Town of Wolcott
Road Erosion Inventory Report

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Inventory and report funded by the Vermont Agency of Transportation 2019 Better Roads Program

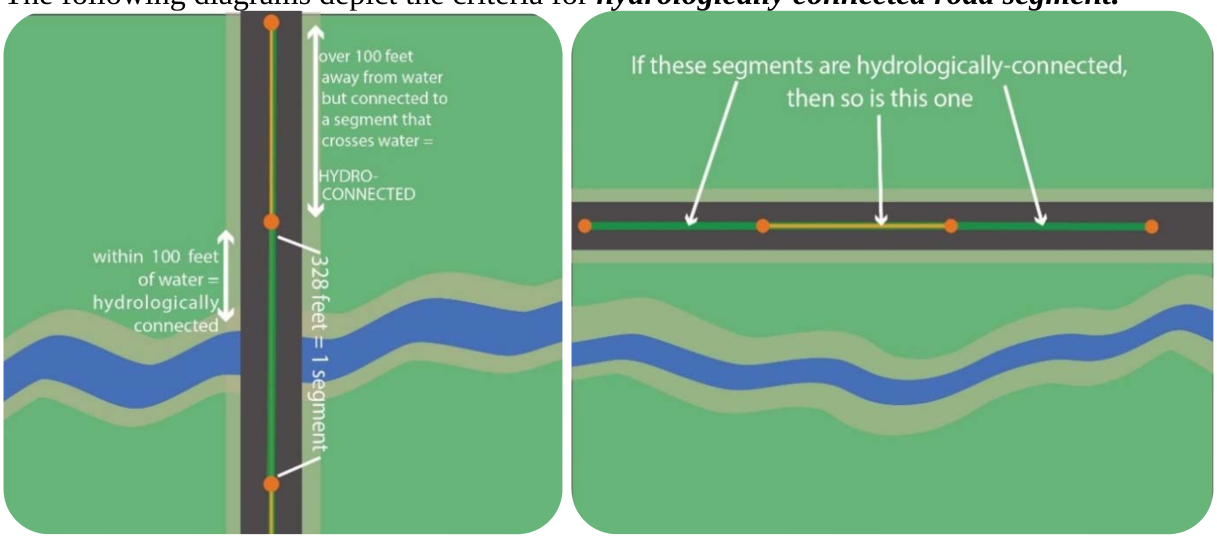
Introduction

Lamoille County Planning Commission (LCPC) conducted a road erosion inventory (REI) to evaluate "hydrologically connected" road segments in the town of Wolcott in 2019. This report describes the process, the observed conditions, and the Town priorities.

Hydrologically connected road segments are indicated by one or more of the following:

- Within 100 feet to water resources (streams, rivers, wetlands, lakes, ponds)
- Road segments that bisect a water resource
- Adjacent segments to connected segments (i.e. segment uphill of a connected segment)
- Catch basin outfall pipe at 500 feet or less from a water resource

The following diagrams depict the criteria for ***hydrologically connected road segment:***



*Diagrams created by Two Rivers-Ottauquechee Regional Commission staff

Background

Many settlements and roads in Vermont are near water since these are generally the flattest parts of our State, and proximity to water was historically essential to economic vitality. Road sediment in water resources contributes to a spectrum of ecological problems related to water pollution. During rain events, road sediment sometimes is deposited directly into the water resources. In the context of this report, water resources are defined as perennial and intermittent streams, rivers, wetlands, lakes, and ponds.

Solutions for road erosion concerns are taking shape in the form of state regulations and grants. Grants should support installation and maintenance of road Best Management Practices (BMPs), while regulations should establish minimum BMP requirements. The goal is to minimize road erosion caused by storm runoff and ensure the sediment that does erode is sufficiently filtered before reaching the water. In optimum circumstances surface water runoff should be prevented (or disconnected) from directly reaching water resources.

The Road Erosion Inventory and Implementation Schedule (REI) is required for both grant funding and permit compliance. The purpose of the REI is to identify locations susceptible to road erosion. These are usually the places that require regular attention by town road crews to maintain safe travel or repeatedly fix erosion issues. Only hydrologically connected road segments are assessed in the REI.

The Department of Environmental Conservation (DEC) provides GIS data via the Agency of Natural Resources (ANR) Natural Resource Atlas (Atlas) identifying the hydrologically connected road segments for each municipality. This REI reflects the criteria set by DEC's Municipal Roads General Permit (MRGP), which intends to be congruous with the Better Roads Manual provided by the Vermont Agency of Transportation (VTrans). The MRGP is required by the Vermont Clean Water Act (Act 64), and the permit took effect July 31, 2018.

Road Erosion Inventory Methodology

- The DEC identified hydrologically connected municipal road segments (all surface types and all classes of roads) based on proximity to water
- The hydrologically connected roads were divided into approximately 100-meter segments (~328 feet) and assigned a segment identification number by DEC
- All hydrologically connected segments were inspected by LCPC staff and given a score of Fully Meets, Partially Meets, or Does Not Meet based on the MRGP guidance

LCPC staff inspected each hydrologically connected road segment during the 2019 field season and collected data using a portable tablet device. ANR Atlas data was loaded onto the tablet and integrated into a field inventory application created with ESRI ArcGIS Collector software. The roadway surface, shoulders, and ditches of each DEC-identified hydrologically connected road segment were inspected for erosion. Culverts were also examined for erosion issues. Stream culvert issues are exempt from the MRGP if in-stream work permits are required by any local, state or federal regulatory agency. Non-stream culvert issues and driveway culverts were noted if they were contributing to erosion.

Town Report

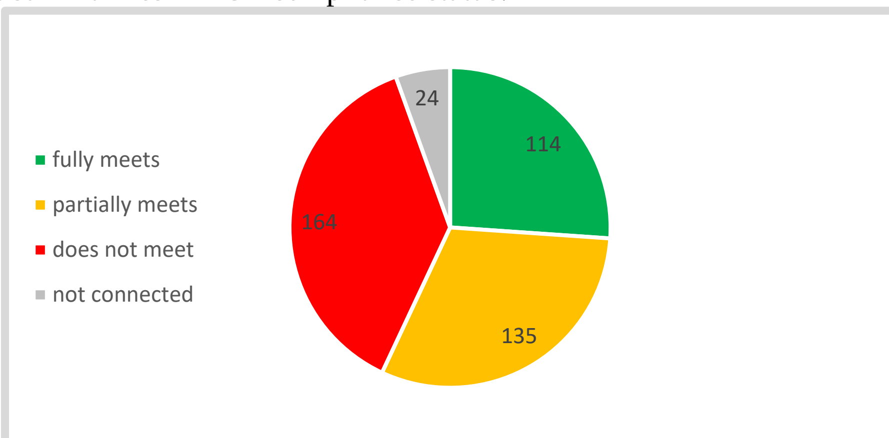
The Town of Wolcott is just over 39 square miles with approximately 56 miles of town-owned public roads. The Atlas identified 439 road segments as hydrologically connected, or approximately 27 miles. 138 segments were identified to be in full compliance and/or non-jurisdictional with the MRGP, or approximately 8.6 miles. The resulting estimated quantity of hydrologically connected, municipally owned, not fully compliant road segments in need of work over the 20 years of the MRGP jurisdiction is **299 segments, or approximately 18.6 miles**.

Maps and spreadsheets depicting the details of the REI is contained in Appendix A and B, respectively. Appendix C contains excerpts of typical BMP construction details from the VTrans Better Roads Manual. It is common to find roads flanked by a steep grade on one side and a water source on the other. This creates extra challenges and emphasizes the importance of proper road drainage installation and maintenance.

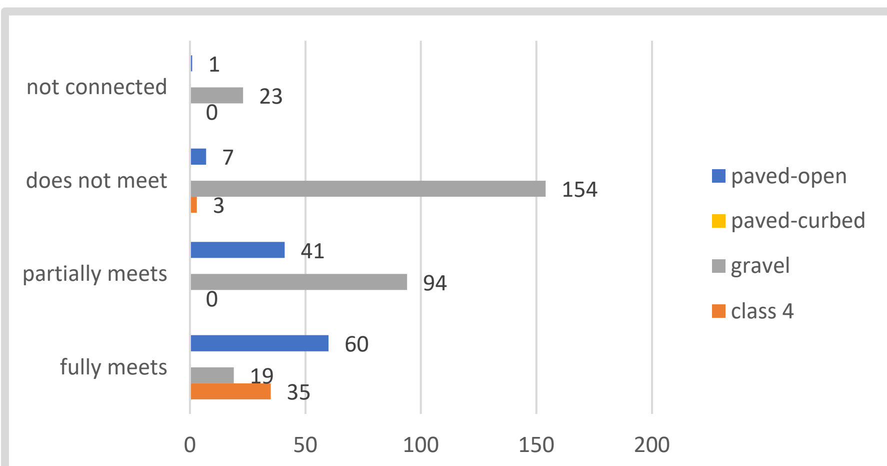
Common causes for erosion issues are as follows:

- Inadequate infiltration and disconnection practices
- Unstable river and stream banks adjacent to roads
- Unstable swales or no swales where they are needed
- Lack of, or inadequate culverts or headwalls
- Inadequate compaction or cohesiveness of road surface material

<u>Results: Snapshot of Current Condition</u>
This pie-chart summarizes MRGP compliance status:



The following bar chart depicts the scoring breakdown (fully meets, partially meets, does not meet) by road type for hydrologically connected road miles within the town's total road miles.



<u>Implementation Plan</u>

It is important to note this report represents a snapshot in time. It is based on a combination of desktop geographic analysis by DEC staff, plus field observations made by LCPC staff. It is known that some site-specific conditions have changed since the field work was conducted. The work conducted in this assessment was consistent with DEC training provided for Regional Planning Commission staff. The findings in this report are a clear indication of the types of conditions that may be observed at any snapshot in time around Town. This report is also useful in framing the order of magnitude of work which will be required under the Municipal Road General Permit, and therefore should be helpful in projecting budget needs.

Twenty-one (21) segments have been identified by the Town for implementation in the first five years of the MRGP, at an estimated cost of $290,000. Some sites may be determined by Town Staff to need a fully engineered design, or a design created by the Town. However, most sites can be addressed by implementing typical BMPs found in the Better Roads Guidance Manual published by VTrans. Town Staff met with LCPC on numerous occasions, both in the office and at example erosion locations; possible erosion management options were discussed, to be consistent with the Town's available resources. Specific techniques to be applied to each location, including estimates of materials, equipment, and personnel needs will be determined by the Town prior to implementation of corrective actions. The data and this report will help the Town track erosion problem areas over time and identify project locations and schedules.

The Town priorities, project descriptions, schedule, and costs in the following table are subject to change.

Road Name	Segment ID #	Estimated Project Description	Est Project Cost	Est Time
MOREY HILL RD	135343 135344 135345 135346 135347 135348 135329	Replace 2 existing driveway culverts; improve nearby segments with problems related to crown, shoulders, swales & conveyances, and non-stream culverts	$45,000	Year 1, 2020
EAST ELMORE RD	92595 92594 92593	Replace existing 48" stream culvert with new; upsize existing 12" drainage culvert with new 18"; improve nearby segments with problems related to crown, shoulders, swales & conveyances, and non-stream culverts	$25,000	Year 2, 2021
BROOK RD	13832 13846 13845	Replace 1 existing culverts of < 3ft diameter with new >3ft culvert on better alignment. Improve nearby segments with problems related to crown, shoulders, swales & conveyances, and non-stream culverts	$180,000	Year 3, 2022
TURCOTTE RD And JONES RD	188583 188604 188603 118305 118306 118307	Install stone ditches and two <2ft culverts as needed. Improve nearby segments with problems related to crown, shoulders, swales & conveyances, and non-stream culverts. May involve ledge removal on Jones Road	$25,000	Year 4, 2023
EAST HILL RD	93186 93185	Upsize existing <24" culvert to 36". Improve nearby segments with problems related to crown, shoulders, swales & conveyances, and non-stream culverts near this replacement and near recent large culvert replacement project.	$15,000	Year 5, 2024

Conclusion

While the existence of roads in proximity to water poses a risk for water quality, adequate road maintenance practices will reduce the rate of unmanaged runoff reaching our valuable natural resources. Recommended BMPs to improve current conditions are detailed in Appendix C and include measures such as grass and stone-lined drainage swales, sheet flow infiltration, disconnection practices, road crowning, improving culvert outlets and headwalls, and stabilizing exposed soil.

The Road Erosion Inventory for the Town of Wolcott accomplished the following objectives: (1) an increased understanding of erosion concerns along municipal roads, (2) an inventory of hydrologically connected road segments, and (3) five-year work plan with cost estimates. The identification and prioritization of road erosion sites will help the Town budget for and implement the necessary repairs.

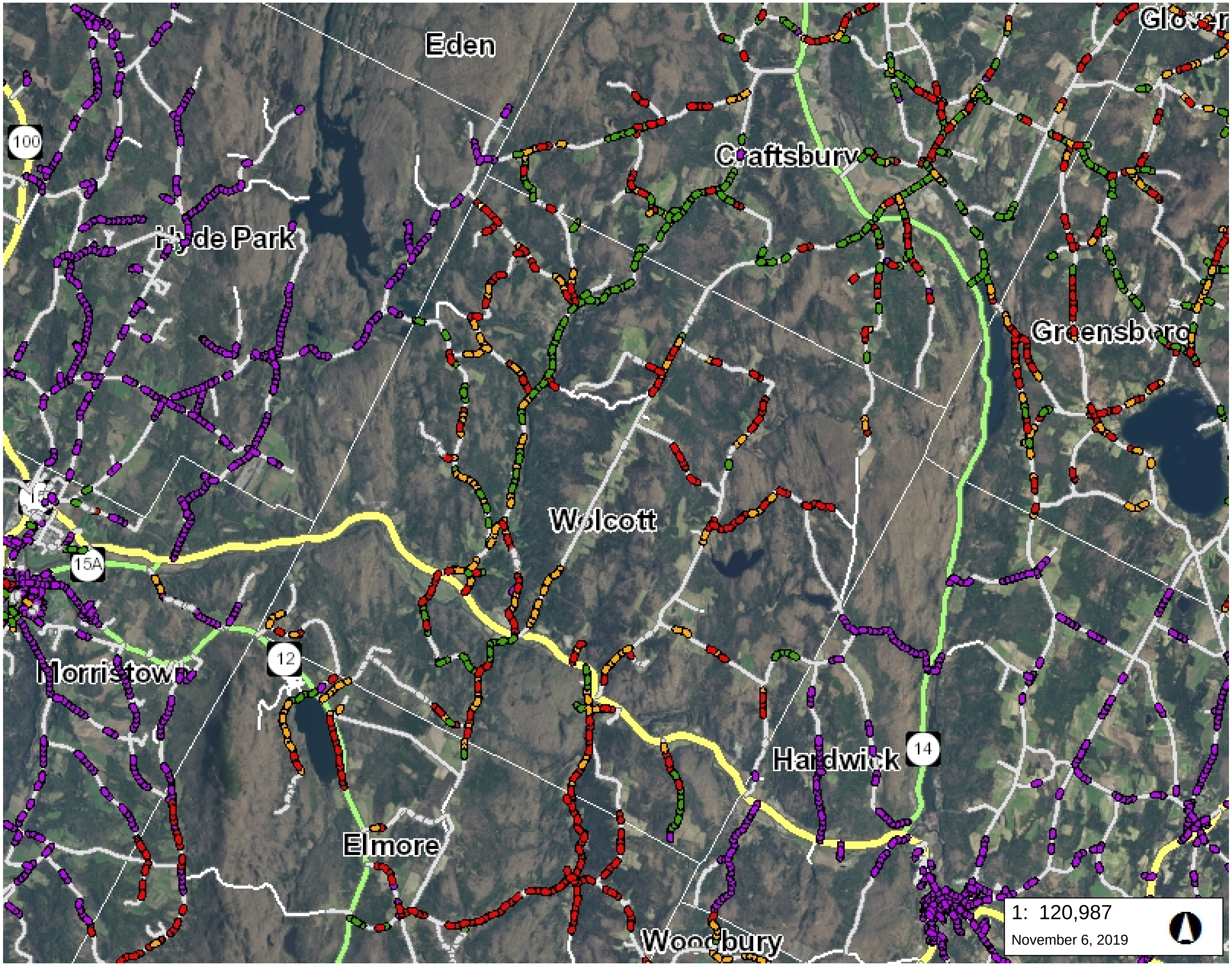
Road segments not identified in the ANR Atlas as hydrologically connected, but are connected, were documented by LCPC staff. Additionally, there were segments identified in the ANR Atlas as hydrologically connected but they are not connected. The REI should be updated every five years in accordance with the MRGP to document progress, impacts from specific weather events, and re-evaluation of the Town's priorities. Sites identified for a full engineering design should also be reviewed by the Town and prioritized for inclusion in Capital Budgets.

