

# **Town of Hyde Park Road Erosion Inventory Report**



*Prepared by:*

**Lamoille County Planning Commission**

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*Inventory and report funded by the Vermont Agency of Transportation 2016 Better Roads Program*

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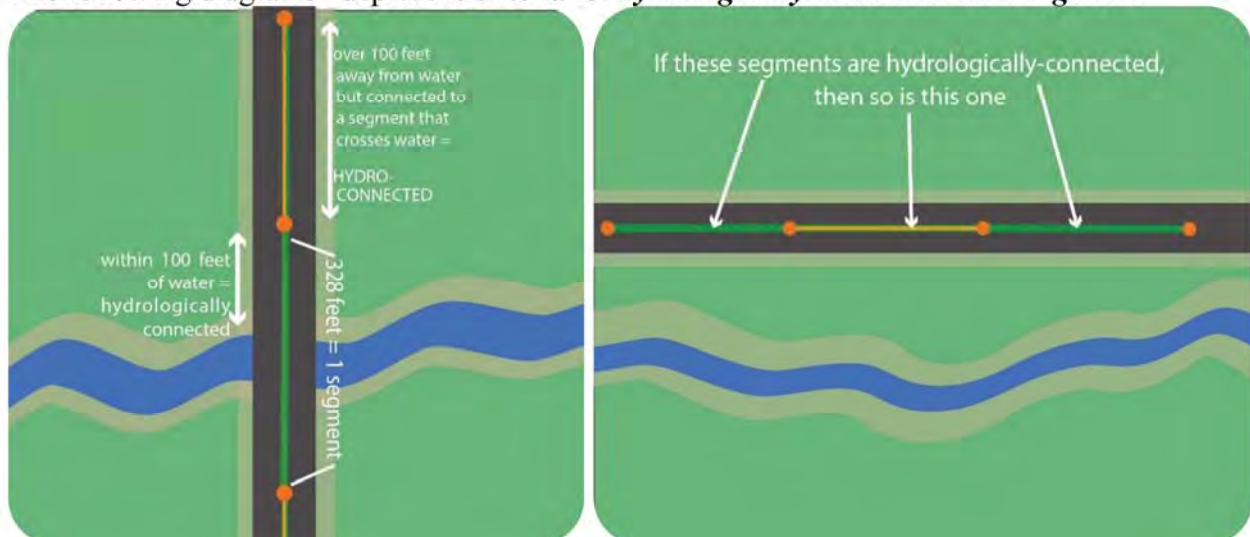
## Introduction

In the course of the 2016 and 2017 field work seasons, the Lamoille County Planning Commission (LCPC) conducted a road erosion inventory (REI) to evaluate “hydrologically-connected” road segments in the town of Hyde Park. This report highlights those sites with the most significant hydrological impact due to erosion within the municipality.

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

- Within 100 feet to water resources (perennial and intermittent streams, wetlands, lakes and ponds)
- Road segments that bisect a water resource
- Adjacent segments to connected segments
- Catch basin outfall pipe is 500 feet or less from a water of the state

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



\*Diagrams created by Two Rivers-Ottawquechee Regional Commission staff



## **Background**

### **Problem Definition**

Many historic settlements and roads in Vermont are near waterways since these are generally the lowest and flattest parts of our State, and proximity to water was historically essential to economic vitality. Erosion has adverse effects on water resources. 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, wetlands, lakes, and ponds. Road sediment in water resources contributes to a spectrum of ecological problems related to water pollution.

### **Problem Response**

Solutions for road erosion problems are taking shape in the form of state permits and grants. Grants should support installation and maintenance of road Best Management Practices (BMPs), while permits should establish minimum BMP requirements. The goal is to minimize road erosion caused by storm runoff and ensure that any sediment that does erode is sufficiently filtered before reaching the watershed; 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 instrumental to both grant funding and permit compliance. The purpose of the REI is to identify locations with circumstances conducive to road erosion. These are usually the places that require regular attention by town road crews to maintain safe travel or repeatedly fix erosion problems. Only hydrologically-connected road segments are assessed in the REI, plus segments identified by the Town as possibly hydrologically-connected and in need of field verification.

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 draft 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 Lake Champlain Phase I TMDL; the permit is scheduled to take effect in 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 an identification number by DEC
- All hydrologically-connected segments were assessed via field inspection by LCPC staff and given a score of Fully Meets, Partially Meets, or Does Not Meet based on the MRGP interim guidance



Field crews visited and inspected each ANR Atlas identified hydrologically-connected road segment during the 2016 and 2017 field seasons, and collected data using an “iPad” brand portable tablet. ANR Atlas data was loaded onto the tablet on approximately September 15, 2016, 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 areas of erosion. Culverts were also examined for erosion issues related to transition areas between swales and streams, culvert head walls, stream channel, and stream bank stability. Stream culvert issues were noted but 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 also noted if they were contributing to erosion issues. The geographic location and extent of each erosion area was recorded as a discrete point or as a line along the road. A digital camera was used to take photos of some erosion sites.

## **Town Report**

### **Context**

The town of Hyde Park is nearly 39 square miles of mountains and rivers, with approximately 84 miles of public roads. As of September 15, 2016, DEC identified through GIS methods 418 road segments as hydrologically-connected, or approximately 25.9 miles. Upon field inspections, 79 of the GIS-identified hydrologically-connected segments were determined incorrect in terms of connectivity status and/or spatial location and/or status as a municipal road, or approximately 4.9 miles. There were 154 segments identified during field inspections to be in full compliance with the MRGP, or approximately 9.6 miles. Four (4) segments were identified as “unknown” in terms of compliance with the MRGP; for calculation purposes these segments were counted as “not fully compliant”. Another 32 segments were identified as requiring a permit from a different ANR Division or other regulatory agency and therefore exempt from the MRGP, however some of these locations do have road erosion issues the Town is expected to mitigate when working on the “other permit” projects. The resulting estimated quantity of hydrologically-connected, municipally owned, not fully MRGP compliant road segments in need of work over the 20 years of the MRGP jurisdiction is 185 segments, or approximately 11.5 miles.

Maps and spreadsheets depicting the details of this report is contained in Appendix A and B, respectively. Appendix C contains excerpts of typical BMP construction details from the Better Back Roads Manual. A significant portion of the roads run near water resources. It is not unexpected to find many roads flanked by a steep grade to one side and a water resource on the other. Combined with steep roads this creates extra challenges and emphasizes the importance of proper road drainage installation and maintenance.

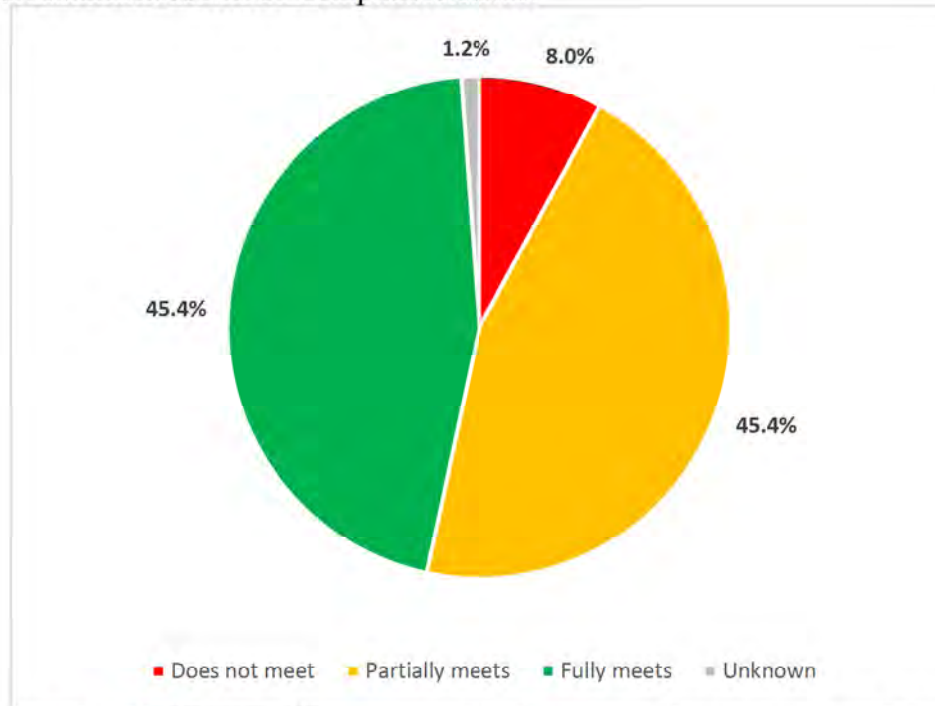
Common causes for erosion issues are as follows:

