when wet and the soil material may flow into and plug subsurface drains. Installation of subsurface drains during drier periods of the year reduces the hazard of sloughing of trench walls.

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

**(1) DRAINAGE GROUP P**

Poorly drained silty alluvial soils with moderate to slow permeability. Subject to flooding.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Charles	ML	0.06	2.5	4.0	High water table, ponding, and a flooding hazard.
Limerick & Limerick Variant	ML	0.06	2.5	4.0	
Wayland	ML	0.06	2.5	4.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 - 3	Ditch - Interceptor	B Curve – corn C Curve - hay-pasture	24 inches minimum to 48 inches	OSD	1:1
	- Random	B Curve – corn C Curve - hay-pasture	24 inches minimum to 48 inches	OSD	1:1
	- Surface Drainage	None	12 inches	OSD	4:1 or flatter
	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----
	Subsurface Drain - Random	See Column 4	30 inches minimum	OSD	-----

Remarks: The soils in this group have a low liquid limit and the soil material flows when wet. Subsurface drain trenches and ditch banks slough in readily when wet and the soil material may flow into and plug subsurface drains. Installation of subsurface drains during drier periods of the year reduces the hazard of sloughing of trench walls.

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

**(1) DRAINAGE GROUP Q**

Very poorly drained silty alluvial soils with variable permeability. Subject to flooding.

<b>(2) SOIL SERIES</b>	<b>(3) UNIFIED CLASSIFICATION</b>	<b>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</b>	<b>(5) VELOCITIES Ft/Sec.</b>		<b>(6) MAJOR PROBLEMS OR HAZARDS</b>
			<b>Bare</b>	<b>Vegetated *</b>	
Histic Fluvaquents	ML, OL	0.04	2.5	4.0	High water table and flooding hazards. Subject to ponding.
Medomack	ML, CL	0.04	2.5	4.0	
Saco	ML, OL	0.04	2.5	4.0	
Saco Variant	ML, OL over SP, SP-SM	0.15	2.5	4.0	

<b>(7) PERCENT SLOPE</b>	<b>(8) DRAINAGE METHOD</b>	<b>(9) DRAINAGE CRITERIA</b>	<b>(10) DEPTH IN INCHES</b>	<b>(11) SPACING RANGE-FEET</b>	<b>(12) RECOMMENDED SIDE SLOPES</b>
0 - 1	Ditch - Random	C or D Curve	24 inches minimum to 48 inches	OSD	1:1
	- Surface Drainage	None	12 inches	OSD	4:1 or flatter
	Land Smoothing	-----	Cut and fill for grade to outlet	---	-----

\* This is a maximum value and shall only be used where good vegetative cover and proper maintenance can be obtained.

**(1) DRAINAGE GROUP R**

Very poorly drained, organic soils and soils with loamy material over organic muck or peat.

<u>(2) SOIL SERIES</u>	<u>(3) UNIFIED CLASSIFICATION</u>	<u>(4) SUBSURFACE DRAIN INFLOW RATE cfs/1000'</u>	<u>(5) VELOCITIES Ft/Sec.</u>		<u>(6) MAJOR PROBLEMS OR HAZARDS</u>
			<u>Bare</u>	<u>Vegetated</u>	
Adrian	PT over SP	0.15	2.5	-	High water table, subsides and oxidizes readily, and outlets difficult to obtain.
Balch	PT	0.15	2.5	-	
Borochemists, moderately deep over loamy substratum	PT over ML	0.07	2.5	-	
Borohemists, deep	PT	0.15	2.5	-	
Carlisle	PT	0.15	2.5	-	
Chocorus	PT over SP	0.15	2.5	-	
Elvers	ML over PT	0.15	2.5	-	
Fresh Water Marsh	PT	0.15	2.5	-	
Hemic Borosapristis	PT	0.15	2.5	-	
Histosols	PT	0.15	2.5	-	
Histosols, loamy substratum	PT over ML or SM	0.07	2.5	-	
Houghton	PT	0.15	2.5	-	
Linwood	PT over ML or SM	0.07	2.5	-	
Lupton	PT	0.15	2.5	-	
Markey	PT	0.15	2.5	-	
Marsh	PT	0.15	2.5	-	
Muck	PT	0.15	2.5	-	
Muck, deep	PT	0.15	2.5	-	
Muck over loams	PT over ML or SM	0.07	2.5	-	
Muck and Peat	PT	0.15	2.5	-	
Muck over sands	PT over SP	0.15	2.5	-	
Ossipee	PT over ML	0.07	2.5	-	
Palms	PT over ML or SM	0.07	2.5	-	
Tawas	PT over SP	0.15	2.5	-	
Terric Medisapristis	PT	0.15	2.5	-	
Wallkill	ML over PT	0.15	2.5	-	

<u>(7) PERCENT SLOPE</u>	<u>(8) DRAINAGE METHOD</u>	<u>(9) DRAINAGE CRITERIA</u>	<u>(10) DEPTH IN INCHES</u>	<u>(11) SPACING RANGE-FEET</u>	<u>(12) RECOMMENDED SIDE SLOPES</u>
0 - 1	This group occurs under conditions, which produce complex problems not covered in this guide. Drainage of soils in this group should be considered on an individual job basis.				