There are sections of Class 4 roads where erosion issues were documented. Town highway budgets are limited and more traveled roads usually receive higher priority by the voting public and taxpayers. Due to the MRGP requirements, LCPC will collaborate with the partners – Vermont Department of Environmental Conservation, Vermont Youth Conservation Corps, and involved Towns – to identify available funding sources and develop appropriate implementation measures for selected Class 4 roads in the future.

Natural Resources Atlas

Vermont Agency of Natural Resources

vermont.gov



LEGEND

Road Erosion Scoring (MRGP)

- Fully Meets
- Partially Meets
- Does Not Meet
- Incomplete Data
- Not Connected

Hydrologically Connected Roa(d) (MRGP)

- Yes
- No

Roads

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- Not part of function Classification S

Town Boundary

1: 120,987

November 6, 2019

6,146.0 0 3,073.00 6,146.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 10082 Ft. 1cm = 1210 Meters

THIS MAP IS NOT TO BE USED FOR NAVIGATION

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

NOTES

Map created using ANR's Natural Resources Atlas

Seg ID	Road Name	Inventory Date	Road Type	Slope	Crown	Berm / windrow	Drainage	Conveyance	Driveway Culvert	Drainage Culvert	Status
3773	BALDWIN BROOK RD	10/10/2019	Gravel	4	D	P	P	N			Does Not Meet
3775	BALDWIN BROOK RD	10/10/2019	Gravel	10	P	P	F	N			Partially Meets
3776	BALDWIN BROOK RD	10/10/2019	Gravel	10	P	F	F	N			Partially Meets
3777	BALDWIN BROOK RD	10/10/2019	Gravel	5	P	P	F	N			Partially Meets
3780	BALDWIN BROOK RD	10/10/2019	Gravel	10	F	P	P	N			Partially Meets
3781	BALDWIN BROOK RD	10/10/2019	Gravel	6	P	F	D	D			Does Not Meet
3782	BALDWIN BROOK RD	10/10/2019	Gravel	4	D	P	P	N			Does Not Meet
3783	BALDWIN BROOK RD	10/10/2019	Gravel	5	P	P	P	N	P		Does Not Meet
3788	BALDWIN BROOK RD	10/10/2019	Gravel	3	P	P	P	D			Does Not Meet
3789	BALDWIN BROOK RD	10/10/2019	Gravel	3	D	F	D	N			Does Not Meet
3790	BALDWIN BROOK RD	10/10/2019	Gravel	2	F	P	F	N			Partially Meets
3791	BALDWIN BROOK RD	10/10/2019	Gravel	5	F	P	F	N	P		Partially Meets
3792	BALDWIN BROOK RD	10/10/2019	Gravel	5	F	P	P	N	P		Does Not Meet
3793	BALDWIN BROOK RD	10/10/2019	Gravel	8	F	F	P	N	P		Partially Meets
3794	BALDWIN BROOK RD	10/10/2019	Gravel	5	F	D	F	N			Does Not Meet
3795	BALDWIN BROOK RD	10/10/2019	Gravel	4	D	D	F	N			Does Not Meet
3801	BALDWIN BROOK RD	10/10/2019	Gravel	8	D	P	P	N			Does Not Meet
13832	BROOK RD	10/10/2019	Gravel	2	D	D	F	N			Does Not Meet
13841	BROOK RD	10/10/2019	Gravel	7	F	P	P	N			Partially Meets
13842	BROOK RD	10/10/2019	Gravel	8	F	P	P	N			Partially Meets
13843	BROOK RD	10/10/2019	Gravel	4	F	P	P	N			Partially Meets
13844	BROOK RD	10/10/2019	Gravel	5	F	D	P	N	F		Does Not Meet
13845	BROOK RD	10/10/2019	Gravel	5	D	P	D	N	P		Does Not Meet
13846	BROOK RD	10/10/2019	Gravel	2	D	D	P	D			Does Not Meet
13847	BROOK RD	10/14/2019	Gravel	99	F	F	F	N			Not Connected
13848	BROOK RD	10/14/2019	Gravel	99	F	F	F	N			Not Connected
13851	BROOK RD	10/14/2019	Gravel	2	D	D	F	N			Does Not Meet
26165	CORLEY RD	10/21/2019	Gravel	5	F	D	F	N			Does Not Meet
26166	CORLEY RD	10/21/2019	Class 4	3							Fully Meets
26173	CORLEY RD	10/21/2019	Class 4	10							Fully Meets
26174	CORLEY RD	10/21/2019	Gravel	5	F	F	D	D			Does Not Meet
26175	CORLEY RD	10/21/2019	Gravel	7	F	P	F	N			Partially Meets
26176	CORLEY RD	10/21/2019	Gravel	4	F	F	F	N	F		Fully Meets
26177	CORLEY RD	10/21/2019	Gravel	8	F	F	F	N		F	Fully Meets
26178	CORLEY RD	10/21/2019	Gravel	5	F	F	F	N			Fully Meets
26179	CORLEY RD	10/21/2019	Gravel	6	F	F	D	N			Does Not Meet
26180	CORLEY RD	10/21/2019	Gravel	1	F	D	F	N			Does Not Meet
26181	CORLEY RD	10/21/2019	Gravel	3	F	D	F	N			Does Not Meet
26182	CORLEY RD	10/21/2019	Gravel	1	F	D	F	N			Does Not Meet
26183	CORLEY RD	10/21/2019	Gravel	99	F	F	F	N			Not Connected
26184	CORLEY RD	10/21/2019	Gravel	3	F	D	F	N			Does Not Meet
27241	COURCHAINE FARM RD	10/21/2019	Gravel	3	D	F	P	N			Partially Meets
27244	COURCHAINE FARM RD	10/21/2019	Gravel	4	D	D	F	N			Does Not Meet
29028	CROSS RD	10/10/2019	Gravel	4	D	D	F	N			Does Not Meet
29029	CROSS RD	10/10/2019	Gravel	5	D	P	P	N	P		Does Not Meet
29032	CROSS RD	10/10/2019	Gravel	3	D	D	F	N			Does Not Meet
29033	CROSS RD	10/10/2019	Gravel	3	D	D	P	N			Does Not Meet
29034	CROSS RD	10/10/2019	Gravel	3	D	P	P	N			Does Not Meet
29035	CROSS RD	10/10/2019	Gravel	2	D	D	P	N		F	Does Not Meet

Seg ID	Road Name	Inventory Date	Road Type	Slope	Crown	Berm / windrow	Drainage	Conveyance	Driveway Culvert	Drainage Culvert	Status
29036	CROSS RD	10/10/2019	Gravel	3	D	D	P	N	P		Does Not Meet
92591	E ELMORE RD	10/18/2019	Gravel	3	F	D	F	N			Does Not Meet
92593	E ELMORE RD	10/18/2019	Gravel	1	F	D	F	N			Does Not Meet
92594	E ELMORE RD	10/18/2019	Gravel	1	F	D	F	N			Does Not Meet
92595	E ELMORE RD	10/18/2019	Gravel	2	F	P	P	N			Partially Meets
92596	E ELMORE RD	10/18/2019	Gravel	1	F	D	F	N			Does Not Meet
92597	E ELMORE RD	10/18/2019	Gravel	2	F	D	F	N			Does Not Meet
92598	E ELMORE RD	10/18/2019	Gravel	1	F	D	F	N		F	Does Not Meet
92599	E ELMORE RD	10/18/2019	Gravel	1	F	P	P	N			Partially Meets
92600	E ELMORE RD	10/18/2019	Gravel	1	F	D	F	N			Does Not Meet
92601	E ELMORE RD	10/18/2019	Gravel	1	F	P	F	N			Partially Meets
92602	E ELMORE RD	10/18/2019	Gravel	3	F	D	F	N			Does Not Meet
92603	E ELMORE RD	10/18/2019	Gravel	1	F	D	F	N		P	Does Not Meet
92604	E ELMORE RD	10/18/2019	Gravel	2	F	F	D	N			Does Not Meet
92605	E ELMORE RD	10/18/2019	Gravel	3	F	F	D	N			Does Not Meet
92606	E ELMORE RD	10/18/2019	Gravel	7	F	F	D	N			Does Not Meet
92607	E ELMORE RD	10/18/2019	Gravel	3	F	D	P	N			Does Not Meet
92608	E ELMORE RD	10/18/2019	Gravel	2	F	D	F	N			Does Not Meet
17700.1	E HILL RD	10/16/2019	Paved with open ditches	8			P	N		P	Partially Meets
17705.1	E HILL RD	10/16/2019	Paved with open ditches	8			D	N		P	Does Not Meet
17706.1	E HILL RD	10/16/2019	Paved with open ditches	6			D	N	P		Does Not Meet
17707.1	E HILL RD	10/16/2019	Paved with open ditches	8			F	N	P	P	Partially Meets
17708.1	E HILL RD	10/16/2019	Paved with open ditches	10			P	N	P	P	Does Not Meet
17709.1	E HILL RD	10/16/2019	Paved with open ditches	12			P	N		P	Partially Meets
17710.1	E HILL RD	10/16/2019	Paved with open ditches	8			P	N		P	Partially Meets
17711.1	E HILL RD	10/16/2019	Paved with open ditches	10			P	N		P	Partially Meets
17712.1	E HILL RD	10/16/2019	Paved with open ditches	5			P	N			Partially Meets
93119	E HILL RD	10/11/2019	Gravel	5	F	F	F	N			Not Connected
93125	E HILL RD	10/16/2019	Gravel	99	F	F	F	N			Not Connected
93147	E HILL RD	10/16/2019	Gravel	3	F	P	P	N			Partially Meets
93148	E HILL RD	10/16/2019	Gravel	2	F	P	P	N			Partially Meets
93149	E HILL RD	10/16/2019	Gravel	1	F	D	F	N			Does Not Meet
93150	E HILL RD	10/16/2019	Gravel	1	F	D	F	N			Does Not Meet
93151	E HILL RD	10/16/2019	Gravel	4	F	F	D	N			Does Not Meet
93163	E HILL RD	10/11/2019	Gravel	3	F	F	F	N		F	Fully Meets
93166	E HILL RD	10/11/2019	Gravel	99	F	F	F	N			Not Connected
93167	E HILL RD	10/11/2019	Gravel	8	F	P	F	N	F		Partially Meets
93168	E HILL RD	10/11/2019	Gravel	2	F	P	F	N			Partially Meets
93169	E HILL RD	10/11/2019	Gravel	1	F	P	F	N			Partially Meets
93172	E HILL RD	10/11/2019	Gravel	5	F	D	D	N			Does Not Meet
93173	E HILL RD	10/11/2019	Gravel	6	F	D	P	D			Does Not Meet
93174	E HILL RD	10/11/2019	Gravel	12	P	D	D	N			Does Not Meet
93175	E HILL RD	10/11/2019	Gravel	7	P	D	D	N			Not Connected
93176	E HILL RD	10/11/2019	Gravel	6	F	D	D	N			Does Not Meet
93177	E HILL RD	10/11/2019	Gravel	3	F	D	D	N			Does Not Meet
93178	E HILL RD	10/11/2019	Gravel	6	F	D	P	D		D	Does Not Meet
93185	E HILL RD	10/11/2019	Gravel	7	F	D	P	F			Does Not Meet
93186	E HILL RD	10/11/2019	Gravel	6	F	P	P	D	P		Does Not Meet
93194	E HILL RD	10/11/2019	Gravel	7	F	D	P	F	F		Does Not Meet

Seg ID	Road Name	Inventory Date	Road Type	Slope	Crown	Berm / windrow	Drainage	Conveyance	Driveway Culvert	Drainage Culvert	Status
93195	E HILL RD	10/11/2019	Gravel	4	F	P	F	F			Partially Meets
93196	E HILL RD	10/11/2019	Gravel	2	F	F	P	N			Partially Meets
93197	E HILL RD	10/11/2019	Gravel	99	F	F	F	N			Not Connected
20224.1	ELMORE POND RD	10/21/2019	Paved with open ditches	10			F	N	F		Fully Meets
20225.1	ELMORE POND RD	10/21/2019	Paved with open ditches	3			F	N			Fully Meets
20226.1	ELMORE POND RD	10/21/2019	Paved with open ditches	1			F	N			Fully Meets
20227.1	ELMORE POND RD	10/21/2019	Paved with open ditches	1			F	N			Fully Meets
20228.1	ELMORE POND RD	10/21/2019	Paved with open ditches	3			F	N			Fully Meets
20229.1	ELMORE POND RD	10/21/2019	Paved with open ditches	5			F	N			Fully Meets
20230.1	ELMORE POND RD	10/21/2019	Paved with open ditches	8			F	N			Fully Meets
20231.1	ELMORE POND RD	10/21/2019	Paved with open ditches	8			F	N	F		Fully Meets
20232.1	ELMORE POND RD	10/21/2019	Paved with open ditches	10			F	N	F		Fully Meets
95580	ELMORE POND RD	10/21/2019	Gravel	5	F	P	F	N			Partially Meets
95588	ELMORE POND RD	10/21/2019	Gravel	99	F	F	F	N			Not Connected
95589	ELMORE POND RD	10/21/2019	Gravel	99	F	F	F	N			Not Connected
95592	ELMORE POND RD	10/21/2019	Gravel	2	F	D	F	N			Does Not Meet
95593	ELMORE POND RD	10/21/2019	Gravel	2	F	P	P	N		P	Does Not Meet
95594	ELMORE POND RD	10/21/2019	Gravel	2	F	P	P	N			Partially Meets
95595	ELMORE POND RD	10/21/2019	Gravel	4	F	P	F	N		P	Partially Meets
95596	ELMORE POND RD	10/21/2019	Gravel	4	F	F	F	N			Fully Meets
95597	ELMORE POND RD	10/21/2019	Gravel	3	F	F	F	D			Does Not Meet
95600	ELMORE POND RD	10/21/2019	Gravel	11	F	F	D	N		P	Does Not Meet
95601	ELMORE POND RD	10/21/2019	Gravel	6	F	D	F	N			Does Not Meet
95602	ELMORE POND RD	10/21/2019	Gravel	3	F	D	F	N		P	Does Not Meet
95603	ELMORE POND RD	10/21/2019	Gravel	4	F	F	P	N			Partially Meets
95604	ELMORE POND RD	10/21/2019	Gravel	3	F	P	F	N		P	Partially Meets
95605	ELMORE POND RD	10/21/2019	Gravel	3	F	P	F	N		F	Partially Meets
95606	ELMORE POND RD	10/21/2019	Gravel	2	F	P	F	N		P	Partially Meets
95607	ELMORE POND RD	10/21/2019	Gravel	3	F	P	P	N			Partially Meets
95608	ELMORE POND RD	10/21/2019	Gravel	6	F	P	D	N			Does Not Meet
95609	ELMORE POND RD	10/21/2019	Gravel	7	F	P	F	N			Partially Meets
95613	ELMORE POND RD	10/21/2019	Gravel	99	F	F	F	N			Not Connected
95617	ELMORE POND RD	10/21/2019	Gravel	99	F	F	F	N			Not Connected
95622	ELMORE POND RD	10/21/2019	Gravel	9	F	P	F	N			Partially Meets
95623	ELMORE POND RD	10/21/2019	Gravel	5	F	P	P	N	F	P	Does Not Meet
95624	ELMORE POND RD	10/21/2019	Gravel	7	F	P	P	N			Partially Meets
95625	ELMORE POND RD	10/21/2019	Gravel	7	F	P	F	D			Does Not Meet
98304	FLAT IRON RD	10/18/2019	Gravel	1	F	D	F	N			Does Not Meet
98307	FLAT IRON RD	10/18/2019	Gravel	2	F	F	D	N		P	Does Not Meet
98308	FLAT IRON RD	10/18/2019	Gravel	1	F	P	P	N		P	Does Not Meet
98309	FLAT IRON RD	10/18/2019	Gravel	1	F	P	F	N			Partially Meets
98310	FLAT IRON RD	10/18/2019	Gravel	1	F	P	P	N			Partially Meets
22120.1	FORT HILL RD	10/21/2019	Paved with open ditches	2			F	D			Does Not Meet
22121.1	FORT HILL RD	10/21/2019	Paved with open ditches	99			F	N			Fully Meets
22122.1	FORT HILL RD	10/21/2019	Paved with open ditches	1			P	N			Partially Meets
22123.1	FORT HILL RD	10/21/2019	Paved with open ditches	1			P	N		P	Partially Meets
22124.1	FORT HILL RD	10/21/2019	Paved with open ditches	2			F	N			Fully Meets
99240	FOSS RD	10/21/2019	Class 4	9							Fully Meets
99242	FOSS RD	10/21/2019	Class 4	4							Fully Meets