- 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



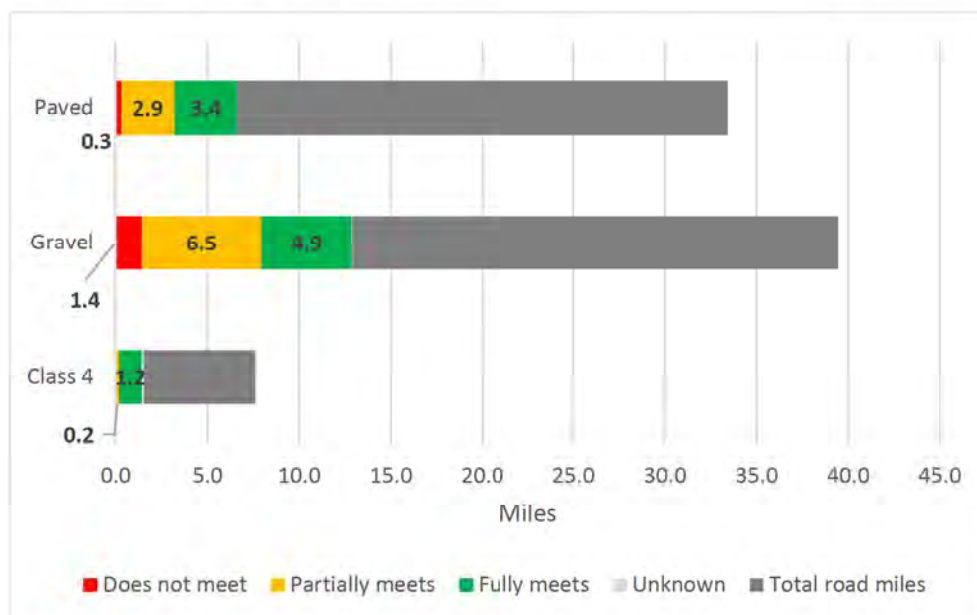
Results: Snapshot of Current Condition

This pie-chart summarizes MRGP compliance status:



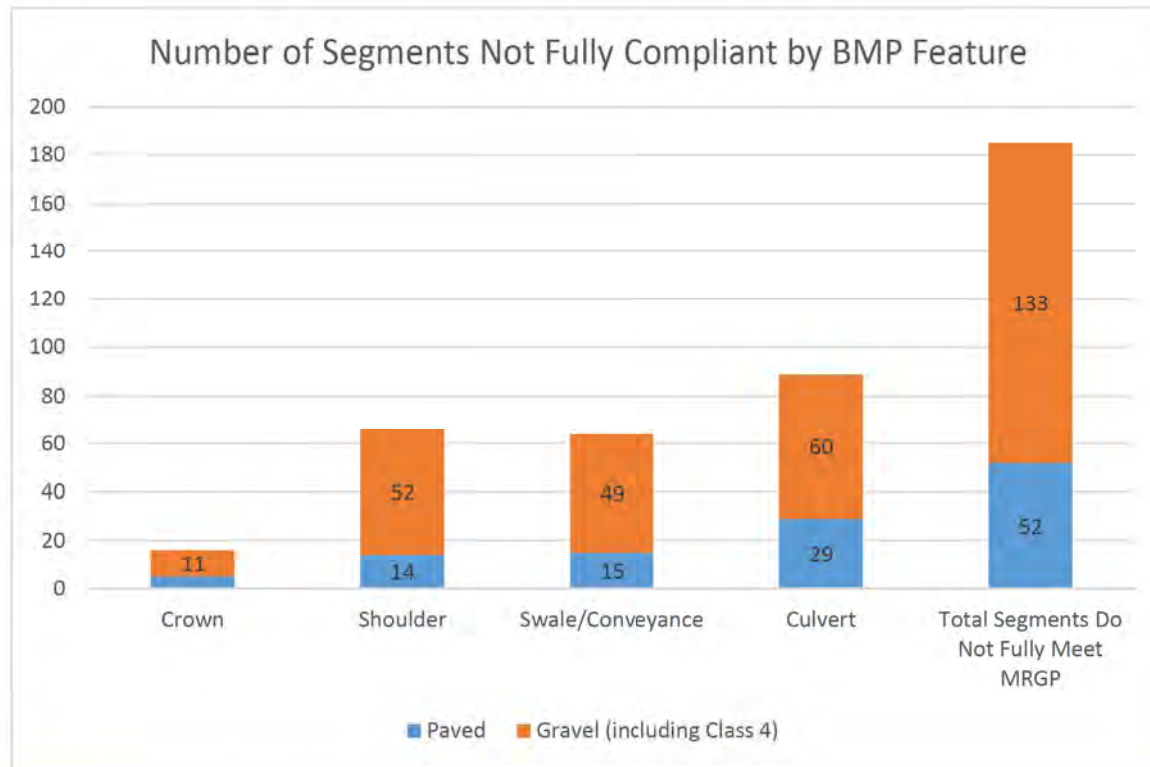
- There are 339 hydrologically-connected road segments in Hyde Park, or 21.1 miles (including class 4 roads)
- Of these, 55% (185 segments) do not fully meet standards; which equals approximately 11.5 miles of road

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.





The following graph depicts the number of segments not in full compliance with the MRGP, by BMP categories (crown, shoulder, swale & conveyances, culverts). Some non-compliant segments have more than one BMP category in need of improvement, therefore the sum of the BMP features exceeds the total count of segments not fully meeting MRGP standards.



### Implementation Plan

It is important to note this report represents a snapshot in time, and is based on a combination of desktop geographic analysis of specific parameters plus field observations made by LCPC staff. It is known that some site-specific conditions have changed since the field work was conducted. It is also important to note that LCPC staff designed the assessment protocols prior to the publication of the DEC final guidance documents for the MRGP. However, the work conducted in this assessment was done in consultation with DEC staff concurrent to the development of the MRGP and is a clear indication of the likelihood of conditions that may be observed at any snapshot in time, at various locations around Town. This report is also useful in framing the caliber and order of magnitude of work which will be required under the Municipal Road General Permit, and therefore should be helpful in projecting general budgeting needs.

Thirty-two (32) segments have been identified as High Priority. High Priority indicates a “partially” or “does not meet” score for segments near locations identified by the Town as a high priority, shown in the following table. 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 Back Roads Guidance Manual published by VTrans.



**Town of Hyde Park  
2017 Road Erosion Inventory Report**

Road Name	Average Road Grade	Segment ID #	Crown Issue	Shoulder Issue	Swale Issue	Culvert Issue	Meets MRGP?
BATTLE ROW RD	2.2	2530	n	n	n	y	partially
BATTLE ROW RD	3.1	2533	n	n	n	y	partially
BATTLE ROW RD	8.9	2542	n	n	y	n	partially
BATTLE ROW RD	1	2529	n	y	n	n	partially
BATTLE ROW RD	5.1	2543	n	y	n	n	partially
BATTLE ROW RD	8.2	2534	n	y	n	n	partially
CRICKET HILL RD	8.7	14524	n	y	n	n	partially
CRICKET HILL RD	2.5	14526	n	y	n	n	partially
CRICKET HILL RD	3.4	14525	n	n	n	y	partially
CRICKET HILL RD	5.4	28478	n	n	y	n	partially
CRICKET HILL RD	4	28476	n	n	n	y	partially
CRICKET HILL RD	6	28473	n	n	n	y	partially
CRICKET HILL RD	5.8	28472	?	?	?	?	unknown
JOHNSON ST EXT	6.9	31306	n	n	n	y	partially
JOHNSON ST EXT	11.7	31304	n	n	y	n	partially
TINGLE RD	5.5	185797	n	y	n	n	partially
W MAIN ST	4.8	193036	n	y	n	n	partially
W MAIN ST	12.2	193038	n	n	y	n	partially
E MAIN ST	2.5	17826	n	y	n	n	partially
E MAIN ST	3.4	17829	y	n	n	n	partially
E MAIN ST	11.3	17830	n	y	n	n	partially
E MAIN ST	2.4	17825	n	y	n	y	partially
GARFIELD RD	2.9	101134	n	n	n	y	partially
GARFIELD RD	4.1	101121	n	n	y	n	partially
GARFIELD RD	7.2	101143	n	n	y	y	does not
GARFIELD RD	?	101142	n	y	y	n	does not
GARFIELD RD	6	101137	n	y	n	n	partially
GARFIELD RD	6.7	101135	n	y	n	n	partially
GARFIELD RD	9.9	101136	n	n	y	y	partially
GREEN RIVER DAM RD	5	105813	n	n	y	n	partially
GREEN RIVER DAM RD	2.5	105815	y	y	n	n	partially
GREEN RIVER DAM RD	6.6	105814	n	y	n	n	partially

From a review of the erosion sites, several common erosion scenarios were determined to be recurring at various locations in Town. Typical designs for mitigating erosion issues are identified from the Better Back Roads Manual by LCPC and included in Appendix C. Town Staff met with LCPC on numerous occasions, both in the office and at example erosion locations, to review the results of the desktop analysis and subsequent field work conducted in 2016-17. Possible erosion management (i.e. treatment) options for implementation were also 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 erosion location maps, typical details, and database are provided to the Town in this report. The data will serve to help the Town track erosion area problems over time, and to repair specific locations using the Town Staff or contractors. For the sites that require full engineering design to



repair, the Town can use this information to help inform future decisions on hiring a design firm to address these areas as funding becomes available. The typical designs can also be used as supplementary documentation for future grant applications.

## **Conclusion**

The results of the field inventory illustrate the scope of the MRGP. 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 culverts including outlet stabilization and headwalls, and stabilizing exposed soil.