Seg ID	Road Name	Inventory Date	Road Type	Slope	Crown	Berm / windrow	Drainage	Conveyance	Driveway Culvert	Drainage Culvert	Status
99243	FOSS RD	10/21/2019	Class 4	6							Fully Meets
99244	FOSS RD	10/21/2019	Class 4	12							Fully Meets
99245	FOSS RD	10/21/2019	Class 4	7							Fully Meets
99246	FOSS RD	10/21/2019	Class 4	9							Fully Meets
99250	FOSS RD	10/21/2019	Class 4	6							Fully Meets
99654	FRAZER RD	10/21/2019	Gravel	2	D	F	D	N			Does Not Meet
99655	FRAZER RD	10/21/2019	Gravel	99	F	F	F	N			Fully Meets
99656	FRAZER RD	10/21/2019	Gravel	1	D	F	D	N			Does Not Meet
101440	GATES FARM RD	10/16/2019	Gravel	4	D	D	F	N			Does Not Meet
106934	GULF RD	10/15/2019	Gravel	1	F	D	D	N			Does Not Meet
106935	GULF RD	10/15/2019	Paved with open ditches	99			F	N			Fully Meets
106936	GULF RD	10/15/2019	Paved with open ditches	1			D	N			Does Not Meet
106937	GULF RD	10/15/2019	Gravel	1	F	P	P	N			Partially Meets
106938	GULF RD	10/15/2019	Gravel	1	F	P	P	N			Partially Meets
106939	GULF RD	10/15/2019	Gravel	2	D	P	D	N		P	Does Not Meet
106940	GULF RD	10/15/2019	Gravel	1	D	F	D	N		P	Does Not Meet
106941	GULF RD	10/15/2019	Gravel	1	D	F	D	N			Does Not Meet
106942	GULF RD	10/15/2019	Gravel	99	F	F	F	N			Not Connected
106943	GULF RD	10/15/2019	Gravel	99	F	F	F	N			Not Connected
106944	GULF RD	10/15/2019	Gravel	99	F	F	F	N			Not Connected
106947	GULF RD	10/15/2019	Gravel	3	D	D	P	N			Does Not Meet
106948	GULF RD	10/15/2019	Gravel	4	F	P	P	D			Does Not Meet
106949	GULF RD	10/15/2019	Gravel	3	F	D	F	N			Does Not Meet
106950	GULF RD	10/15/2019	Gravel	2	F		P	N			Incomplete Data
106951	GULF RD	10/15/2019	Gravel	3	F	P	F	N			Partially Meets
106952	GULF RD	10/15/2019	Gravel	3	F	P	F	N			Partially Meets
106953	GULF RD	10/15/2019	Gravel	2	F	P	F	N		P	Partially Meets
106954	GULF RD	10/15/2019	Gravel	3	F	P	F	N			Partially Meets
106955	GULF RD	10/15/2019	Gravel	3	F	P	P	N		P	Does Not Meet
106956	GULF RD	10/15/2019	Gravel	3	F	D	D	N		P	Does Not Meet
106957	GULF RD	10/15/2019	Gravel	3	F	D	D	N		P	Does Not Meet
106958	GULF RD	10/15/2019	Gravel	2	F	D	D	N			Does Not Meet
112618	HINES RD	10/9/2019	Gravel	7	F	D	F	N			Does Not Meet
112619	HINES RD	10/9/2019	Gravel	2	F	P	F	N			Partially Meets
112620	HINES RD	10/9/2019	Gravel	4	F	P	P	F			Partially Meets
118171	JONES LN	10/10/2019	Gravel	4	F	P	P	N			Partially Meets
118178	JONES LN	10/10/2019	Gravel	99	F	F	F	N			Not Connected
118179	JONES LN	10/10/2019	Gravel	99	F	F	F	N			Not Connected
118180	JONES LN	10/10/2019	Gravel	99	F	F	F	N			Fully Meets
118181	JONES LN	10/10/2019	Gravel	5	F	F	D	D			Does Not Meet
118304	JONES RD	10/18/2019	Gravel	4	D	P	P	N	P		Does Not Meet
118305	JONES RD	10/18/2019	Gravel	10	D	F	D	N		P	Does Not Meet
118306	JONES RD	10/18/2019	Gravel	8	D	P	D	N			Does Not Meet
118307	JONES RD	10/18/2019	Gravel	5	D	F	D	N			Does Not Meet
118308	JONES RD	10/18/2019	Gravel	2	D	F	F	N			Partially Meets
118931	KEELER RD	10/10/2019	Gravel	5	D	P	P	N			Does Not Meet
118932	KEELER RD	10/10/2019	Gravel	99	F	F	F	N			Fully Meets
118933	KEELER RD	10/10/2019	Gravel	1	F	D	F	N			Does Not Meet
118934	KEELER RD	10/10/2019	Gravel	3	F	D	P	N	F		Does Not Meet

Seg ID	Road Name	Inventory Date	Road Type	Slope	Crown	Berm / windrow	Drainage	Conveyance	Driveway Culvert	Drainage Culvert	Status
118935	KEELER RD	10/10/2019	Gravel	6	F	D	P	N			Does Not Meet
118936	KEELER RD	10/10/2019	Gravel	4	D	P	P	D			Does Not Meet
118937	KEELER RD	10/10/2019	Gravel	5	D	P	P	N			Does Not Meet
118938	KEELER RD	10/10/2019	Gravel	3	D	D	P	N			Does Not Meet
118939	KEELER RD	10/10/2019	Gravel	1	D	D	F	N			Does Not Meet
118940	KEELER RD	10/10/2019	Gravel	3	P	P	P	N			Does Not Meet
118941	KEELER RD	10/10/2019	Gravel	6	P	P	P	N			Does Not Meet
118942	KEELER RD	10/10/2019	Gravel	4	F	P	P	N			Partially Meets
118943	KEELER RD	10/10/2019	Gravel	2	F	P	F	N			Partially Meets
118944	KEELER RD	10/10/2019	Gravel	3	P	P	F	N			Partially Meets
118945	KEELER RD	10/10/2019	Gravel	2	P	P	P	N			Does Not Meet
118946	KEELER RD	10/10/2019	Gravel	3	P	P	F	N			Partially Meets
118947	KEELER RD	10/10/2019	Gravel	2	P	P	F	N			Partially Meets
118950	KEELER RD	10/10/2019	Gravel	8	D	F	D	D			Does Not Meet
118951	KEELER RD	10/10/2019	Gravel	9	D	P	P	N			Does Not Meet
118956	KEELER RD	10/10/2019	Gravel	2	D	F	D	N			Does Not Meet
118957	KEELER RD	10/10/2019	Gravel	4	D	F	D	D			Does Not Meet
118958	KEELER RD	10/10/2019	Gravel	1	D	D	F	N		F	Does Not Meet
118959	KEELER RD	10/10/2019	Gravel	2	D	D	F	N			Does Not Meet
118960	KEELER RD	10/10/2019	Gravel	6	D	P	D	N			Does Not Meet
129382	MANLEY RD	10/10/2019	Gravel	99	F	F	F	N			Fully Meets
129383	MANLEY RD	10/10/2019	Gravel	1	D	D	F	N			Does Not Meet
129384	MANLEY RD	10/10/2019	Gravel	2	D	D	F	N			Does Not Meet
129385	MANLEY RD	10/10/2019	Gravel	3	D	D	F	N			Does Not Meet
129388	MANLEY RD	10/10/2019	Gravel	99	F	F	F	N			Not Connected
130399	MARSH RD	10/9/2019	Gravel	99	F	F	F	N			Not Connected
130405	MARSH RD	10/11/2019	Gravel	10	F	D	D	N		D	Does Not Meet
130406	MARSH RD	10/11/2019	Gravel	10	F	D	D	N		P	Does Not Meet
130407	MARSH RD	10/11/2019	Gravel	9	F	D	D	N			Does Not Meet
130408	MARSH RD	10/11/2019	Gravel	9		D	F	N			Does Not Meet
130409	MARSH RD	10/11/2019	Gravel	9	F	P	P	N			Partially Meets
130420	MARSH RD	10/9/2019	Gravel	8	F	P	F	D			Does Not Meet
130421	MARSH RD	10/9/2019	Gravel	8	F	P	F	N			Partially Meets
130422	MARSH RD	10/9/2019	Gravel	4	F	P	F	N			Partially Meets
130423	MARSH RD	10/9/2019	Gravel	8	F	P	F	D			Does Not Meet
130429	MARSH RD	10/9/2019	Gravel	3	F	P	F	N			Partially Meets
130430	MARSH RD	10/9/2019	Gravel	6	F	P	P	N			Partially Meets
130431	MARSH RD	10/9/2019	Gravel	7	F	P	F	N			Partially Meets
131835	MCKEARNEY RD	10/16/2019	Class 4	10							Fully Meets
131836	MCKEARNEY RD	10/16/2019	Class 4	3							Fully Meets
131837	MCKEARNEY RD	10/16/2019	Class 4	15							Fully Meets
134059	MILLS RD	10/10/2019	Class 4	1							Fully Meets
134060	MILLS RD	10/10/2019	Class 4	3							Fully Meets
135329	MOREY HILL RD	10/10/2019	Gravel	8	P	P	P	N		P	Does Not Meet
135333	MOREY HILL RD	10/10/2019	Gravel	3	F	P	P	N			Partially Meets
135334	MOREY HILL RD	10/10/2019	Gravel	3	P	P	P	N			Does Not Meet
135337	MOREY HILL RD	10/10/2019	Gravel	4	D	P	P	N			Does Not Meet
135338	MOREY HILL RD	10/10/2019	Gravel	3	P	D	P	N			Does Not Meet
135343	MOREY HILL RD	10/10/2019	Gravel	12	F	P	F	N			Partially Meets

Seg ID	Road Name	Inventory Date	Road Type	Slope	Crown	Berm / windrow	Drainage	Conveyance	Driveway Culvert	Drainage Culvert	Status
135344	MOREY HILL RD	10/10/2019	Gravel	10	F	P	F	N			Partially Meets
135345	MOREY HILL RD	10/10/2019	Gravel	10	F	P	F	N			Partially Meets
135346	MOREY HILL RD	10/10/2019	Gravel	9	F	P	F	N	P		Partially Meets
135347	MOREY HILL RD	10/10/2019	Gravel	10	F	P	P	N	D		Does Not Meet
135348	MOREY HILL RD	10/10/2019	Gravel	8	F	P	P	N	P		Does Not Meet
135350	MOREY HILL RD	10/14/2019	Gravel	4	D	D	F	N			Does Not Meet
135351	MOREY HILL RD	10/14/2019	Gravel	3	D		F	N			Incomplete Data
135352	MOREY HILL RD	10/14/2019	Gravel	1	D	D	F	N			Does Not Meet
135353	MOREY HILL RD	10/14/2019	Gravel	3	D	D	P	F	P		Does Not Meet
135354	MOREY HILL RD	10/14/2019	Gravel	3	D	D	F	N			Does Not Meet
135355	MOREY HILL RD	10/14/2019	Gravel	4	D	D	F	N			Does Not Meet
135358	MOREY HILL RD	10/10/2019	Gravel	99	F	F	F	N			Not Connected
43715.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43716.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43717.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43718.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43719.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43720.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43721.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43722.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			P	N			Partially Meets
43723.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			P	N			Partially Meets
43724.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			P	N			Partially Meets
43725.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			P	N			Partially Meets
43726.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			F	N			Fully Meets
43727.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			F	N			Fully Meets
43731.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			P	N	F		Partially Meets
43732.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			P	N			Partially Meets
43733.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			P	N			Partially Meets
43734.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			F	N			Fully Meets
43735.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			F	N		F	Fully Meets
43736.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	4			P	N		P	Partially Meets
43737.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			P	N			Partially Meets
43738.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	4			F	N			Fully Meets
43739.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	2			P	N			Partially Meets
43740.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			F	N			Fully Meets
43741.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			F	N			Fully Meets
43742.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	2			F	N			Fully Meets
43743.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	2			P	N			Partially Meets
43744.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	3			P	N			Partially Meets
43748.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	2			P	N			Partially Meets
43749.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			P	N		F	Partially Meets
43750.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	7			P	N			Partially Meets
43751.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	7			P	N			Partially Meets
43753.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	5			P	N		F	Partially Meets
43758.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	5			P	N	F	F	Partially Meets
43759.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	5			P	N			Partially Meets
43760.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	2			P	N			Partially Meets
43761.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			F	N			Fully Meets
43762.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	1			P	N			Partially Meets

Seg ID	Road Name	Inventory Date	Road Type	Slope	Crown	Berm / windrow	Drainage	Conveyance	Driveway Culvert	Drainage Culvert	Status
43763.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	3			D	N			Does Not Meet
43764.1	N WOLCOTT RD	10/21/2019	Paved with open ditches	3			D	N			Does Not Meet
43767.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43768.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	2			F	N			Fully Meets
43769.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43773.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43774.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	2			F	N			Fully Meets
43775.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43776.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	2			F	N			Fully Meets
43777.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43778.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43779.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	2			F	N			Fully Meets
43780.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	2			F	N			Fully Meets
43781.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43782.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43783.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	2			F	N			Fully Meets
43784.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	2			F	N			Fully Meets
43785.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	2			F	N			Fully Meets
43786.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	2			F	N			Fully Meets
43789.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43790.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43791.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	2			F	N			Fully Meets
43792.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	2			F	N			Fully Meets
43793.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43794.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43795.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	2			F	N			Fully Meets
43796.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
43797.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	3			F	N			Fully Meets
43798.1	N WOLCOTT RD	10/14/2019	Paved with open ditches	1			F	N			Fully Meets
155943	REED RD	10/10/2019	Gravel	10	D	F	D	N	P		Does Not Meet
155950	REED RD	10/10/2019	Class 4	10							Fully Meets
155951	REED RD	10/10/2019	Gravel	10	D	P	D	N		P	Does Not Meet
156773	RICHARD WOOLCUTT RD	10/21/2019	Gravel	3	D	P	P	N			Does Not Meet
156774	RICHARD WOOLCUTT RD	10/21/2019	Gravel	4	F	P	P	N			Partially Meets
156777	RICHARD WOOLCUTT RD	10/21/2019	Gravel	2	D	P	P	N			Does Not Meet
163396	SAND HILL RD	10/14/2019	Gravel	3	D	P	D	N			Does Not Meet
163401	SAND HILL RD	10/10/2019	Gravel	4	F	P	P	N			Partially Meets
163402	SAND HILL RD	10/10/2019	Gravel	7	F	P	F	N	P		Partially Meets
163403	SAND HILL RD	10/10/2019	Gravel	5	F	P	F	N		F	Partially Meets
163404	SAND HILL RD	10/10/2019	Gravel	9	F	P	F	N		F	Partially Meets
163405	SAND HILL RD	10/10/2019	Gravel	4	F	P	F	N		F	Partially Meets
163411	SAND HILL RD	10/14/2019	Gravel	10	F	P	P	N	P		Does Not Meet
163412	SAND HILL RD	10/14/2019	Gravel	10	F	P	P	N			Partially Meets
163413	SAND HILL RD	10/14/2019	Gravel	8	F	P	P	D			Does Not Meet
163414	SAND HILL RD	10/14/2019	Gravel	2	F	P	P	N			Partially Meets
163415	SAND HILL RD	10/14/2019	Gravel	2	P	P	P	N			Does Not Meet
163416	SAND HILL RD	10/14/2019	Gravel	7	F	D	P	N	P		Does Not Meet
163417	SAND HILL RD	10/14/2019	Gravel	6	F	F	D	N			Does Not Meet
59313.1	SCHOOL ST	10/18/2019	Paved with open ditches	2			F	N			Fully Meets