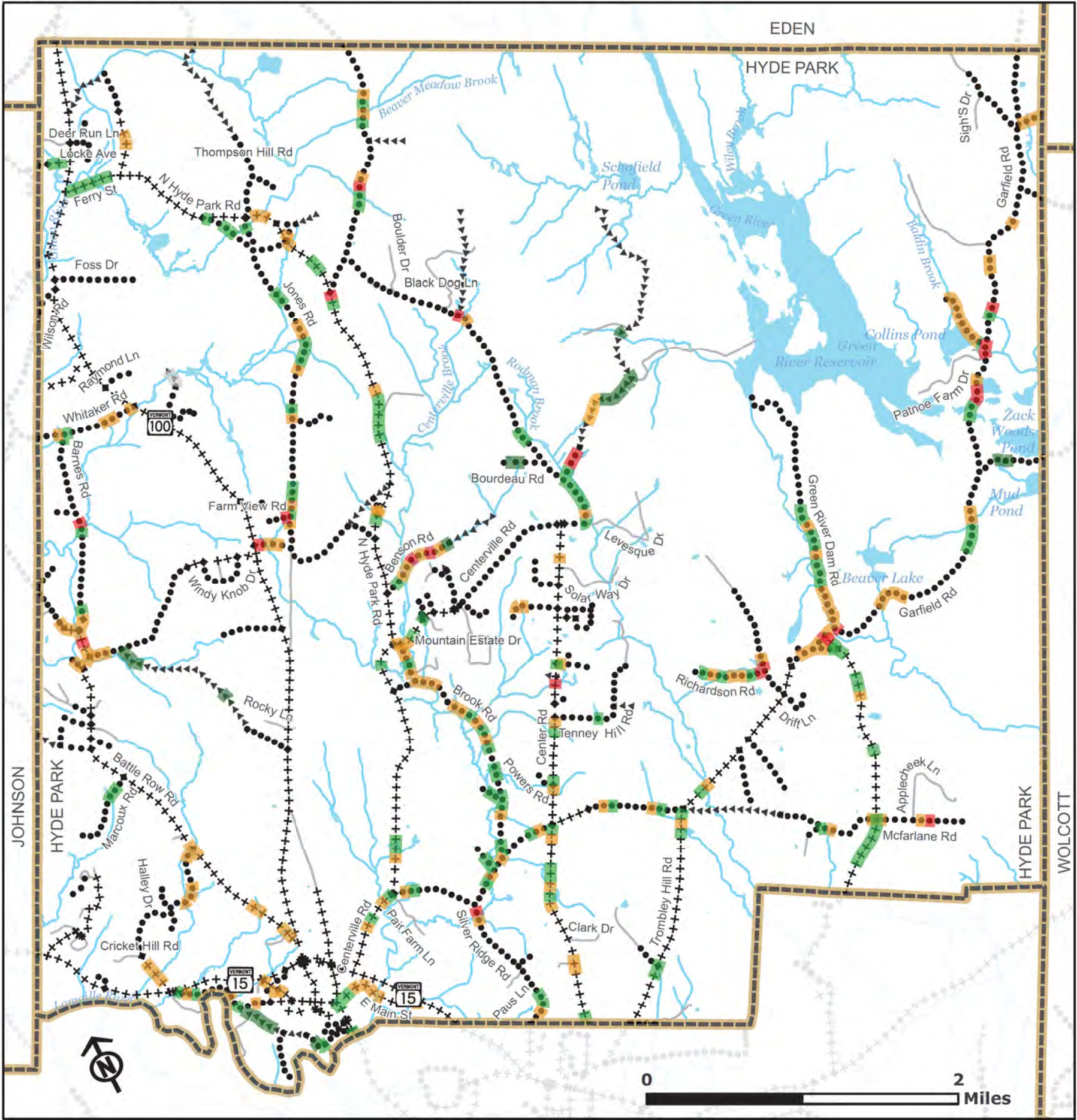
The Road Erosion Inventory for the Town of Hyde Park accomplished the following objectives: 1) an increased understanding of the scope of erosion problems along municipal roads, 2) an inventory of hydrologically-connected road segments, prioritized for corrective actions, and 3) a list of typical erosion treatment techniques for erosion sites. The identification and prioritization of road erosion sites will help the Town budget for and implement the necessary repairs. This will reduce sedimentation to water resources, while also reducing the need for repeated maintenance by road crews.

Local roadway segments that were not captured in ANR Atlas hydrologically-connected analysis were not field inspected, and therefore it can be expected that additional unmapped erosion areas within hydrologically-connected segments exist on Hyde Park's roads. Additionally, there were segments identified in the ANR Atlas as hydrologically-connected but are not; this data will be provided to ANR periodically as directed by the Town. The GIS inventory of the erosion sites should be updated every five years in accordance with the MRGP to reflect improvements made, changes from specific weather events, and re-evaluation of the Town's priorities. As various erosion issues are addressed over time, additional mapped sites could be targeted for further investigation and repair based on evolving priorities. Sites identified for a full engineering design should also be reviewed by the Town and prioritized for inclusion in Capital Budgets.

It should be noted there are multiple sections of Class 4 roads where erosion issues were documented and thus were considered to have a negative impact on water quality. Because Town highway budgets are limited and more heavily traveled roads usually receive higher priority by the voting public and taxpayers, Class 4 roads have historically received little attention. However, due to growing recognition of their potential water quality impacts, and the upcoming implementation of the Vermont Municipal Road General Permit, 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.



Hyde Park Road Erosion Inventory 2016-17: DRAFT



Municipal roads General Permit Score

- Fully meets
- Partially meets
- Does not meet
- Unknown

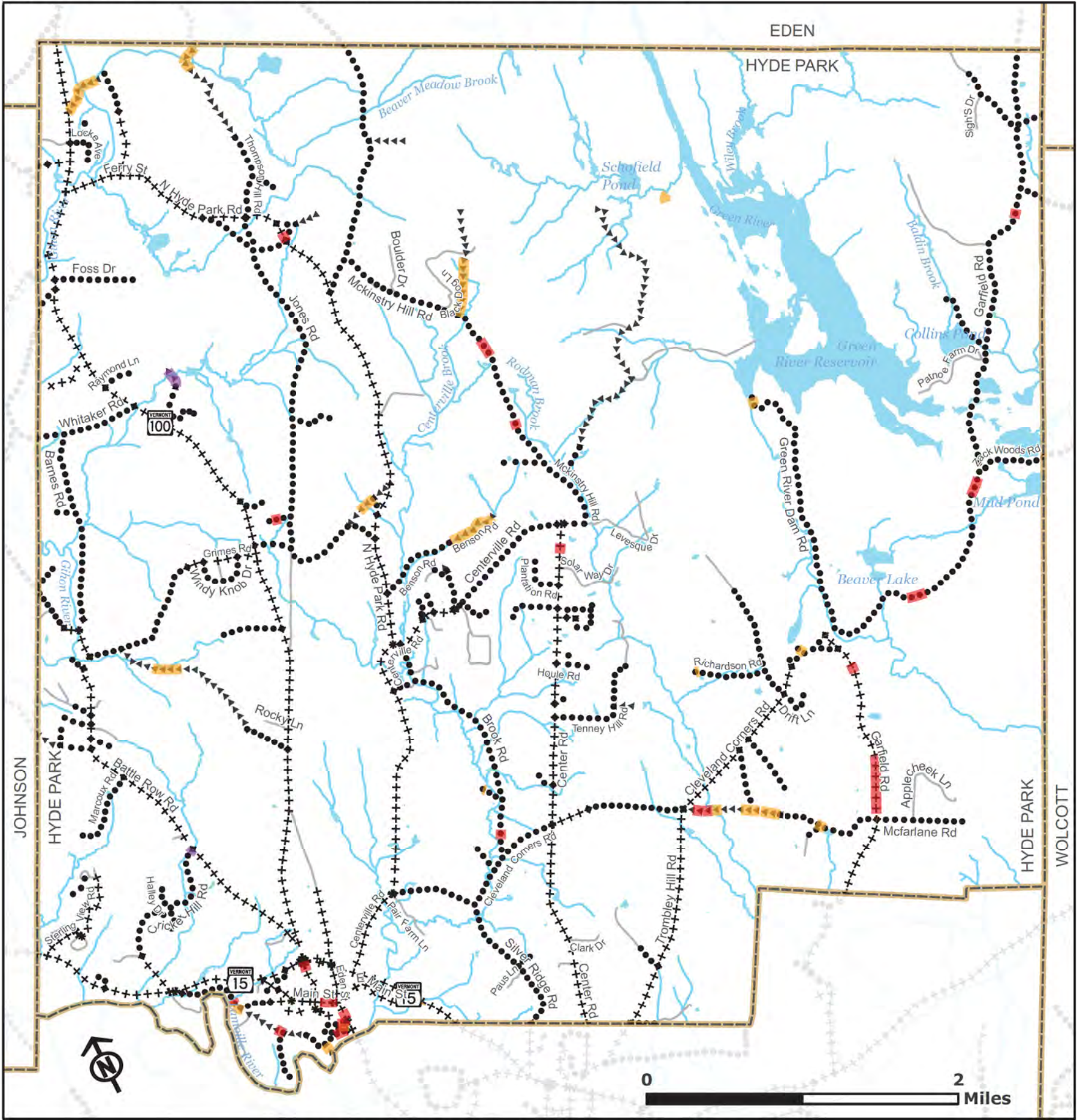
Road Surface

- Paved
- Gravel
- Class 4
- Unknown
- Streams
- Waterbody
- Town Boundary

DATA SOURCES:  
HYDROLOGICALLY CONNECTED ROAD SEGMENTS:  
Vermont Agency of Natural Resources, downloaded September 2016.  
POLITICAL BOUNDARIES:  
1:24000 USGS Quadrangles, VCGI, 1991.  
ROAD SURFACE:  
1:5000 VTrans Road Data, 2017. The "gravel" surface type also includes "soil, graded and drained earth", and the "Class 4" surface type includes "unimproved/primitive" and "impassible or untravelled"  
SURFACE WATER:  
On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.