Seg ID	Road Name	Inventory Date	Road Type	Slope	Crown	Berm / windrow	Drainage	Conveyance	Driveway Culvert	Drainage Culvert	Status
59315.1	SCHOOL ST	10/18/2019	Paved with open ditches	1			F	N		P	Partially Meets
59316.1	SCHOOL ST	10/18/2019	Paved with open ditches	1			F	N			Fully Meets
59317.1	SCHOOL ST	10/18/2019	Paved with open ditches	1			F	N			Fully Meets
59318.1	SCHOOL ST	10/18/2019	Paved with open ditches	1			F	N			Fully Meets
164659	SCHOOL ST	10/18/2019	Paved with open ditches	2			F	N		F	Fully Meets
164661	SCHOOL ST	10/18/2019	Gravel	2	F	P	P	N			Partially Meets
164662	SCHOOL ST	10/18/2019	Gravel	1	F	P	P	N			Partially Meets
164663	SCHOOL ST	10/18/2019	Gravel	1	F	P	P	N			Partially Meets
167340	SIMMONS RD	10/9/2019	Class 4	4							Fully Meets
167341	SIMMONS RD	10/9/2019	Class 4	2							Fully Meets
167343	SIMMONS RD	10/9/2019	Class 4	4							Fully Meets
167344	SIMMONS RD	10/9/2019	Class 4	2							Fully Meets
176427	TAMARACK RD	10/14/2019	Gravel	2	D	F	D	N			Does Not Meet
176428	TAMARACK RD	10/14/2019	Gravel	5	D	F	D	N			Does Not Meet
176429	TAMARACK RD	10/14/2019	Gravel	3	D	F	D	N			Does Not Meet
185899	TJADER RD	10/21/2019	Gravel	3	F	P	F	N			Partially Meets
185900	TJADER RD	10/21/2019	Gravel	4	F	P	F	N			Partially Meets
185901	TJADER RD	10/21/2019	Gravel	4	F	P	F	N		P	Partially Meets
185902	TJADER RD	10/21/2019	Gravel	4	F	P	P	N			Partially Meets
66761.1	TOWN HILL RD	10/14/2019	Paved with open ditches	8			P	N			Partially Meets
66765.1	TOWN HILL RD	10/14/2019	Paved with open ditches	8			P	N			Partially Meets
66766.1	TOWN HILL RD	10/14/2019	Paved with open ditches	6			P	N		P	Partially Meets
66767.1	TOWN HILL RD	10/14/2019	Paved with open ditches	5			P	N			Partially Meets
66768.1	TOWN HILL RD	10/14/2019	Paved with open ditches	3			P	N		F	Partially Meets
66769.1	TOWN HILL RD	10/14/2019	Paved with open ditches	7			P	N			Partially Meets
186984	TOWN HILL RD	10/14/2019	Paved with open ditches	9			P	N			Partially Meets
186992	TOWN HILL RD	10/14/2019	Paved with open ditches	99			F	N			Not Connected
186996	TOWN HILL RD	10/14/2019	Gravel	2	F	F	F	N			Fully Meets
186997	TOWN HILL RD	10/14/2019	Gravel	2	F	P	F	N			Partially Meets
186998	TOWN HILL RD	10/14/2019	Gravel	4	F	P	F	N			Partially Meets
186999	TOWN HILL RD	10/14/2019	Gravel	4	F	D	F	N			Does Not Meet
187000	TOWN HILL RD	10/14/2019	Gravel	4	F	D	F	N			Does Not Meet
187001	TOWN HILL RD	10/14/2019	Gravel	3	F	D	F	N		P	Does Not Meet
187002	TOWN HILL RD	10/14/2019	Gravel	3	F	P	P	N			Partially Meets
187003	TOWN HILL RD	10/14/2019	Gravel	3	F	D	F	N			Does Not Meet
187004	TOWN HILL RD	10/14/2019	Gravel	2	F	P	F	N		F	Partially Meets
187005	TOWN HILL RD	10/14/2019	Gravel	1	F	P	F	N			Partially Meets
187006	TOWN HILL RD	10/14/2019	Gravel	2	F	D	F	N			Does Not Meet
187007	TOWN HILL RD	10/14/2019	Gravel	5	F	D	F	N			Does Not Meet
187008	TOWN HILL RD	10/14/2019	Gravel	6	F	D	F	N			Does Not Meet
187020	TOWN HILL RD	10/14/2019	Gravel	99	F	F	F	N			Not Connected
187048	TOWN HILL RD	10/14/2019	Paved with open ditches	8			P	N			Partially Meets
187049	TOWN HILL RD	10/14/2019	Paved with open ditches	4			P	N			Partially Meets
187050	TOWN HILL RD	10/14/2019	Paved with open ditches	5			P	N			Partially Meets
187051	TOWN HILL RD	10/14/2019	Paved with open ditches	8			P	N	F	F	Partially Meets
188587	TURCOTTE RD	10/21/2019	Class 4	5							Fully Meets
188588	TURCOTTE RD	10/21/2019	Class 4	4							Fully Meets
188589	TURCOTTE RD	10/21/2019	Class 4	6							Fully Meets
188590	TURCOTTE RD	10/21/2019	Class 4	6							Fully Meets

Seg ID	Road Name	Inventory Date	Road Type	Slope	Crown	Berm / windrow	Drainage	Conveyance	Driveway Culvert	Drainage Culvert	Status
188591	TURCOTTE RD	10/21/2019	Class 4	6							Fully Meets
188592	TURCOTTE RD	10/21/2019	Class 4	5							Fully Meets
188593	TURCOTTE RD	10/21/2019	Class 4	5							Fully Meets
188594	TURCOTTE RD	10/21/2019	Class 4	7							Fully Meets
188595	TURCOTTE RD	10/21/2019	Class 4	7							Fully Meets
188596	TURCOTTE RD	10/16/2019	Class 4	10							Does Not Meet
188597	TURCOTTE RD	10/16/2019	Class 4	8							Fully Meets
188598	TURCOTTE RD	10/16/2019	Class 4	10							Fully Meets
188599	TURCOTTE RD	10/16/2019	Class 4	8							Fully Meets
188600	TURCOTTE RD	10/16/2019	Class 4	10							Does Not Meet
188601	TURCOTTE RD	10/16/2019	Class 4	15							Does Not Meet
188602	TURCOTTE RD	10/16/2019	Class 4	6							Fully Meets
188603	TURCOTTE RD	10/16/2019	Gravel	4	D	D	F	N		P	Does Not Meet
188604	TURCOTTE RD	10/16/2019	Gravel	3	D	P	F	N			Partially Meets
192741	W HILL RD	10/10/2019	Gravel	3	F	F	F	N			Fully Meets
192742	W HILL RD	10/22/2019	Class 4	4							Fully Meets
192743	W HILL RD	10/22/2019	Class 4	2							Fully Meets
192750	W HILL RD	10/22/2019	Class 4	2							Fully Meets
192754	W HILL RD	10/10/2019	Gravel	1	F	F	D	N			Does Not Meet
192755	W HILL RD	10/10/2019	Gravel	4	F	P	D	D			Does Not Meet
192756	W HILL RD	10/10/2019	Gravel	2	F	F	F	N			Fully Meets
192762	W HILL RD	10/10/2019	Gravel	2	F	F	F	N			Fully Meets
192763	W HILL RD	10/10/2019	Gravel	2	F	F	F	N			Fully Meets
192764	W HILL RD	10/10/2019	Gravel	2	F	F	F	N			Fully Meets
192767	W HILL RD	10/10/2019	Gravel	3	F	P	P	D			Does Not Meet
192768	W HILL RD	10/10/2019	Gravel	2	F	P	F	N			Partially Meets
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192779	W HILL RD	10/10/2019	Gravel	6	F	F	F	N			Fully Meets
192780	W HILL RD	10/10/2019	Gravel	8	F	P	F	N			Partially Meets
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192783	W HILL RD	10/10/2019	Gravel	7	F	P	F	N			Partially Meets
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192785	W HILL RD	10/10/2019	Gravel	2	F	P	F	N		F	Partially Meets
192786	W HILL RD	10/10/2019	Gravel	2	F	F	F	N			Fully Meets
192787	W HILL RD	10/10/2019	Gravel	3	F	P	F	N	F		Partially Meets
192788	W HILL RD	10/10/2019	Gravel	3	F	F	F	N		P	Partially Meets
192789	W HILL RD	10/10/2019	Gravel	3	F	F	F	N			Fully Meets
192792	W HILL RD	10/10/2019	Gravel	2	F	F	F	N	F		Fully Meets
195703	WELLS RD	10/10/2019	Gravel	1	D	D	P	N			Does Not Meet
195704	WELLS RD	10/10/2019	Gravel	2	D	P	P	N	P		Does Not Meet
201447	YOUNG RD	10/10/2019	Gravel	99	F	F	F	N			Not Connected
201448	YOUNG RD	10/10/2019	Gravel	3	D	P	F	N			Partially Meets
201449	YOUNG RD	10/10/2019	Gravel	7	D	P	P	N			Does Not Meet
201452	YOUNG RD	10/10/2019	Gravel	99	F	F	F	N			Not Connected

Vermont Better Backroads – Road Erosion Inventory

Erosion Solutions – Quick Reference Guide

Better Backroads
Clean Water You Can Afford

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
ECOSYSTEM RESTORATION PROGRAM

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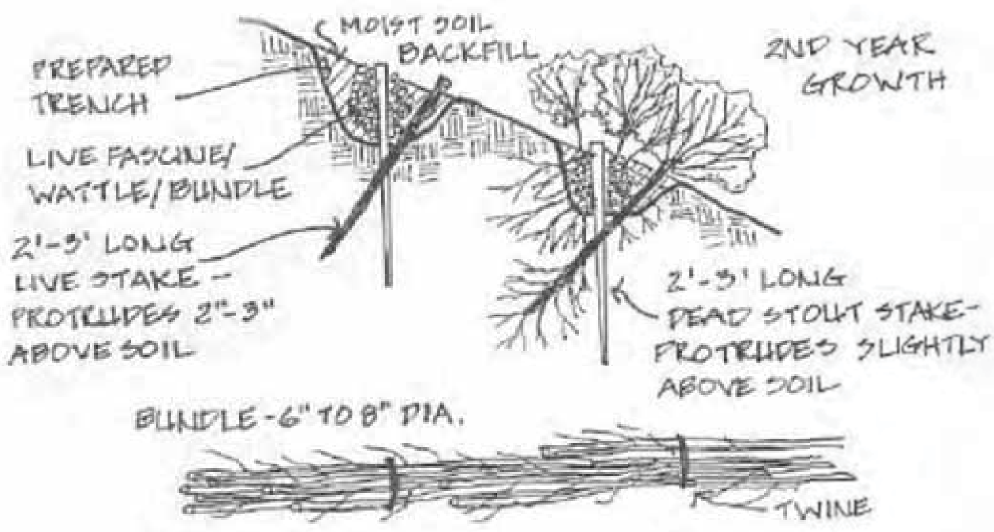
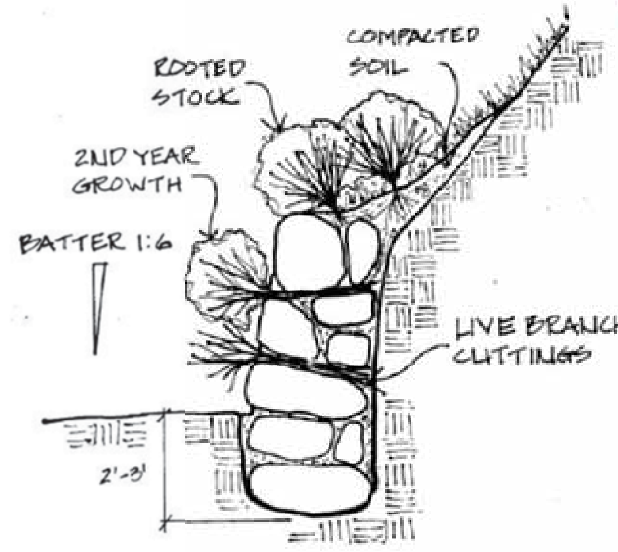


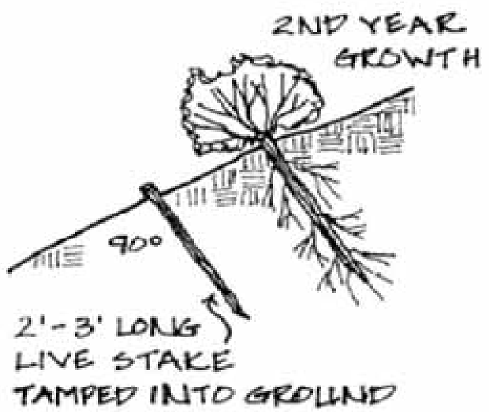
LIVE FASCINES/WATTLES/BUNDLES

(BBR Manual – pg. 35)



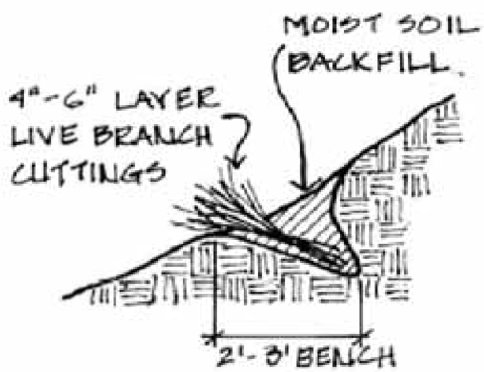
VEGETATED ROCK WALL

(BBR Manual – pg. 44)



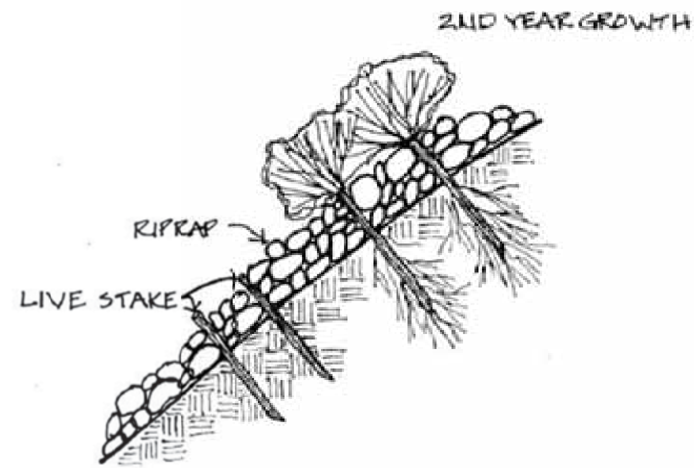
LIVE STAKES

(BBR Manual – pg. 36)