Hyde Park Road Erosion Inventory 2016-17: Draft



Potential Error Source

- May not be connected
- May not be a road or not a good segment
- Missing or incomplete field data

Road Surface

- Paved
- Gravel
- Class 4
- Unknown
- Streams
- Waterbody
- Town Boundary

DATA SOURCES:  
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SURFACE WATER:  
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# Hyde Park 2017 Road Erosion Inventory 5 Year Work Plan

Appendix B

Road Name	Average Road Grade	Segment ID #	Crown Issue	Shoulder Issue	Swale Issue	Culvert Issue	Meets MRGP?	Estimated Project Description	Estimated Project Cost
BATTLE ROW RD	2.2	2530	n	n	n	y	partially	Replace existing stream culvert with new 4ft culvert. Repair nearby segments with problems related to crown, shoulders, swales & conveyances, and non-stream culverts	\$75,000
BATTLE ROW RD	3.1	2533	n	n	n	y	partially		
BATTLE ROW RD	8.9	2542	n	n	y	n	partially		
BATTLE ROW RD	1	2529	n	y	n	n	partially		
BATTLE ROW RD	5.1	2543	n	y	n	n	partially		
BATTLE ROW RD	8.2	2534	n	y	n	n	partially		
CRICKET HILL RD	8.7	14524	n	y	n	n	partially	Replace existing stream culvert with new 4ft culvert. Repair nearby segments with problems related to crown, shoulders, swales & conveyances, and non-stream culverts	\$110,000
CRICKET HILL RD	2.5	14526	n	y	n	n	partially		
CRICKET HILL RD	3.4	14525	n	n	n	y	partially		
CRICKET HILL RD	5.4	28478	n	n	y	n	partially		
CRICKET HILL RD	4	28476	n	n	n	y	partially		
CRICKET HILL RD	6	28473	n	n	n	y	partially		
CRICKET HILL RD	5.8	28472	?	?	?	?	unknown		
JOHNSON ST EXT	6.9	31306	n	n	n	y	partially	Repair sink-hole. Stabilize existing stream culvert. Repair nearby segments with problems related to crown, shoulders, swales & conveyances, and non-stream culverts	\$675,000
JOHNSON ST EXT	11.7	31304	n	n	y	n	partially		
TINGLE RD	5.5	185797	n	y	n	n	partially		
W MAIN ST	4.8	193036	n	y	n	n	partially		
W MAIN ST	12.2	193038	n	n	y	n	partially		
E MAIN ST	2.5	17826	n	y	n	n	partially	Replace existing stream culvert with new 8ft culvert. Repair nearby segments with problems related to crown, shoulders, swales & conveyances, and non-stream culverts	\$175,000
E MAIN ST	3.4	17829	y	n	n	n	partially		
E MAIN ST	11.3	17830	n	y	n	n	partially		
E MAIN ST	2.4	17825	n	y	n	y	partially		
GARFIELD RD	2.9	101134	n	n	n	y	partially	Replace existing stream culvert with new 10ft culvert. Repair nearby segments with problems related to crown, shoulders, swales & conveyances, and non-stream culverts	\$275,000
GARFIELD RD	4.1	101121	n	n	y	n	partially		
GARFIELD RD	7.2	101143	n	n	y	y	does not		
GARFIELD RD	?	101142	n	y	y	n	does not		
GARFIELD RD	6	101137	n	y	n	n	partially		
GARFIELD RD	6.7	101135	n	y	n	n	partially		
GARFIELD RD	9.9	101136	n	n	y	y	partially		
GREEN RIVER DAM RD	5	105813	n	n	y	n	partially		
GREEN RIVER DAM RD	2.5	105815	y	y	n	n	partially		
GREEN RIVER DAM RD	6.6	105814	n	y	n	n	partially		



Town 1st 5 year cycle targets	RDFLNAME	Avg_ Road Gr	Segment D	crown issue	shoulder issue	swale issue	culvert issue	meets MRGP? (fully, partially, does not)	ID_Town_Rd	Stream culvert comment	Comments	SHAPE_ Length
y	BATTLE ROW RD	1.0	2529	n	y	n	n	partially	15025_BATTLE_ROW_RD_2529.1	NA	Rd culvert is wetland drainage	100
y	BATTLE ROW RD	2.2	2530	n	n	n	y	partially	15025_BATTLE_ROW_RD_2530.1	Perched; undersized	Pounding on east side of rd; cv not draining well	100
y	BATTLE ROW RD	3.1	2533	n	n	n	y	partially	15025_BATTLE_ROW_RD_2533.1	Outlet crushed. East side needs shoring up.		100
y	BATTLE ROW RD	5.1	2543	n	y	n	n	partially	15025_BATTLE_ROW_RD_2543.1	Na	Very stable	100
y	BATTLE ROW RD	8.2	2534	n	y	n	n	partially	15025_BATTLE_ROW_RD_2534.1		Well vegetated but needs stone lined ditches	100
y	BATTLE ROW RD	8.9	2542	n	n	y	n	partially	15025_BATTLE_ROW_RD_2542.1	Erosion on the south side of the bank	needs stone lined ditches	100
y	CRICKET HILL RD	2.5	14526	n	y	n	n	partially	15025_CRICKET_HILL_RD_14526.1	Na	Parking lot cv outlet no visible	100
y	CRICKET HILL RD	3.4	14525	n	n	n	y	partially	15025_CRICKET_HILL_RD_14525.1	Scour pool; double perched	Lack of buffer on stream bank-power line	100
y	CRICKET HILL RD	8.7	14524	n	y	n	n	partially	15025_CRICKET_HILL_RD_14524.1	Na	Lack of sheet flow in gravel part;erosion downhill	100
y	E MAIN ST	2.4	17825	n	y	n	y	partially	15025_E_MAIN_ST_17825.1	Stream culvert outlet needs end treatment	Shoulder has dirt that can convey right to stream. Driveway cvs convey wetland drainage	100
y	E MAIN ST	2.5	17826	n	y	n	n	partially	15025_E_MAIN_ST_17826.1			100
y	E MAIN ST	3.4	17829	y	n	n	n	partially	15025_E_MAIN_ST_17829.1	Very steep did not access	Driveway no cv not really needed but puddling in dw; better grading would fix	100
y	E MAIN ST	11.3	17830	n	y	n	n	partially	15025_E_MAIN_ST_17830.1		Sheet flow goes primarily into one drop inlet culvert at end of segment connected to the stream.	100
y	JOHNSON ST EXT	6.9	31306	n	n	n	y	partially	15025_JOHNSON_ST_EXT_31306.1	Outlet eroded	Road drainage culvert plugged with sed	100
y	JOHNSON ST EXT	11.7	31304	n	n	y	n	partially	15025_JOHNSON_ST_EXT_31304.1	Large apron at outlet	Most of segment steep walls	100
	BARNES RD	2.4	2100	n	y	n	n	partially	15025_BARNES_RD_2100.1		Road very close to stream, some dirt on edge beamed up that can get into stream over the rip rap	100
	BARNES RD	3.5	2096	n	n	y	n	partially	15025_BARNES_RD_2096.1	Perched	On ds side of st cv, rd not ditched, sheet flow bringing sed to stream, needs ditch not paved!	100
	BARNES RD	4.1	2098	n	n	n	y	partially	15025_BARNES_RD_2098.1		Needs driveway cv	100
	BARNES RD	5.8	2097	n	n	n	y	partially	15025_BARNES_RD_2097.1		short segment Lump with uphill seg 2098.1	14
	BARNES RD	7.7	2099	n	y	y	n	does not	15025_BARNES_RD_2099.1		Needs stone lined ditches, dw needs cv, road runoff eroding dw	100
	BATTLE ROW RD	4.1	2527	n	n	y	n	partially	15025_BATTLE_ROW_RD_2527.1	Sw input into upstream end; cv old and rusty	Ditch needed on side of rd where house is to funnel rd drainage and not damage dw	100
	BLACK FARM RD	1.9	4073	n	n	n	n	fully	15025_BLACK_FARM_RD_4073.1		No issues	71
	CADYS FALLS RD	1.7	8166					unknown	15025_CADYS_FALLS_RD_8166.1		not in hyde park?	0
	CENTER RD	0.8	9626	n	n	y	y	partially	15025_CENTER_RD_9626.1		Rd drainage cv filled in a bit and probably too small; inlet torn	100
	CENTER RD	0.8	9651	n	n	n	n	fully	15025_CENTER_RD_9651.1		unknown connected, no issues	100
	CENTER RD	0.9	9630	n	n	n	n	fully	15025_CENTER_RD_9630.1		No issues	100
	CENTER RD	1.0	9614	n	n	n	n	fully	15025_CENTER_RD_9614.1		Drains into pond across street, include southern seg with this one 9613.1	100
	CENTER RD	1.0	9619	n	n	n	y	partially	15025_CENTER_RD_9619.1	Stream culvert outlet ripped		100
	CENTER RD	1.4	9644	n	n	n	n	fully	15025_CENTER_RD_9644.1			100
	CENTER RD	1.5	9613	n	n	n	n	fully	15025_CENTER_RD_9613.1		Lump with other segment 9614.1	32
	CENTER RD	1.9	9638	n	n	n	y	partially	15025_CENTER_RD_9638.1	Rusted on bottom, inlet crushed & torn a bit	Stream cv issues	100
	CENTER RD	2.4	9633	n	n	y	n	partially	15025_CENTER_RD_9633.1		no drainage west side; slump on east side	100
	CENTER RD	2.6	9634	n	n	n	n	fully	15025_CENTER_RD_9634.1		Cv not in segment in other side of intersection; no drainage west side	100