BRUSHLAYERING

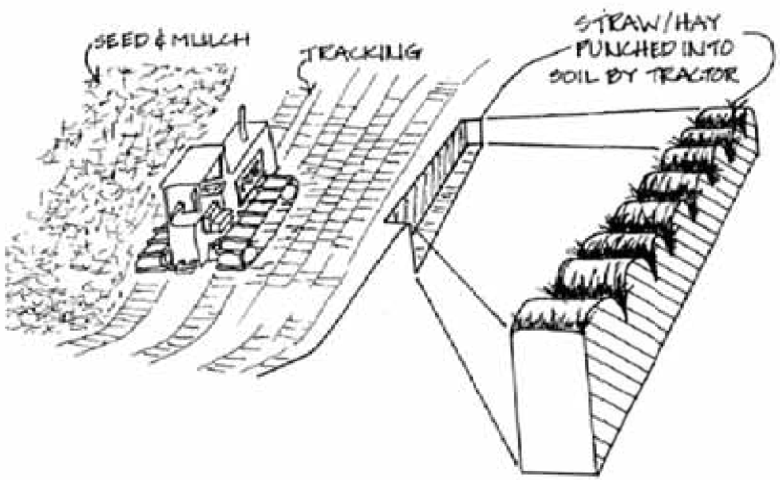
(BBR Manual – pg. 36)



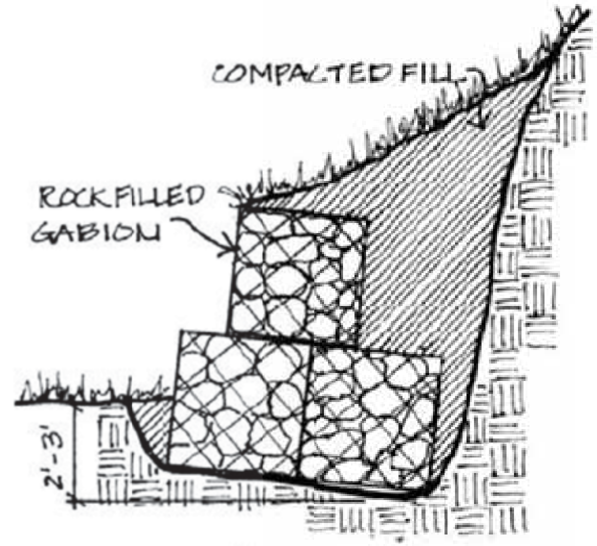
VEGETATED RIPRAP

(BBR Manual – pg. 45)

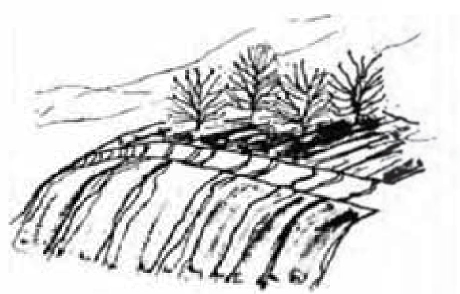
Bank Stabilization Solutions – Better Backroads Manual

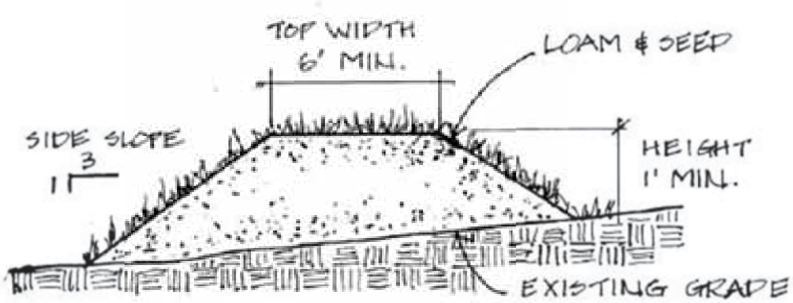


SURFACE ROUGHENING
(BBR Manual – pg. 34)

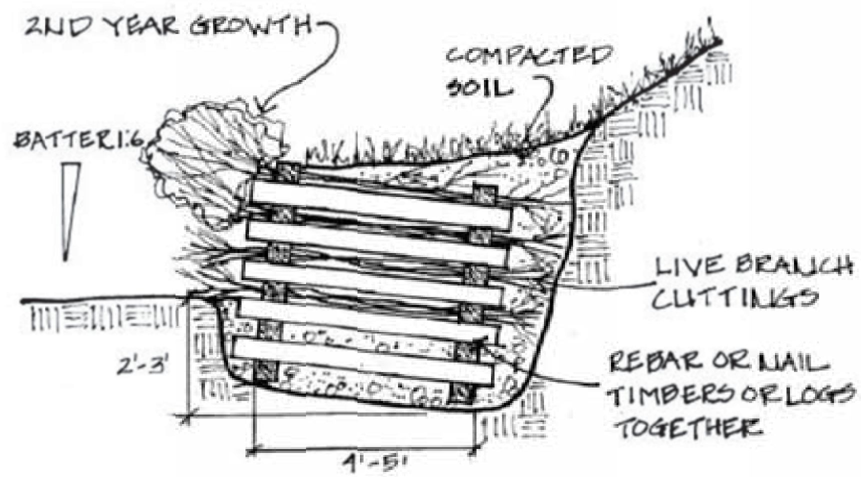


GABION WALL
(BBR Manual – pg. 39)





DIVERSION BERM
(BBR Manual – pg. 15)



LIVE CRIBWALL
(BBR Manual – pg. 42)

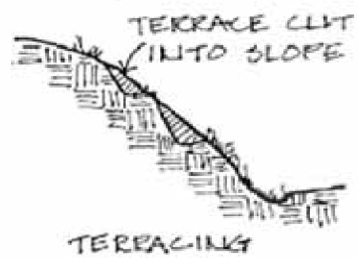
Bank Stabilization Solutions – Better Backroads Manual

Grading Techniques:
Proper grading or regrading of slopes can often stabilize banks without the use of structures.

- Grading or regrading slopes to a maximum 2:1 slope will help to stabilize the bank.

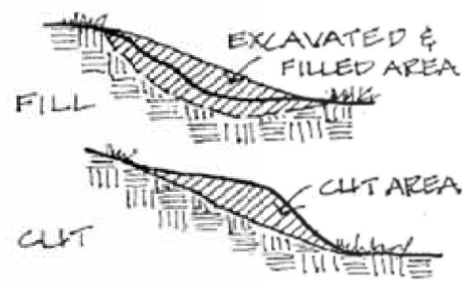
Terracing:
Benches can be constructed on slopes that are excessively steep and long to provide near level areas that intercept and divert water.

- Backslope terraces inwards toward the slope to intercept water and prevent erosion of terrace.

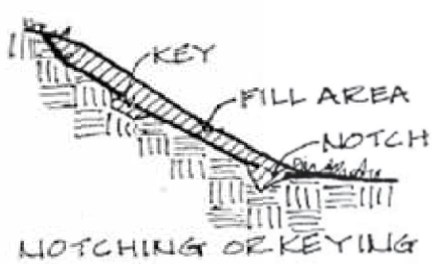


Counterweight:
A one level bench and slope that can be added next to a steep failing bank to hold the bank up and prevent continued sliding.

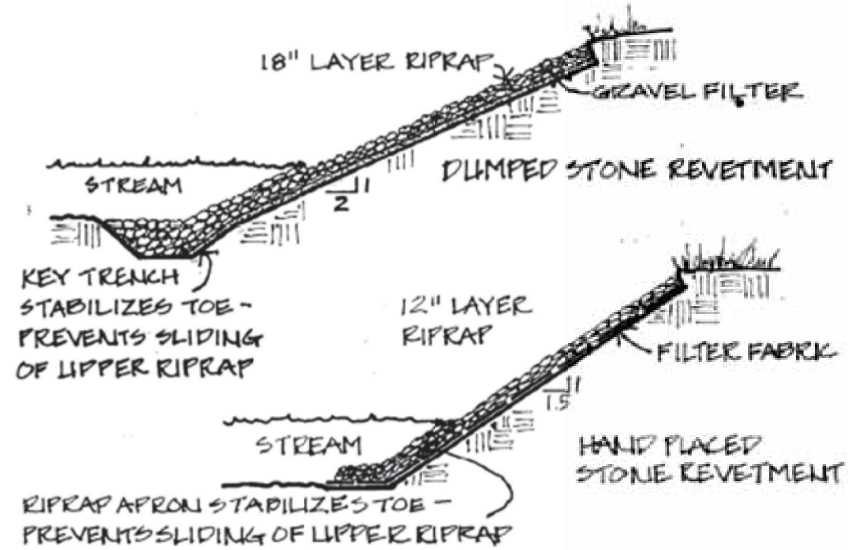
Cut and/or Fill:
The removal or addition of soil to the bank to create the desired 2:1 or flatter slope, often times removing less stable soils and replacing them in the process of regrading the slope.



Notching or Keying:
A "V" or trapezoid shaped cut made in the existing ground to help further stabilize the slope.

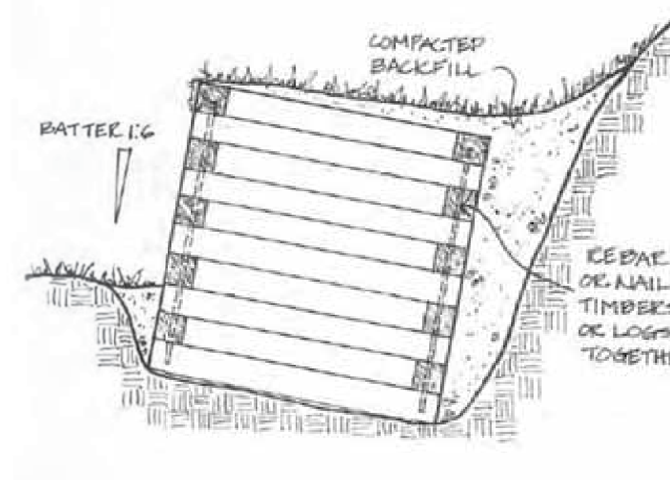


(BBR Manual – pg. 38)



RIPRAP REVETMENT

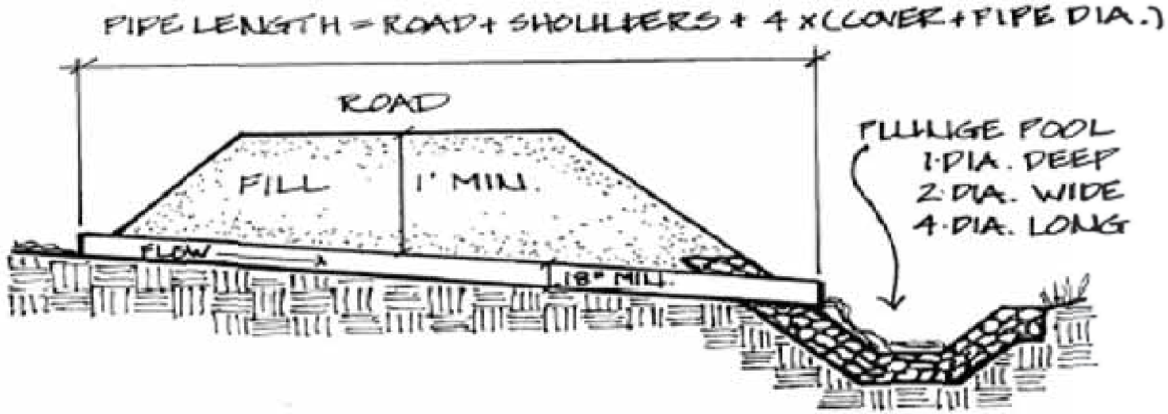
(BBR Manual – pg. 41)



LOG OR TIMBER CRIB

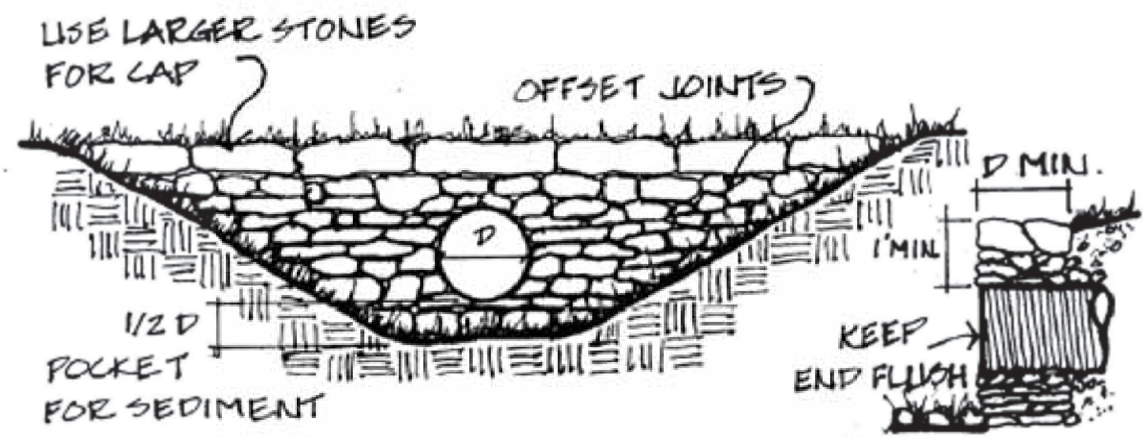
(BBR Manual – pg. 40)

Culvert length example calculation:
Using 18 inch (1.5 ft.) culvert with 1.5 ft. of cover and 28 ft. road + shoulder width.
Step 1: Pipe length = 28 + 4 (1.5 + 1.5)
Step 2: Pipe length = 28 + 4 (3)
Step 3: Pipe length = 28 + 12
Step 4: Pipe length= 40



CULVERT PROFILE & CROSS SECTION

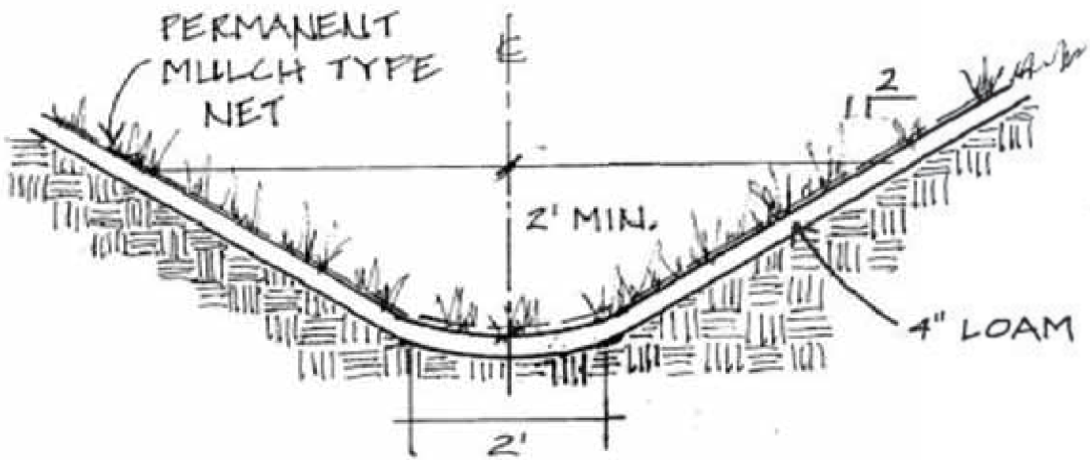
(BBR Manual – pg. 20)



HEADER

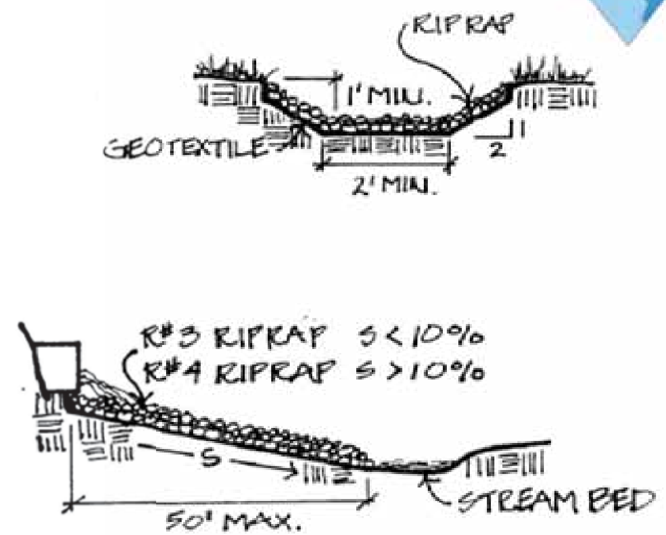
(BBR Manual – pg. 24)

Ditch Stabilization Solutions – Better Backroads Manual



GRASS LINED DITCH

(BBR Manual – pg. 12)



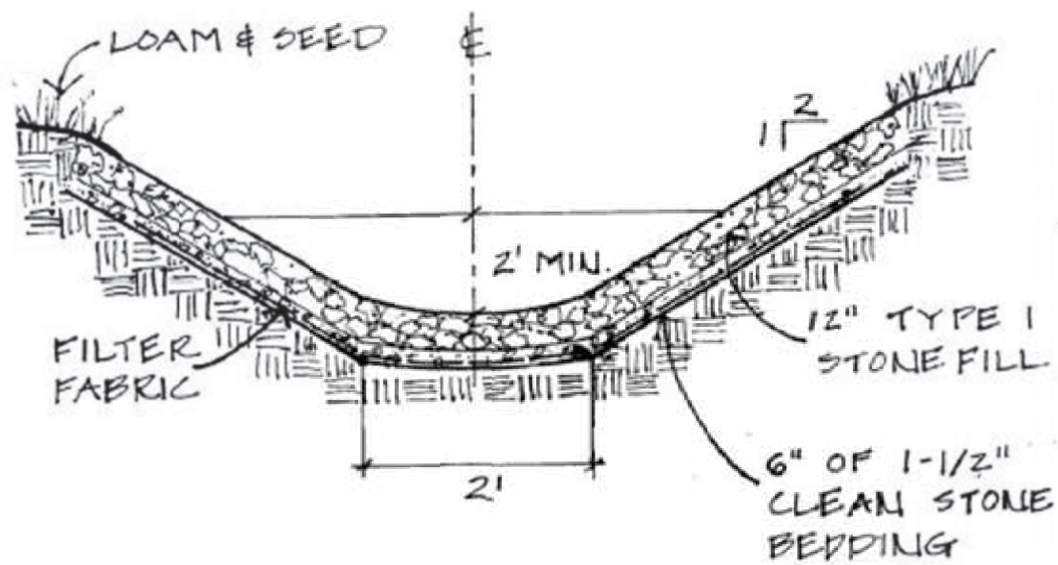
RIPRAP CONVEYANCE CHANNEL

(BBR Manual – pg. 30)

TABLE 1: DITCH LININGS

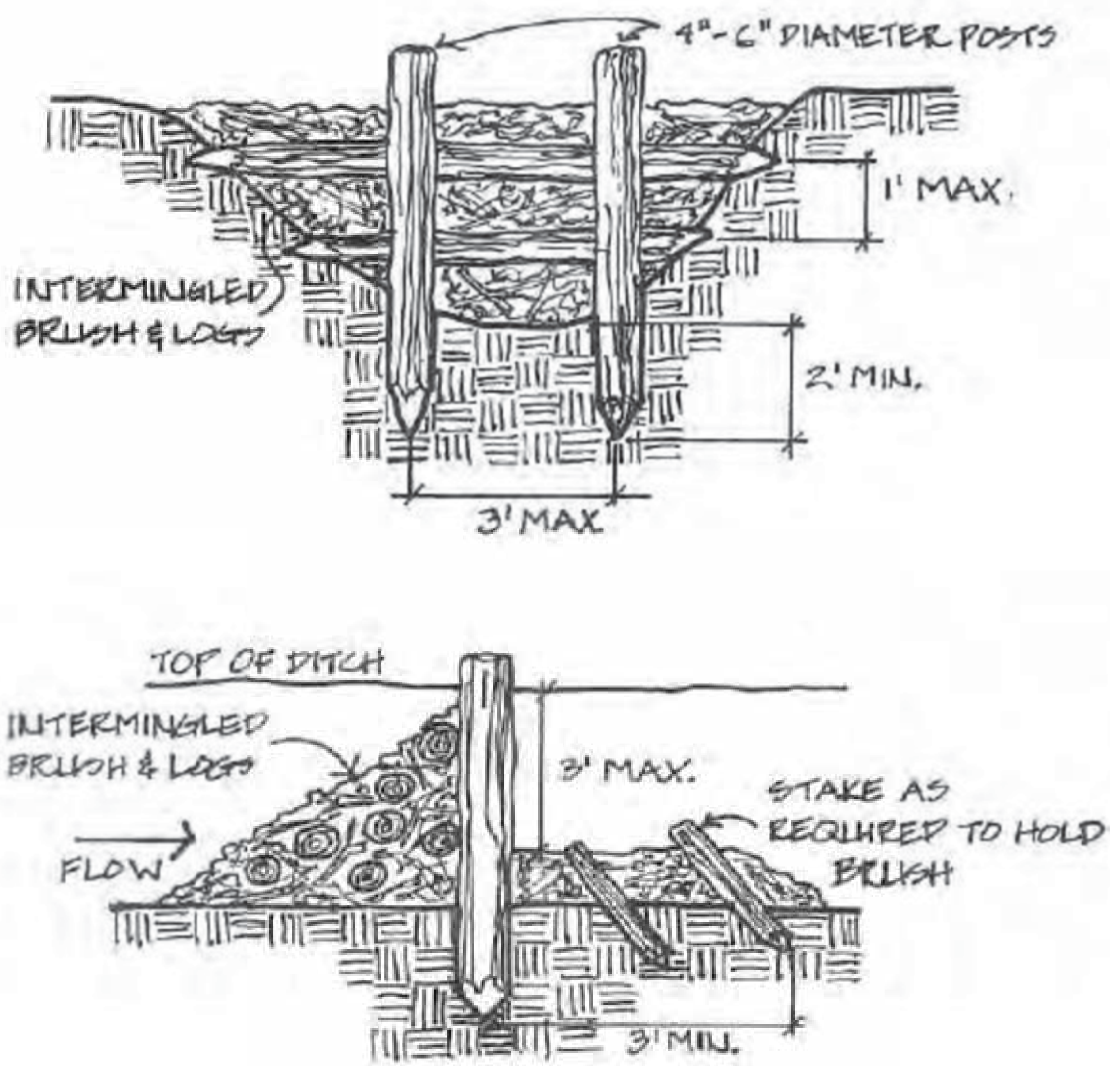
Channel Slope	Lining	Thickness
0-5%	grass	
5-10%	R#3 (2 - 6 inch) diameter rock	7.5"
> 10%	R#4 (3-12 inch) diameter rock	12"

(BBR Manual – pg. 14)



STONE LINED DITCH

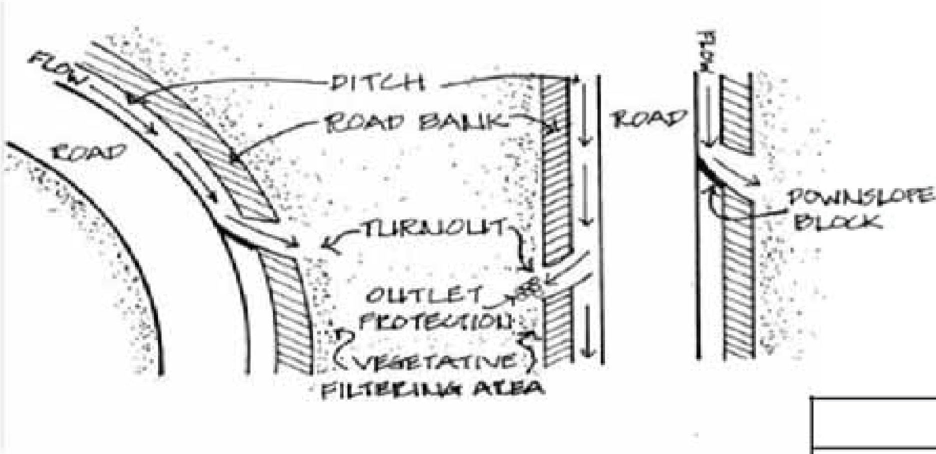
(BBR Manual – pg. 13)



LOG & BRUSH CHECK DAMS

(BBR Manual – pg. 18)

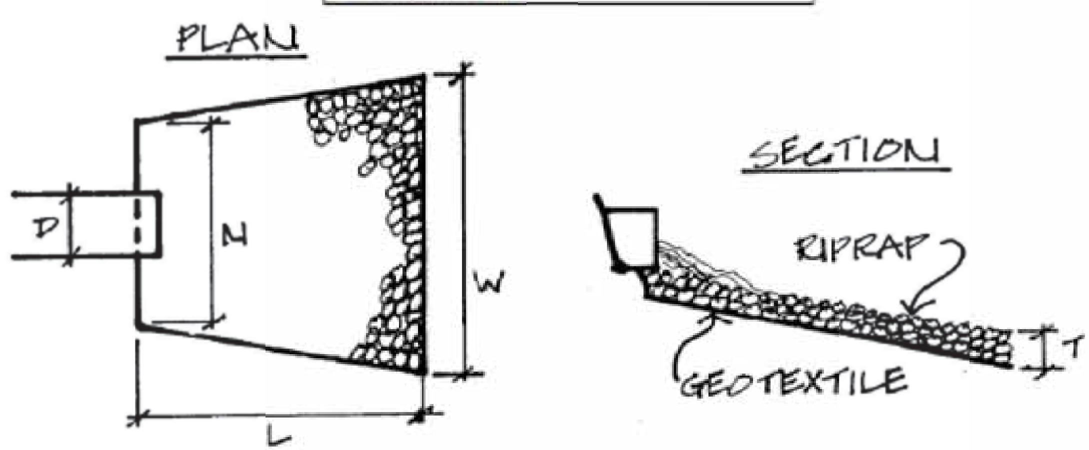
Velocity Control Solutions – Better Backroads Manual



TURNOUTS
(BBR Manual – pg. 28)

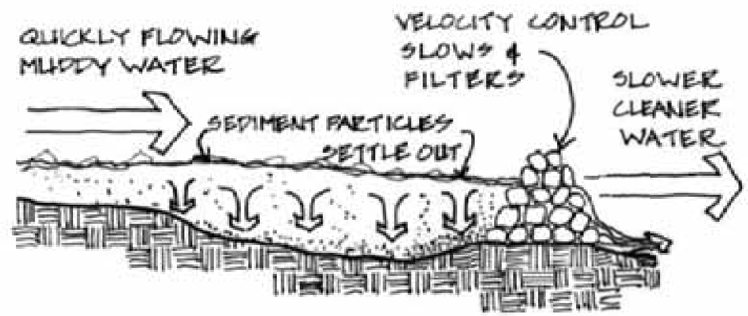
Rock Apron Specifications					
Culvert Diameter (D)	Riprap Size	T (in.)	N (ft.)	W (ft.)	L (ft.)
18 inches	(3-12 inch)	18	4.5	14.5	10.0
24 inches	(3-12 inch)	18	6.0	20.0	14.0

D= diameter of culvert
T= depth of stone in apron
N= width of apron near culvert
W= width at downhill end of apron
L= length of apron

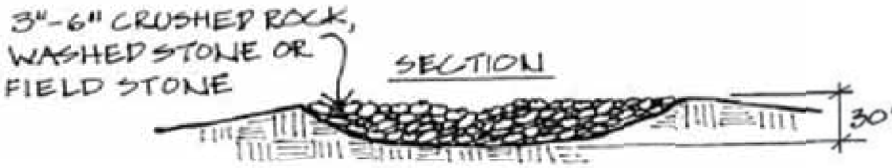


ROCK APRON
(BBR Manual – pg. 29)

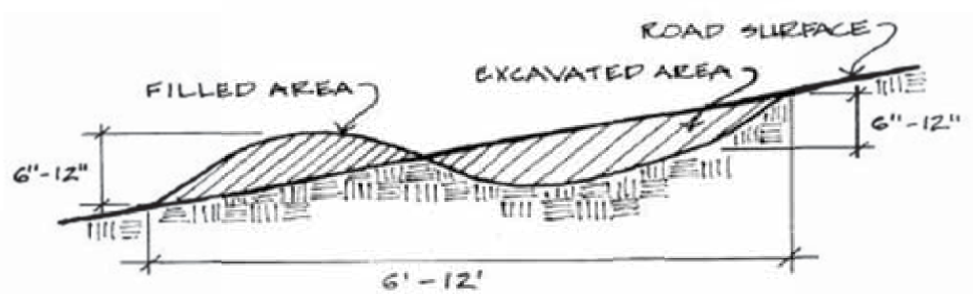
Velocity Control Solutions – Better Backroads Manual



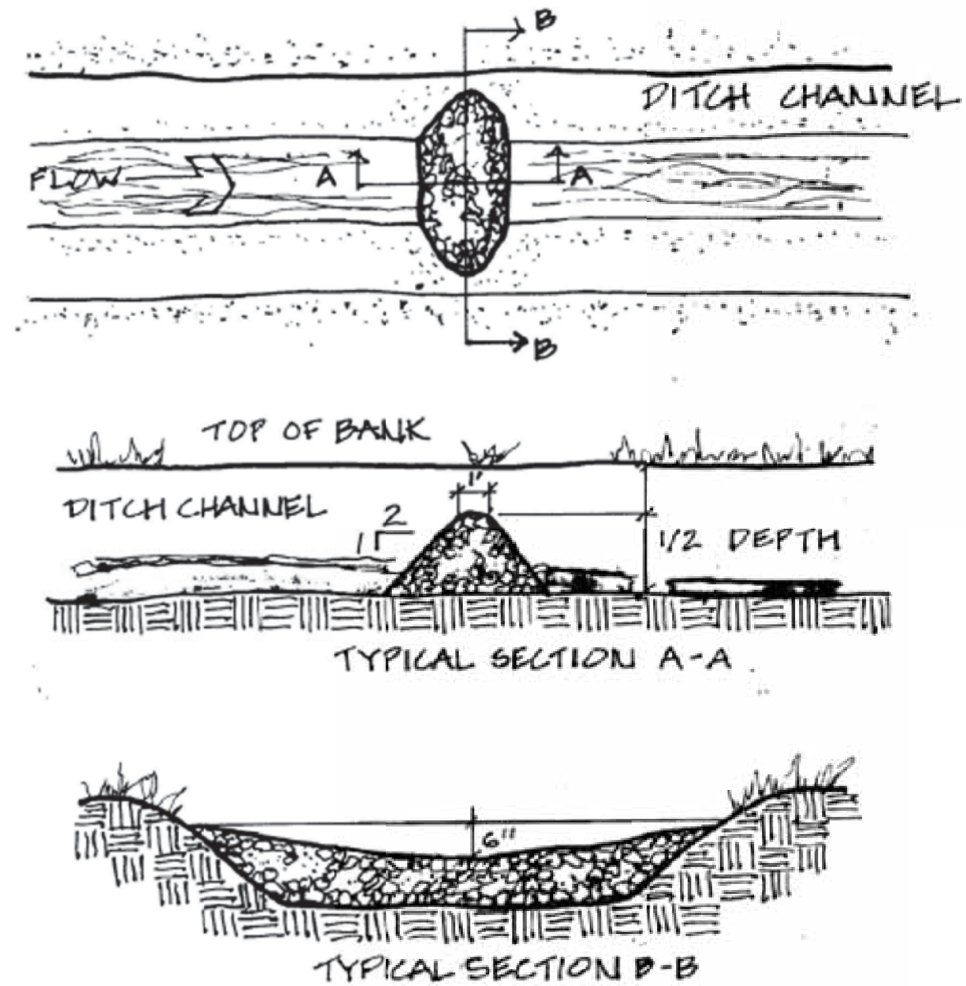
VELOCITY CONTROL
(BBR Manual – pg. 16)



LEVEL SPREADER
(BBR Manual – pg. 50)



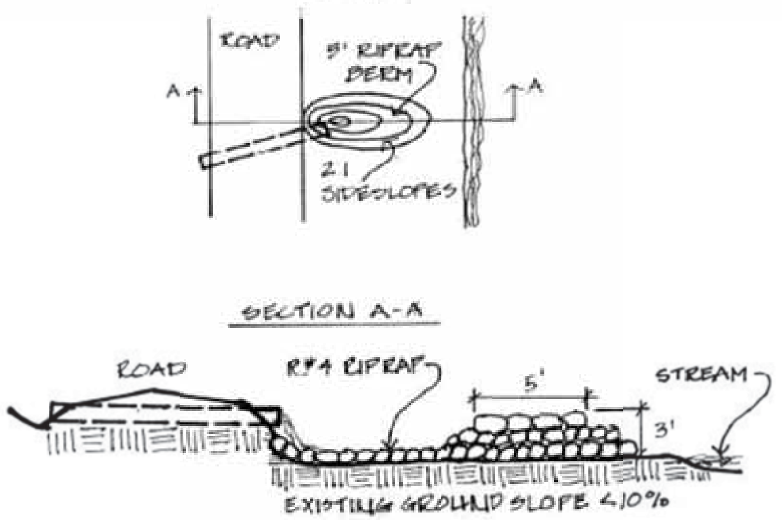
WATERBAR CROSS-SECTION
(BBR Manual – pg. 51)



STONE CHECK DAMS
(BBR Manual – pg. 17)

Splash/Plunge Pools:
Riprap basin located at outlet of a culvert pipe.