Town 1st 5 year cycle targets	RDFLNAME	Avg_ Road Gr	Segment D	crown issue	shoulder issue	swale issue	culvert issue	meets MRGP? (fully, partially, does not)	ID_Town_Rd	Stream culvert comment	Comments	SHAPE_ Length
	CENTER RD	2.6	9645	n	n	n	y	partially	15025_CENTER_RD_9645.1	Crushed a bit at inlet		100
	CENTER RD	2.7	9662	n	n	n	y	partially	15025_CENTER_RD_9662.1		Erosion around cv outlets do header collapsed	100
	CENTER RD	3.5	9629				n	fully	15025_CENTER_RD_9629.1	drainage cv is stream cv	Small stream crossing	100
	CENTER RD	3.6	9628	n	n	n	y	partially	15025_CENTER_RD_9628.1	Inlet could use header. Outlet needs header		100
	CENTER RD	3.6	9627	n	n	n	n	fully	15025_CENTER_RD_9627.1		One conveyance drains to pond	100
	CENTER RD	4.7	9620	n	n	n	y	partially	15025_CENTER_RD_9620.1	Inlet crushed & rusty, needs headwall	Flowing water on side of rd, small stream?	100
	CENTER RD	4.8	9639	n	n	n	n	fully	15025_CENTER_RD_9639.1			100
	CENTER RD	5.4	9663					n/a	15025_CENTER_RD_9663.1			100
	CENTER RD	7.4	9649	n	n	y	y	does not	15025_CENTER_RD_9649.1	Too small, erosion caused gully on top of cv	Slope seems<7%	100
	CENTERVILLE RD	2.1	9813	n	n	n	y	partially	15025_CENTERVILLE_RD_9813.1	Perched; scour pool; nice boulder under cv;	Vhd off a bit	100
	CENTERVILLE RD	2.1	9774	n	n	n	y	partially	15025_CENTERVILLE_RD_9774.1	Outlet could use more stone		100
	CENTERVILLE RD	2.2	9787	n	n	n	n	fully	15025_CENTERVILLE_RD_9787.1			100
	CENTERVILLE RD	2.7	9781	n	y	n	n	partially	15025_CENTERVILLE_RD_9781.1	Slump caused gully on side of rd near cv inlet	Slump on side of rd	100
	CENTERVILLE RD	2.8	9785	n	n	n	n	fully	15025_CENTERVILLE_RD_9785.1		Could not find a dw cv, but it appears that this is the start of trib drainage	100
	CENTERVILLE RD	2.9	9773	n	n	n	n	fully	15025_CENTERVILLE_RD_9773.1	None	Grassed lawns in conveyance zones	100
	CENTERVILLE RD	4.7	9811	n	n	n	n	fully	15025_CENTERVILLE_RD_9811.1	From man made pond drainage	On E side of rd some logging: sediment getting into drainage area	100
	CENTERVILLE RD	5.2	40	n	n	n	n	fully	15025_CENTERVILLE_RD_9792.1	Cow poo flowing into stream. Culvert perch. Scour	Cow path along edge of bank near stream	100
	CENTERVILLE RD	6.1	9780	n	n	n	n	fully	15025_CENTERVILLE_RD_9780.1			100
	CENTERVILLE RD	6.2	9812	n	n	n	n	fully	15025_CENTERVILLE_RD_9812.1			100
	CENTERVILLE RD	11.1	9789	n	n	y	n	partially	15025_CENTERVILLE_RD_9789.1		Needs stone lined ditches	100
	CENTERVILLE RD	11.4	9788	n	n	n	y	partially	15025_CENTERVILLE_RD_9788.1	Perched	Dam upstream of cv, not necessary, remove?	100
	CHURCH ST	3.6	11301					n/a	15025_CHURCH_ST_11301.1		part of segment on VT15, not connected, drainage cv has caused a little gully at outlet on property. Storm drains lead to rd drain cv	100
	CLEVELAND CORNERS RD	5.9	11813	n	n	n	n	fully	15025_CLEVELAND_CORNERS_RD_11813.1			100
	CLEVELAND CORNERS RD	6.5	11812	n	n	n	y	partially	15025_CLEVELAND_CORNERS_RD_11812.1	Culvert perched. Scour pool		100
	DEPOT ST	4.5	15890	n	n	n	n	fully	15025_DEPOT_ST_15890.1		No issues	35
	DEPOT ST	5.8	15891	n	n	n	n	fully	15025_DEPOT_ST_15891.1		No issues	100
	DEPOT ST	6.6	15889	n	n	n	n	fully	15025_DEPOT_ST_15889.1	Stream on town line	Segment with stream not mapped-included w next seg	100
	DEPOT ST	10.5	15892					n/a	15025_DEPOT_ST_15892.1		One side curbed. No longer connected as per 2016 LCCD project	100
	DEPOT ST EXT	4.5	15961					n/a	15025_DEPOT_ST_EXT_15961.1	Cv for SW or Rd drain causing gully; remediated	25 percent curbed. Includes paved segment; No longer connected as per LCCD 2016 project	53
	E MAIN ST	1.0	17824					n/a	15025_E_MAIN_ST_17824.1		not a road, on VT15, remove from hyde park list	18
	E MAIN ST	1.6	17833	n	n	n	n	fully	15025_E_MAIN_ST_17833.1	NA	Dws no culverts but not erosion problem	100
	E MAIN ST	2.0	17823	n	n	n	n	fully	15025_E_MAIN_ST_17823.1	O	Storm drain on left side of rd; some drains to lot	100
	E MAIN ST	3.1	17832	n	y	n	n	partially	15025_E_MAIN_ST_17832.1	Shoulder wash off getting into stream	Stable part is paved ditch; dw cv leads to stor dr	100
	E MAIN ST	5.3	17831	n	n	n	y	partially	15025_E_MAIN_ST_17831.1		2 driveways with no cvs; one needs culvert	100



Town 1st 5 year cycle targets	RDFLNAME	Avg_ Road Gr	Segment D	crown issue	shoulder issue	swale issue	culvert issue	meets MRGP? (fully, partially, does not)	ID_Town_Rd	Stream culvert comment	Comments	SHAPE_ Length
	FERRY ST	1.0	21520	n	n	n	n	fully	15025_FERRY_ST_21520.1	Stream culvert downstream both sides of segment		100
	FERRY ST	2.1	21515	n	n	n	n	fully	15025_FERRY_ST_21515.1	Drop inlet culvert at intersection		100
	FERRY ST	2.2	21523	n	n	n	n	fully	15025_FERRY_ST_21523.1		1 non filtered =cluster of homes/driveways	100
	FERRY ST	2.2	21521	n	n	n	n	fully	15025_FERRY_ST_21521.1	Large stream. Dirt pull off near stream		100
	FERRY ST	3.5	21522	n	n	n	n	fully	15025_FERRY_ST_21522.1		Large dirt pull off near stream. Stream culvert in next segment	100
	GARFIELD RD	0.1	22948					n/a	15025_GARFIELD_RD_22948.1			100
	GARFIELD RD	0.3	22946					n/a	15025_GARFIELD_RD_22946.1			100
	GARFIELD RD	0.7	22945					n/a	15025_GARFIELD_RD_22945.1			100
	GARFIELD RD	0.7	22947					n/a	15025_GARFIELD_RD_22947.1			100
	GARFIELD RD	0.9	22953	y	n	n	n	fully	15025_GARFIELD_RD_22953.1		No issues, could improve crown next paving	100
	GARFIELD RD	1.0	22950					n/a	15025_GARFIELD_RD_22950.1		Not near conveyance	100
	GARFIELD RD	1.0	22935					n/a	15025_GARFIELD_RD_22935.1			100
	GARFIELD RD	1.1	22949					n/a	15025_GARFIELD_RD_22949.1		Not near conveyance	100
	GARFIELD RD	1.3	22952	n	n	n	n	fully	15025_GARFIELD_RD_22952.1			100
	GARFIELD RD	1.3	22937	n	n	n	n	fully	15025_GARFIELD_RD_22937.1		No issues	100
	GARFIELD RD	1.4	22944	n	n	n	n	fully	15025_GARFIELD_RD_22944.1		Wetland to west of rd	100
	GARFIELD RD	1.4	22951	n	n	n	n	fully	15025_GARFIELD_RD_22951.1		Not near conveyance	100
	GARFIELD RD	1.8	22961	y	n	n	n	fully	15025_GARFIELD_RD_22961.1	Gully erosion at header at outlet	Paved needs better crown next time paved; no prob with dw cv	100
	GARFIELD RD	3.0	22956	n	n	n	n	fully	15025_GARFIELD_RD_22956.1	Could improve crown next paving		100
	GARFIELD RD	3.2	22959					n/a	15025_GARFIELD_RD_22959.1		not a real segment, GIS error, remove from hyde park database	2
	GARFIELD RD	3.2	22938	n	n	n	y	partially	15025_GARFIELD_RD_22938.1	Outlet need header	Possible cow access	100
	GARFIELD RD	4.0	22936	n	n	n	n	fully	15025_GARFIELD_RD_22936.1		Really far from dr cv; no issues	100
	GARFIELD RD	4.9	22962	y	n	n	n	fully	15025_GARFIELD_RD_22962.1		Next paving improve crown	100
	GARFIELD RD	5.5	22960	n	n	y	y	does not	15025_GARFIELD_RD_22960.1	AOP issue	Needs ditches and could then turn outs near telephone poles	100
	GARFIELD RD	6.8	22955	n	n	n	n	fully	15025_GARFIELD_RD_22955.1	Piped from channel upstream into inlet	Cv outlet perched but has stone; dw cv underneath huge belt up rd for gravel pit access	100
	GARFIELD RD	8.1	22954	y	n	n	n	fully	15025_GARFIELD_RD_22954.1	Not a greatly defined channel, trans from wetland	No issues, not sure if distinct channel ds, but wetland and channel us; could improve crown	100
	HEATH RD	0.8	27079	n	n	n	y	partially	15025_HEATH_RD_27079.1	Needs headers both ends	This segment is gravel. Other stream nearby.	100
	HEATH RD	0.9	27080	n	n	y	n	partially	15025_HEATH_RD_27080.1		Stream cv in previous segment. 2 outlets not filtered= logging sites	100
	MAIN ST	0.9	36659					n/a	15025_MAIN_ST_36659.1		No issues	100
	MAIN ST	1.6	36658					n/a	15025_MAIN_ST_36658.1		No issues	71
	MUDGETT HILL RD	6.4	42408	n	n	n	n	fully	15025_MUDGETT_HILL_RD_42408.1			100
	MUDGETT HILL RD	6.6	42406	n	n	n	n	fully	15025_MUDGETT_HILL_RD_42406.1	Stream Culvert at start of segment	80 percent of segment is gravel	100
	N HYDE PARK RD	0.5	43156					n/a	15025_N_HYDE_PARK_RD_43156.1		Segment flat then goes up hill. Sheet flow out before streams in next segments	100
	N HYDE PARK RD	0.9	43133	n	n	n	n	fully	15025_N_HYDE_PARK_RD_43133.1		No issues	100
	N HYDE PARK RD	0.9	43152	n	n	n	n	fully	15025_N_HYDE_PARK_RD_43152.1		Ditch near pond= 1 conveyance	100
	N HYDE PARK RD	0.9	43151	n	n	n	n	fully	15025_N_HYDE_PARK_RD_43151.1			100
	N HYDE PARK RD	1.2	43124	n	n	n	y	partially	15025_N_HYDE_PARK_RD_43124.1	AOP issue, torn culvert		100
	N HYDE PARK RD	1.3	43132	n	n	n	n	fully	15025_N_HYDE_PARK_RD_43132.1		No issues	100