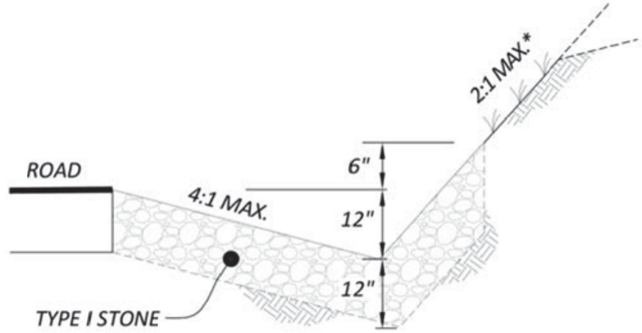
- Used to remove sediments (by absorbing energy from flowing water and allowing sediments to settle out) from areas with concentrated flows and areas without adequate vegetative filter strips.
- Limited to areas with less than 10% slope.
- Consolidates sediment for easier removal.
- Reduces energy and velocity of flows by providing storage of runoff.
- Can allow for ground water recharge.
- Clean when pool area is one third filled with sediment.
- Locate the pool so that mechanized cleaning is possible.
- See pool capacity requirements chart on next page for sizing.



SPLASH/PLUNGE POOL

Splash/Plunge Pool Capacity Requirements		
Distance Between Culverts (ft.)	Pool Capacity (cu. ft.)	
	Crowned road	Banked road
500	230	460
400	180	360
350	160	320
300	140	280
250	120	240
200	100	200

TYPE I STONE FILL
(VAOT SEC. 706.04(A))
THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 1 INCH TO 12 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF 4 INCHES.



SECTION VIEW

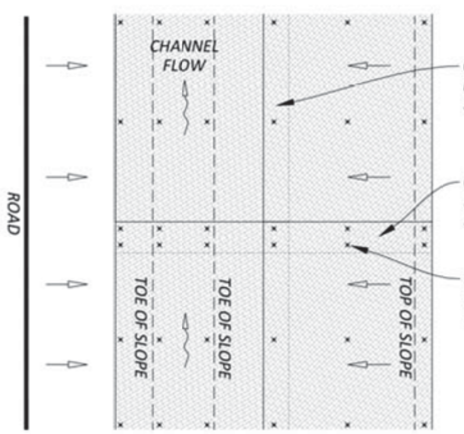
* IF EXISTING SIDE SLOPES ARE STEEPER THAN 2:1, BUT STABLE, DO NOT REGRADE SLOPE.
IF THERE IS INSUFFICIENT WIDTH FOR 2:1 SIDE SLOPES, USE A STEEPER SLOPE ON THE BACKSIDE OF THE SWALE, AWAY FROM THE ROAD, AND STABILIZE WITH NORTH AMERICAN GREEN S150 EROSION BLANKET (SEE DETAIL B).
IF STEE SLOPE IS SATURATED WITH GROUNDWATER, FACE WITH 2-4" DIA. CRUSHED STONE AT LEAST 6" DEEP.

DETAIL A
NARROW ROADSIDE SWALE STABILIZATION

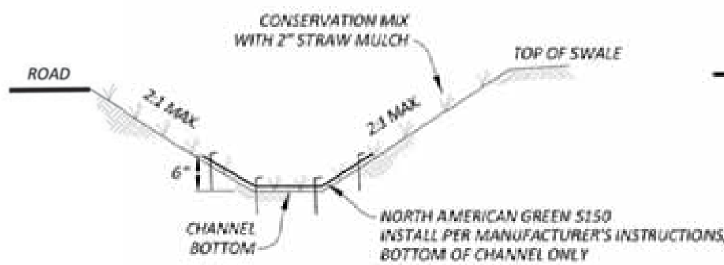
NTS

NOTE:
USE DETAIL A WHEN STABILIZED ROADSIDE SWALE IS "SQUEEZED" BETWEEN ROAD AND STEEP SIDE SLOPE. INTENT IS THAT VEHICLES CAN RUN ONTO ADJACENT 4:1 SLOPE IN EMERGENCY.

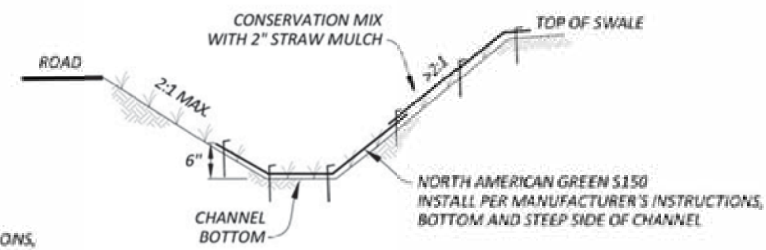
Details Produced By:
WATERSHED CONSULTING ASSOCIATES, LLC
LAKESIDE ENVIRONMENTAL GROUP



PLAN VIEW



SECTION VIEW WITHOUT STEEP BACK SLOPE



SECTION VIEW WITH STEEP BACK SLOPE

DETAIL B
VEGETATIVE CHANNEL STABILIZATION WITH AND WITHOUT EROSION BLANKET

NTS

NOTE:
USE DETAIL B TO STABILIZE TYPICAL ROADSIDE SWALE.
USE EROSION BLANKET ON STEEPER BACKSIDE SLOPES.

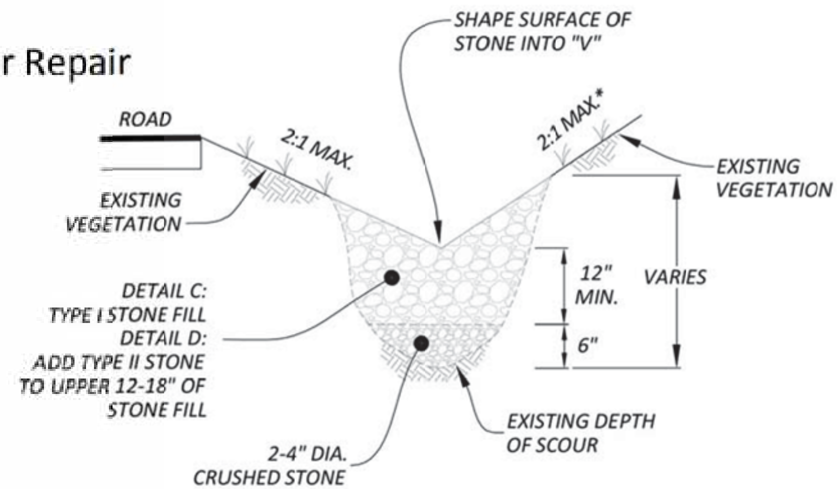
Details Produced By:
WATERSHED CONSULTING ASSOCIATES, LLC
LAKESIDE ENVIRONMENTAL GROUP

Details Produced By:

VTrans Detail Name: Ditch Scour Repair

TYPE I STONE FILL
(VAOT SEC. 706.04(A))
THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 1 INCH TO 12 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF 4 INCHES.

TYPE II STONE FILL
(VAOT SEC. 706.04(A))
THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 2 INCHES TO 36 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF 12 INCHES.



DETAIL C/D SWALE SCOUR REPAIR

* IF EXISTING SIDE SLOPES ARE STEEPER THAN 2:1, BUT STABLE, DO NOT REGRADE SLOPE.
IF THERE IS INSUFFICIENT WIDTH FOR 2:1 SIDE SLOPES, USE A STEEPER SLOPE ON THE BACKSIDE OF THE SWALE, AWAY FROM THE ROAD, AND STABILIZE WITH NORTH AMERICAN GREEN S150 EROSION BLANKET (SEE DETAIL B).

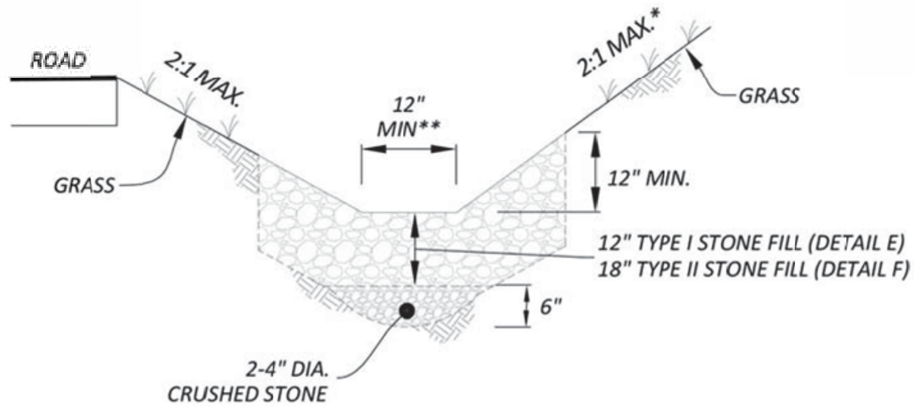
NOTES:
1. USE DETAIL C/D TO REPAIR EXISTING GRASS SWALES WITH ACTIVE CUTTING.

2. USE DETAIL C WITH ONLY TYPE I STONE FOR SWALES WITH SLOWER FLOW VELOCITIES.

3. USE DETAIL D WITH TYPE II STONE FOR SWALES WITH HIGHER FLOW VELOCITIES.

TYPE I STONE FILL
(VAOT SEC. 706.04(A))
THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 1 INCH TO 12 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF 4 INCHES.

TYPE II STONE FILL
(VAOT SEC. 706.04(A))
THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 2 INCHES TO 36 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF 12 INCHES.



DETAIL E/F STONE SWALE

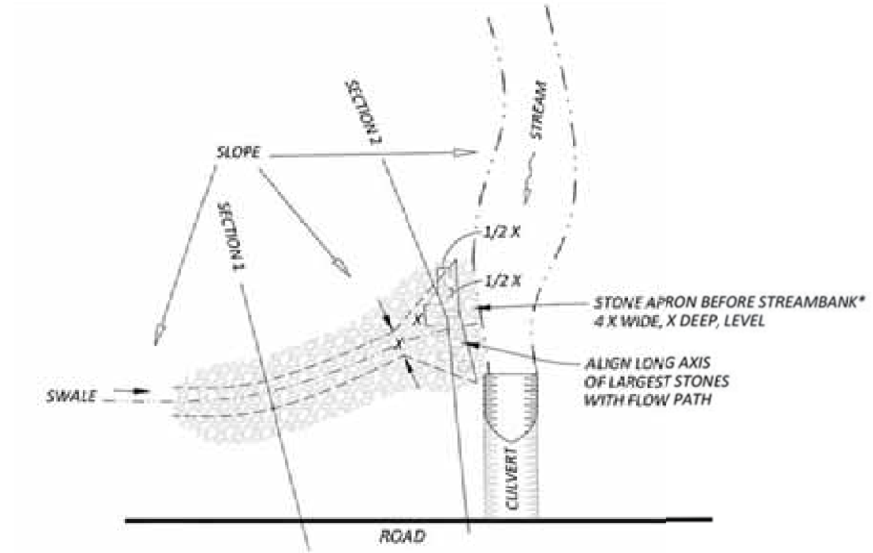
NTS

NOTE:
USE DETAIL E/F WHERE HIGHER FLOW VELOCITIES WILL ERODE GRASS SURFACE.

* IF >2:1, INSTALL NORTH AMERICAN GREEN S150 PER MANUFACTURER'S INSTRUCTIONS, BOTTOM AND STEEP SIDE OF CHANNEL (SEE DETAIL B)

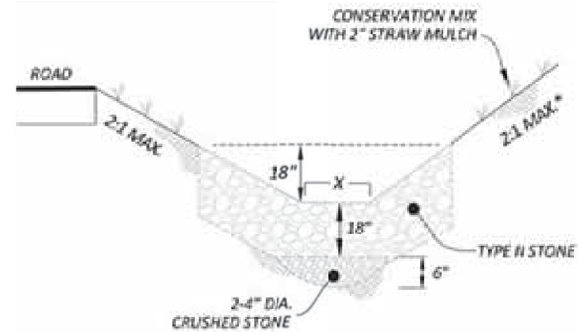
** SHAPE STONE SUFACE AS "V" IF SPACE FOR SWALE IS TOO NARROW FOR FLAT SURFACE

Details Produced By:



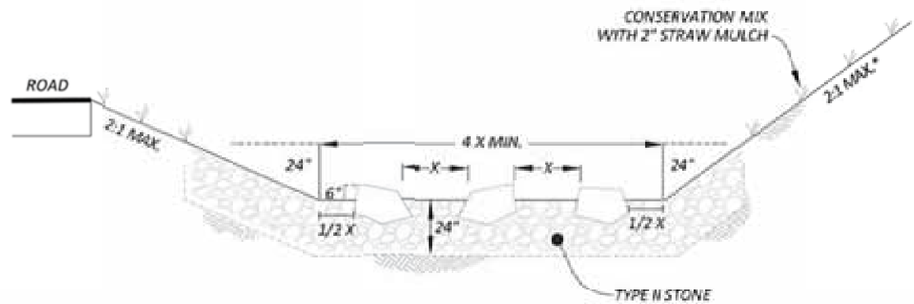
* END APRON ON LEVEL OR GENTLY SLOPING FLOODPLAIN WITH STABLE VEGETATION IF POSSIBLE

PLAN VIEW



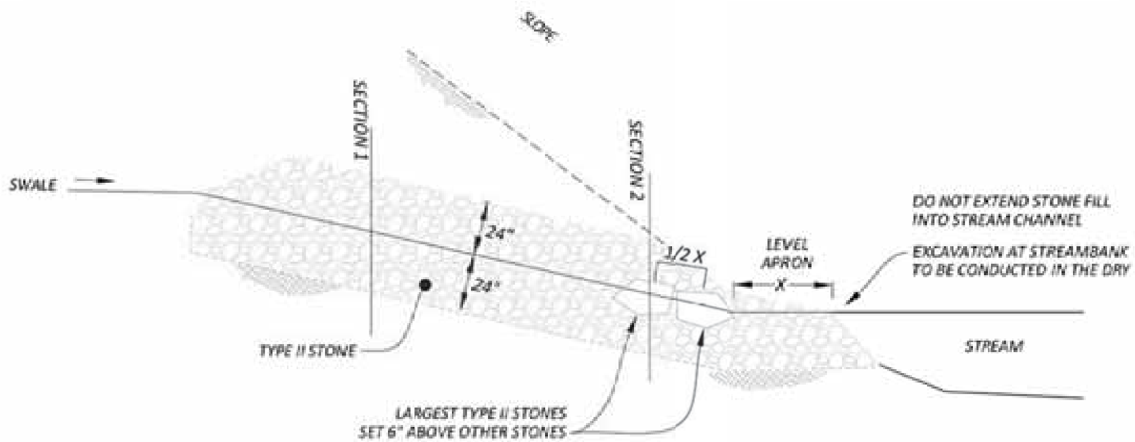
NOTE:
DIMENSION X SPECIFIED BY DESIGNER FOR EACH SITE.