Town 1st 5 year cycle targets	RDFLNAME	Avg_ Road Gr	Segment D	crown issue	shoulder issue	swale issue	culvert issue	meets MRGP? (fully, partially, does not)	ID Town Rd	Stream culvert comment	Comments	SHAPE_ Length
	N HYDE PARK RD	1.4	43123	n	n	n	n	fully	15025_N_HYDE_PARK_RD_43123.1		No issues	100
	N HYDE PARK RD	1.7	43155	n	n	n	y	partially	15025_N_HYDE_PARK_RD_43155.1	Slumping at inlet		100
	N HYDE PARK RD	1.9	43147	n	n	n	n	fully	15025_N_HYDE_PARK_RD_43147.1	St cv start of segment not mapped		100
	N HYDE PARK RD	2.1	43136	n	n	n	n	fully	15025_N_HYDE_PARK_RD_43136.1		No issues	100
	N HYDE PARK RD	2.5	43148	n	y	y	n	does not	15025_N_HYDE_PARK_RD_43148.1	2 stream cv just outside segment north and south	Poor conveyance needs ditch. Stream running along rd shoulder	100
	N HYDE PARK RD	2.6	43134	n	n	n	n	fully	15025_N_HYDE_PARK_RD_43134.1		No issues	100
	N HYDE PARK RD	3.6	43135	n	n	n	n	fully	15025_N_HYDE_PARK_RD_43135.1		No issues	100
	N HYDE PARK RD	5.3	43137	n	y	n	n	partially	15025_N_HYDE_PARK_RD_43137.1		Minor rill at driveway and shoulder	100
	N HYDE PARK RD	9.8	43160	n	n	y	y	partially	15025_N_HYDE_PARK_RD_43160.1		Drive cv too small and clogged; conv vegetated; needs stone lined ditches >8%	100
	N HYDE PARK RD	12.1	43159	n	n	n	y	partially	15025_N_HYDE_PARK_RD_43159.1		Stream cv down hill in next segment. 1st drive cv too small and clogged at address 3014	100
	TROMBLEY HILL RD	1.8	67107	n	n	n	n	fully	15025_TROMBLEY_HILL_RD_67107.1			100
	TROMBLEY HILL RD	2.9	67092	n	n	n	n	fully	15025_TROMBLEY_HILL_RD_67092.1		Half drains to south away from trib	100
	TROMBLEY HILL RD	4.1	67085	n	n	n	n	fully	15025_TROMBLEY_HILL_RD_67085.1		Grade looks higher than 4%	100
	TROMBLEY HILL RD	4.8	67108	n	n	n	y	partially	15025_TROMBLEY_HILL_RD_67108.1	cv drains wetland to pond; bottom rusted out		100
	TROMBLEY HILL RD	4.9	67093	n	n	n	n	fully	15025_TROMBLEY_HILL_RD_67093.1	No flow us, very long, rusted at outlet, perched	Not AOP issue because no channel us of cv, cv goes beyond rd into field	100
	TROMBLEY HILL RD	5.5	67109					n/a	15035_TROMBLEY_HILL_RD_67109.1		not a real segment, GIS error, remove from hyde park database	0
	WHITCOMB ISLAND RD	3.2	72972	n	n	y	n	partially	15025_WHITCOMB_ISLAND_RD_72972.1		Poor conveyance on one side- needs ditch - road turnout right to stream sed can easily get in	61
	WHITCOMB ISLAND RD	8.4	72971	n	n	y	y	partially	15025_WHITCOMB_ISLAND_RD_72971.1	Trib goes through dw cvs	Not paved! Needs stone lined ditch on north sid, gravel berm north side; uphill dw cv crushed a bit	100