SECTION 1 VIEW



SECTION 2 VIEW

* IF EXISTING SIDE SLOPES ARE STEEPER THAN 2:1, BUT STABLE, DO NOT REGRADE SLOPE.
IF THERE IS INSUFFICIENT WIDTH FOR 2:1 SIDE SLOPES, USE A STEEPER SLOPE ON THE BACKSIDE OF THE SWALE, AWAY FROM THE ROAD, AND STABILIZE WITH NORTH AMERICAN GREEN S150 EROSION BLANKET (SEE DETAIL B).



PROFILE VIEW

TYPE II STONE FILL
(VAOT SEC. 706.04(A))
THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 2 INCHES TO 36 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF 12 INCHES.

DETAIL G
STONE CHUTE AND SPREADER

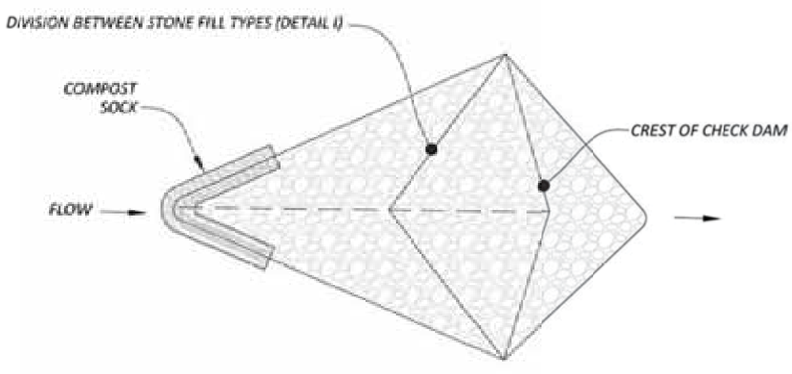
NTS

NOTE:
USE DETAIL G ALONG STEEPER SWALES, TYPICALLY DISCHARGING TO STREAMS OR FLOODPLAINS.
IF STREAMBANK IS UNSTABLE AND ERODING, CONDUCT MORE DETAILED ENGINEERING STUDY BEFORE USING DETAIL G.

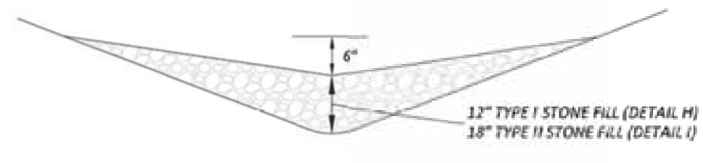
Details Produced By:

WATERSHED

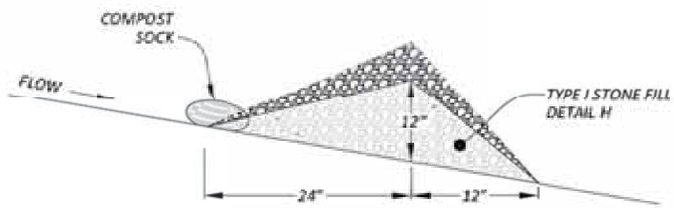
LAKESIDE



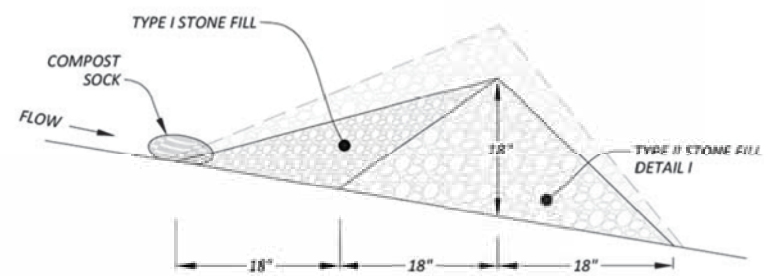
PLAN VIEW



SECTION VIEW



PROFILE VIEW - DETAIL H



PROFILE VIEW - DETAIL I

NOTE:
SET SPACING OF CHECK DAMS TO ASSUME THAT ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM"

DETAIL H/I STONE CHECK DAM

NTS

TYPE I STONE FILL
(VAOT SEC. 706.04(A))
THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 1 INCH TO 12 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF 4 INCHES.

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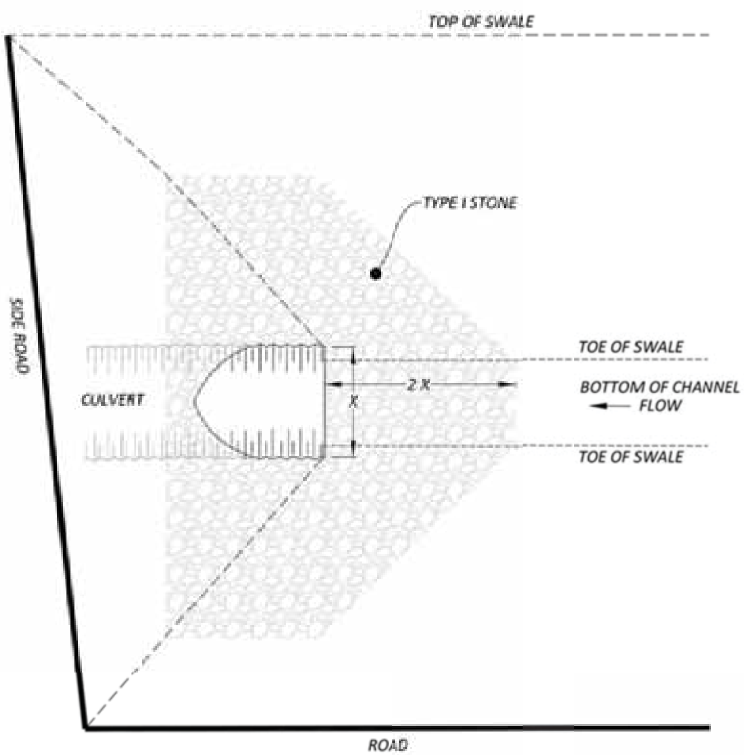
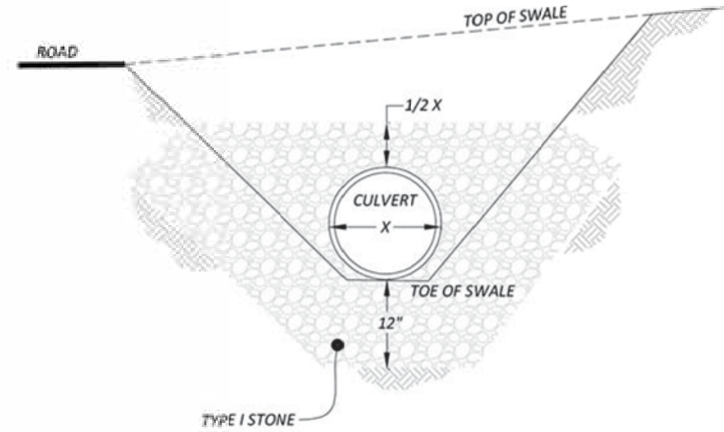
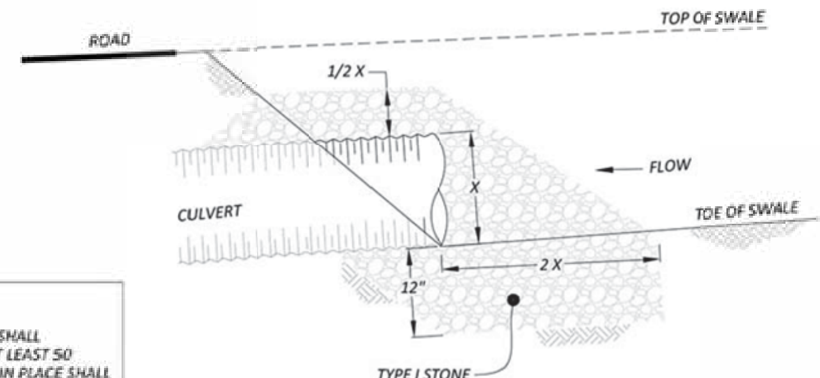
Details Produced By:



PLAN VIEW



SECTION VIEW



PROFILE VIEW

TYPE I STONE FILL
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DETAIL J
CULVERT ENTRANCE STABILIZATION

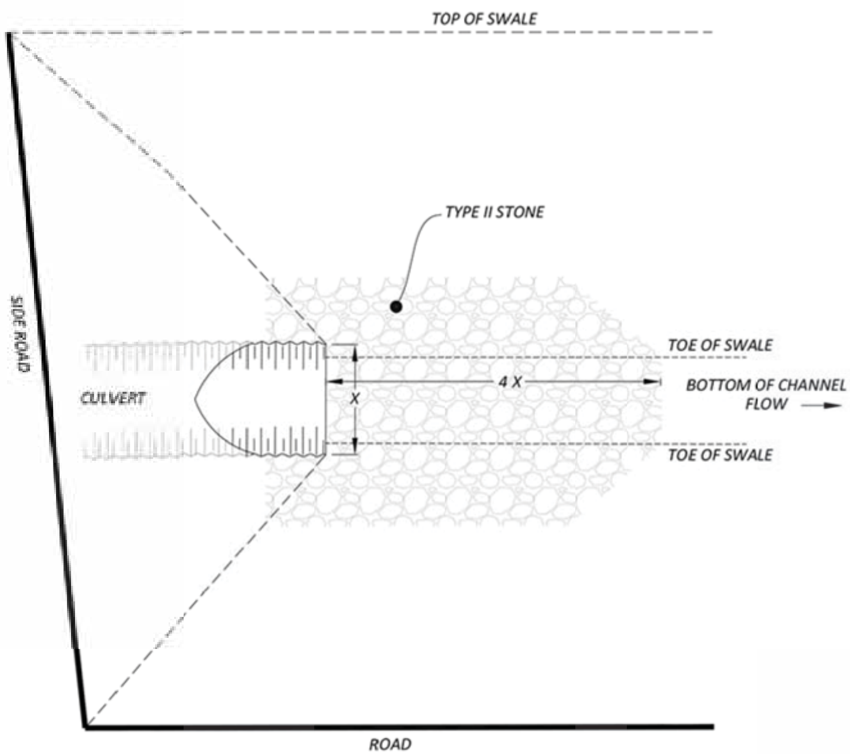
NTS

NOTE:
USE DETAIL J IN LIEU OF CULVERT HEADWALL WHERE ENTERING FLOW IS SCOURING BOTTOM AND SIDES OF SWALE.

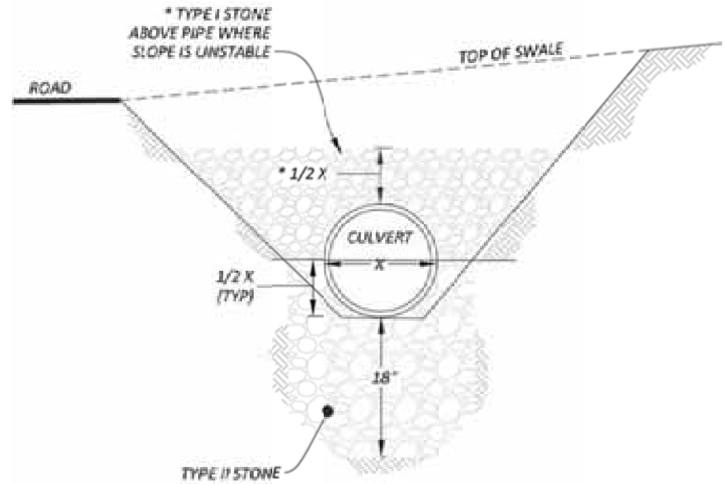
Details Produced By:

WATERSHED CONSULTING ASSOCIATES, LLC

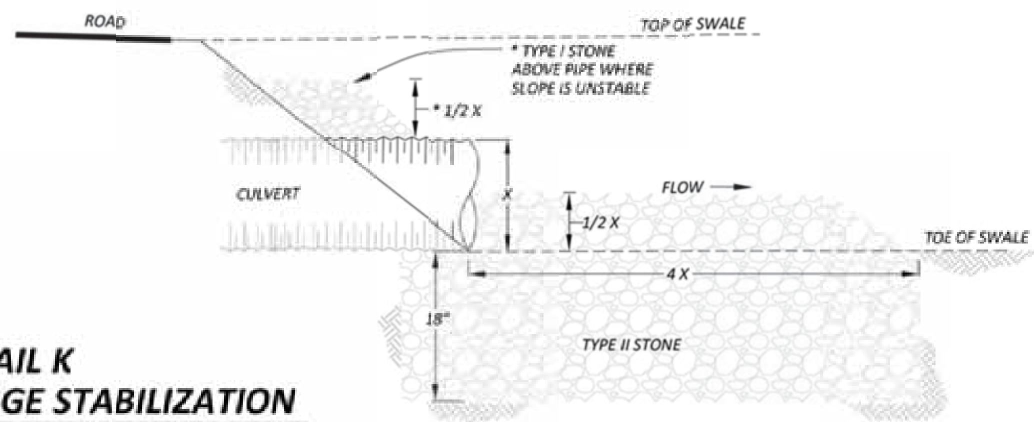
LAKESIDE



PLAN VIEW



SECTION VIEW



PROFILE VIEW

DETAIL K
CULVERT DISCHARGE STABILIZATION

NTS

NOTE:
USE DETAIL K WHERE EXITING FLOW IS SCOURING BOTTOM OF DISCHARGE CHANNEL

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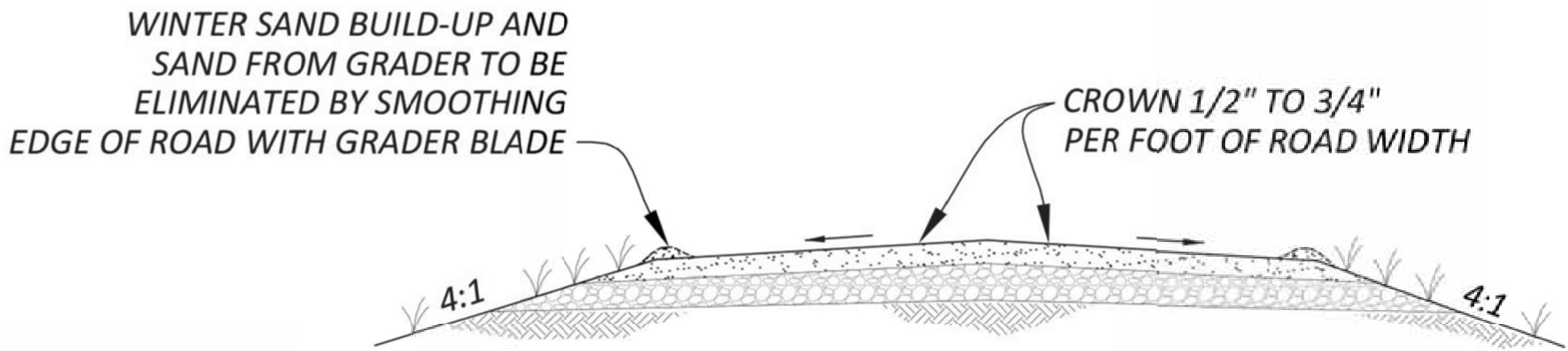
Details Produced By:
WATERSHED
LAKESIDE



DETAIL L
TYPICAL ROAD CROWN SECTION

NTS

Details Produced By:

WATERSHED CONSULTING ASSOCIATES, LLC

LAKESIDE ENVIRONMENTAL GROUP