Town 1st 5 year cycle targets	RDFLNAME	Avg_ Road Gr	Segment D	crown issue	shoulder issue	swale issue	culvert issue	meets MRGP? (fully, partially, does not)	ID_Town_Rd	U_ST_CMNT	Comments	SHAPE_ Length
y	CRICKET HILL RD	4.0	28476	n	n	n	y	partially	15025 Cricket Hill Rd 6	Erosion around outlet		85
y	CRICKET HILL RD	5.4	28478	n	n	y	n	partially	15025 Cricket Hill Rd 8	Send from rd can drain to top of cv	Drainage well veg but not stone lined	100
y	CRICKET HILL RD	5.8	28472					unknown	15025 Cricket Hill Rd 2		Lump with seg 15	59
y	CRICKET HILL RD	6.0	28473	n	n	n	y	partially	15025 Cricket Hill Rd 3	Perched cv; erosion near outlet	Vegetated ditches	100
y	GARFIELD RD	2.9	101134	n	n	n	y	partially	15025 Garfield Rd 14		Dirt pile at cv inlet	100
y	GARFIELD RD	4.1	101121	n	n	y	n	partially	15025 Garfield Rd 1		Poor conveyance at drainage cv	100
y	GARFIELD RD	6.0	101137	n	y	n	n	partially	15025 Garfield Rd 17			100
y	GARFIELD RD	6.7	101135	n	y	n	n	partially	15025 Garfield Rd 15		Nice stone ditch on south side	100
y	GARFIELD RD	7.2	101143	n	n	y	y	does not	15025 Garfield Rd 23		Drainage cv needs outlet stab-causing gully, could use stone lined ditch	100
y	GARFIELD RD	9.9	101136	n	n	y	y	partially	15025 Garfield Rd 16	Rusty; perched, possible AOP issue; squashed	One conveyance sheet flow to stream	100
y	GARFIELD RD		101142	n	y	y	n	does not	15025 Garfield Rd 22		Large Berm! Gully down hill to floodplain access of nearby stream	109
y	GREEN RIVER DAM RD	2.5	105815	y	y	n	n	partially	15025 Green River Dam Rd 4		Stream close to rd	100
y	GREEN RIVER DAM RD	5.0	105813	n	n	y	n	partially	15025 Green River Dam Rd 2		Poor conveyance is turnout	59
y	GREEN RIVER DAM RD	6.6	105814	n	y	n	n	partially	15025 Green River Dam Rd 3		No issues, drains two different directions	100
y	TINGLE RD	5.5	185797	n	y	n	n	partially	15025 Tingle Rd 1		No ditches. 30% sheet flow. Adequately filtered.	100
y	W MAIN ST	4.8	193036	n	y	n	n	partially	15025 W Main St 1	Does not convey to streams directly	Some drainage to class 4 rd	100
y	W MAIN ST	12.2	193038	n	n	y	n	partially	15025 W Main St 3	Perched outlet; scour; stone apron	Driveway culvert conveyance poor up and down hill. Needs stonelined ditches	100
	BARNES RD	0.3	4571	n	n	n	n	fully	15025 Barnes Rd 1		Corn field conveyances	100
	BARNES RD	2.3	4572	n	y	n	y	partially	15025 Barnes Rd 2	Slightly perched, scour around inlet	Some erosion near st cv inlet	54
	BARNES RD	3.4	4581	n	n	n	n	fully	15025 Barnes Rd 11	Bridge crossing	Part of rd drains to south away from stream	100
	BARNES RD	4.0	4573	n	n	n	n	fully	15025 Barnes Rd 3		No issues	100
	BARNES RD	14.1	4582	n	y	y	n	does not	15025 Barnes Rd 12		Some grader berms on east side; needs stone lined ditches	100
	BEAM RD	0.9	6102					n/a	15025 Beam Rd 2		GIS error, not a real segment, part of Garfield Rd	4
	BEAM RD	1.2	6108	n	y	n	n	partially	15025 Beam Rd 8	Drains wetland to pond not really a stream cv	Could not find; some grader berm issues	100
	BEAM RD	3.0	6103	n	n	y	y	partially	15025 Beam Rd 3		Cv off of rd to south plugged mostly with sed may drain to drainages on paved rd, turn in next seg	100
	BEAM RD	3.3	6109	n	n	n	n	fully	15025 Beam Rd 9		Most of segment slopes away from conveyance and down other side towards the west; cv needs end tr	100
	BENSON RD	1.2	7873	n	n	n	n	fully	15025 Benson Rd 15	15inch		100
	BENSON RD	3.6	7872	n	n	y	n	partially	15025 Benson Rd 14	Need headers both ends	No issues, reshape grass swale	100
	BENSON RD	5.9	7871	n	n	y	n	partially	15025 Benson Rd 13		No issues, reshape grass swale	100
	BENSON RD	5.9	7870	n	n	y	y	does not	15025 Benson Rd 12		Some scour at xculvert inlet, need header, reshape grass swale	100
	BENSON RD	6.9	7868	n	n	y	y	does not	15025 Benson Rd 10		Xculvert needs header, reshape grass swale, add stone to steep swale	100
	BENSON RD	7.2	7867	y	y	y	n	partially	15025 Benson Rd 9		Reshape grass swale, minor shoulder berm, improve crown	100
	BENSON RD	7.4	7869	y	n	y	n	partially	15025 Benson Rd 11		Improve crown, reshape grass swale	100
	BLACK FARM RD	1.6	9414	n	n	n	y	partially	15025 Black Farm Rd 1	Some scour around culvert on ds end.	Some sediment from road getting into ds end of cv	100
	BLACK FARM RD	2.1	9415					n/a	15025 Black Farm Rd 2		See seg 6. Well vegetated to river, goes up to 6	43
	BLACK FARM RD	3.7	9416	n	n	n	y	partially	15025 Black Farm Rd 3	Perched, scour; needs header	Erosion around culvert and dep from rd runoff	100
	BLACK FARM RD	6.5	9420	n	n	n	n	fully	15025 Black Farm Rd 7	NA	Anything off segment drains into segment 5 or bp	100
	BROOK RD	0.6	13481	n	n	n	n	fully	15025 Brook Rd 15			100
	BROOK RD	1.0	13492					n/a	15025 Brook Rd 26		Could drain to next segment but no direct connection	100
	BROOK RD	1.1	13480	n	n	n	y	partially	15025 Brook Rd 14	At northern cv, not where vhd is, vhd wrong	Cv could use header; vhd wrong not a stream crossing	100
	BROOK RD	1.2	13493	n	n	n	n	fully	15025 Brook Rd 27		Did not look at cv outlet	100
	BROOK RD	1.3	13489	n	n	n	n	fully	15025 Brook Rd 23			100



Town 1st 5 year cycle targets	RDFLNAME	Avg_ Road Gr	Segment D	crown issue	shoulder issue	swale issue	culvert issue	meets MRGP? (fully, partially, does not)	ID_Town_Rd	U_ST_CMNT	Comments	SHAPE_ Length
	BROOK RD	1.3	13490	n	n	n	y	partially	15025_Brook_Rd_24	Needs header at outlet, sed pushed onto top of cv		100
	BROOK RD	1.4	13473	n	n	y	n	partially	15025_Brook_Rd_7	Good header but slumping from rd nearby cv		100
	BROOK RD	1.6	13483	n	n	n	n	fully	15025_Brook_Rd_17			100
	BROOK RD	1.7	13474	n	n	y	y	partially	15025_Brook_Rd_8		Seg to south, cows walked in ditch causing erosion, can drain to cv, needs new cv, rusted out	100
	BROOK RD	2.2	13472	n	n	n	y	partially	15025_Brook_Rd_6		Old farm access cv gone, now eroding into stream, cows can access stream, if will use need new cv	100
	BROOK RD	2.3	13482	n	n	n	y	partially	15025_Brook_Rd_16	Perched		100
	BROOK RD	2.5	13467	n	n	n	n	fully	15025_Brook_Rd_1			100
	BROOK RD	3.1	13468	n	n	n	y	partially	15025_Brook_Rd_2		Dirt pile near drainage cv inlet	77
	BROOK RD	3.4	13470	n	n	n	n	fully	15025_Brook_Rd_4			100
	BROOK RD	3.5	13478	n	n	y	n	partially	15025_Brook_Rd_12	Vhd in wrong place, slumped at header	One bare bottom ditch	100
	BROOK RD	3.7	13471	n	n	n	y	partially	15025_Brook_Rd_5		Dw cv needs replacement, cows trail along stream	100
	BROOK RD	4.1	13486	n	n	n	n	fully	15025_Brook_Rd_20			100
	BROOK RD	4.2	13479	n	n	n	n	fully	15025_Brook_Rd_13			100
	BROOK RD	4.5	13477	n	n	n	n	partially	15025_Brook_Rd_11		Stream does not cross seg, vhd in wrong place	100
	BROOK RD	4.7	13485	n	n	n	n	fully	15025_Brook_Rd_19			100
	BROOK RD	6.5	13488	n	n	n	n	fully	15025_Brook_Rd_22		Greater than five percent but no erosion present. No stone line ditch needed.	100
	BROOK RD	7.6	13469	n	y	n	n	partially	15025_Brook_Rd_3		Some rd shoulder erosion	100
	CLEVELAND CORNERS RD	1.2	23308	n	y	n	n	partially	15025_Cleveland_Corners_Rd_10		Grader berms but not a lot of erosion	100
	CLEVELAND CORNERS RD	2.2	23320	n	y	n	n	partially	15025_Cleveland_Corners_Rd_22		grader berm issues, almost whole seg, drains to wetland pond	100
	CLEVELAND CORNERS RD	2.4	23314	n	n	n	n	fully	15025_Cleveland_Corners_Rd_16		Most of seg drains to east away from trib	100
	CLEVELAND CORNERS RD	3.0	23302	n	n	n	n	fully	15025_Cleveland_Corners_Rd_4		Sed pushed off rd into ditch again, only 50% connected	100
	CLEVELAND CORNERS RD	3.8	23319	n	n	n	n	fully	15025_Cleveland_Corners_Rd_21	Drains wetland into pond, not really a stream cv	Wetland up and down stream	100
	CLEVELAND CORNERS RD	4.2	23301	n	n	n	y	partially	15025_Cleveland_Corners_Rd_3	Cv rotted out on us end, sed going into cv	Culvert needs header to prevent sed going in	100
	CLEVELAND CORNERS RD	5.0	23309	n	n	n	n	fully	15025_Cleveland_Corners_Rd_11	Bridge crossing; sed getting in a bit by br	Nearby cows	100
	CLEVELAND CORNERS RD	5.1	23325	n	n	y	n	partially	15025_Cleveland_Corners_Rd_27		Cows in buffer in stream! Should have stone ditch	100
	CLEVELAND CORNERS RD	5.4	23306	n	n	n	y	partially	15025_Cleveland_Corners_Rd_8	Perched;		100
	CLEVELAND CORNERS RD	5.5	23326	n	y	n	n	partially	15025_Cleveland_Corners_Rd_28		Lower shoulders	100
	CLEVELAND CORNERS RD	7.7	23323	n	n	y	y	does not	15025_Cleveland_Corners_Rd_25		Needs stone lined ditch, sed getting into drainage cv	65
	CLEVELAND CORNERS RD	8.0	23315	n	n	n	y	partially	15025_Cleveland_Corners_Rd_17	Drains wetland to wetland	Cv very rusted	100
	CLEVELAND CORNERS RD	8.7	23324	n	n	y	n	partially	15025_Cleveland_Corners_Rd_26		Needs stabilized ditches	100
	CLEVELAND CORNERS RD		23327	n	n	n	y	partially	15025_Cleveland_Corners_Rd_29	Needs headwall at outlet		130
	COLLINS POND RD	1.5	25028	n	y	n	n	partially	15025_Collins_Pond_Rd_4		Shave shoulder, ledge present	100
	COLLINS POND RD	1.6	25027	n	y	n	n	partially	15025_Collins_Pond_Rd_3		Shave shoulder	100
	COLLINS POND RD	2.0	25031	n	y	y	n	partially	15025_Collins_Pond_Rd_7		Shave shoulder install turnouts where possible	100
	COLLINS POND RD	4.9	25029	n	y	n	n	partially	15025_Collins_Pond_Rd_5		Shave shoulder one side	100
	COLLINS POND RD	5.4	25025	n	n	n	n	fully	15025_Collins_Pond_Rd_1			100
	COLLINS POND RD	5.4	25026	n	y	n	n	partially	15025_Collins_Pond_Rd_2		Shave shoulder, sunken road	100
	COLLINS POND RD	6.0	25030	y	y	n	n	partially	15025_Collins_Pond_Rd_6		Crown rd, shave shoulder	98
	COOPER HILL RD	0.4	25885	n	n	n	n	fully	15025_Cooper_Hill_Rd_10		Ponding from wetland in ditch, stream begins and runs in ditch along rd	100
	COOPER HILL RD	0.4	25886	n	n	n	y	partially	15025_Cooper_Hill_Rd_11	gets wetland drainage both sides perched scour	Wetland drainage turns to stream, enters cv from both sides	100
	COOPER HILL RD	1.0	25892	n	n	n	n	fully	15025_Cooper_Hill_Rd_17			100
	COOPER HILL RD	1.5	25883	n	n	n	n	fully	15025_Cooper_Hill_Rd_8			100
	COOPER HILL RD	2.2	25893	n	n	n	y	partially	15025_Cooper_Hill_Rd_18	No head wall, perched, scour pool		100



Town 1st 5 year cycle targets	RDFLNAME	Avg_ Road Gr	Segment D	crown issue	shoulder issue	swale issue	culvert issue	meets MRGP? (fully, partially, does not)	ID_Town_Rd	U_ST_CMNT	Comments	SHAPE_ Length
	COOPER HILL RD	2.7	25895	n	n	n	y	partially	15025 Cooper Hill Rd 20	Cv bent, water flows under cv needs new one	Ashes dumped on banks	100
	COOPER HILL RD	4.0	25894	n	n	n	n	fully	15025 Cooper Hill Rd 19			100
	COOPER HILL RD	4.9	25884	n	y	n	y	partially	15025 Cooper Hill Rd 9	Perched	Cv needs end treatment ds end, minor berming	100
	Cooper Hill Rd		25885	n	y	y	n	does not	15025 Cooper Hill Rd 12		ditch flow in this segment enters cv in next segment, berming causing puddling on rd. west side	106
	Cooper Hill Rd		25884	n	n	n	n	fully	15025 Cooper Hill Rd 7		Recent stone lined ditch work and new cross culvert	102
	CRAFTSBURY RD	3.4	27845	n	y	n	n	partially	15025 Craftsbury Rd 3		Shave shoulder	100
	CRAFTSBURY RD	4.3	27843	n	y	n	n	partially	15025 Craftsbury Rd 1		Shave shoulder	100
	CRAFTSBURY RD	5.1	27844	n	y	n	n	partially	15025 Craftsbury Rd 2		Shave shoulder	64
	CRICKET HILL RD	6.0	28477	n	y	n	n	partially	15025 Cricket Hill Rd 7	NA	No stream crossing; vhd wrong; sheet flow to grass	100
	DAVIS HILL RD	2.4	31308	n	n	y	n	partially	15025 Davis Hill Rd 7		Shallow ditching; could be larger	100
	DAVIS HILL RD	3.0	31307	n	y	y	n	does not	15025 Davis Hill Rd 6		Needs lower shoulder on east side for about 100' ; shallow ditching -could be bigger;	100
	DEPOT ST EXT	6.1	32509					n/a	15025 Depot St Ext 2		Included with depot street ex. 1; No longer connected as per LCCD 2016 project	37
	DIGGINS RD	0.0	33034	n	n	n	n	fully	15025 Diggins Rd 3		No significant issues	100
	DIGGINS RD	0.1	33033	n	n	n	n	fully	15025 Diggins Rd 2		No significant issues, short segment	43
	DIGGINS RD	0.9	33035	n	y	y	n	does not	15025 Diggins Rd 4		Need combo of shoulder shave with longer swale and turnouts	100
	DIGGINS RD	12.9	33036	y	n	y	n	does not	15025 Diggins Rd 5		Need to fix crown and Swales with turnouts	100
	DIGGINS RD	15.9	33032					n/a	15025 Diggins Rd 1		Not a town road, state forest road, also wrong class	100
	FROST RD	2.6	100162					n/a	15025 Frost Rd 2		not a road, is driveway	32
	FROST RD	4.0	100161	n	n	n	n	fully	15025 Frost Rd 1	Box cv		100
	FROST RD	8.2	100163	n	n	n	n	fully	15025 Frost Rd 3			100
	GARFIELD CROSSROAD	3.3	101113	n	n	y	n	partially	15025 Garfield Crossroad 2	Us of cv wetland drainage; dr cv outlet here?	Western side of stream right near rd and conveyance not stable; cows upstream	58
	GARFIELD CROSSROAD	3.8	101114	y	y	n	n	partially	15025 Garfield Crossroad 3		Most drains away from stream; grader berms and poor crowning	100
	GARFIELD CROSSROAD	5.7	101112	n	n	n	n	fully	15025 Garfield Crossroad 1		Dr cv could be at headwaters to something	100
	GARFIELD RD	0.9	101125	n	n	n	n	fully	15025 Garfield Rd 5		Drains to wetland; southern cv no longer there, must have put in new one	100
	GARFIELD RD	0.9	101124	n	n	n	n	fully	15025 Garfield Rd 4		Drains to wetland	100
	GARFIELD RD	0.9	101185					n/a	15025 Garfield Rd 65			100
	GARFIELD RD	1.1	101146	n	n	n	n	fully	15025 Garfield Rd 26			100
	GARFIELD RD	1.1	101123	n	n	n	n	fully	15025 Garfield Rd 3		Road goes through wetland	100
	GARFIELD RD	1.3	101164					n/a	15025 Garfield Rd 44			100
	GARFIELD RD	1.5	101145	n	n	y	y	does not	15025 Garfield Rd 25		Install culvert header fix gully shoulder	100
	GARFIELD RD	1.6	101122	n	n	n	y	partially	15025 Garfield Rd 2	Dented at outlet and rusty; needs end treatments		100
	GARFIELD RD	1.8	101192	n	y	n	n	partially	15025 Garfield Rd 72		Shave shoulder	100
	GARFIELD RD	2.0	101165					n/a	15025 Garfield Rd 45			100
	GARFIELD RD	2.4	101132					n/a	15025 Garfield Rd 12		No drainage connection	100
	GARFIELD RD	3.0	101186	n	y	n	n	partially	15025 Garfield Rd 66		Shave shoulder	100
	GARFIELD RD	3.3	101133					n/a	15025 Garfield Rd 13		Stone line ditching at south end of segment start	100
	GARFIELD RD	4.4	101153	n	n	y	n	partially	15025 Garfield Rd 33		Install ditch one side	100
	GARFIELD RD	4.6	101155	n	y	y	n	does not	15025 Garfield Rd 35		Shave shoulder, ditch one side with turnout	100
	GARFIELD RD	4.7	101154	n	y	n	y	does not	15025 Garfield Rd 34		Shave shoulder both sides, install culvert header both culverts	100
	GARFIELD RD	4.8	101156	n	n	n	n	fully	15025 Garfield Rd 36		No issues	100
	GARFIELD RD	5.0	101157	n	n	n	n	fully	15025 Garfield Rd 37		No significant issue	100
	GARFIELD RD	6.2	101191	n	y	n	n	partially	15025 Garfield Rd 71		Shave shoulder	100
	GARFIELD RD	7.2	101150	n	y	n	y	does not	15025 Garfield Rd 30		Install stream culvert header both ends, shave shoulder both sides,	100



Town 1st 5 year cycle targets	RDFLNAME	Avg_ Road Gr	Segment D	crown issue	shoulder issue	swale issue	culvert issue	meets MRGP? (fully, partially, does not)	ID_Town_Rd	U_ST_CMNT	Comments	SHAPE_ Length
	GARFIELD RD	8.6	101167	n	n	y	n	partially	15025 Garfield Rd 47		Needs stone line ditch	100
	GARFIELD RD	11.2	101149	n	y	y	n	does not	15025 Garfield Rd 29		Install ditch both sides, shave shoulder both sides	100
	GARFIELD RD		101141	n	n	n	y	partially	15025 Garfield Rd 21	1 undersized	erosion near stream cv to east, erosion near cv outlet	90
	GREEN RIVER DAM RD	0.2	105825	n	n	n	n	fully	15025 Green River Dam Rd 14			100
	GREEN RIVER DAM RD	0.7	105823	n	n	n	n	fully	15025 Green River Dam Rd 12			100
	GREEN RIVER DAM RD	0.8	105826	n	n	n	n	fully	15025 Green River Dam Rd 15	Na	Dr cv has channel at outlet but not inlet	100
	GREEN RIVER DAM RD	0.8	105822	n	n	n	n	fully	15025 Green River Dam Rd 11		Some spots close to stream	100
	GREEN RIVER DAM RD	1.1	105819	n	n	n	n	fully	15025 Green River Dam Rd 8		No issues, far from stream	100
	GREEN RIVER DAM RD	1.1	105821	n	n	y	n	partially	15025 Green River Dam Rd 10		Rd embankment eroding near stream	100
	GREEN RIVER DAM RD	1.1	105824	n	n	n	y	partially	15025 Green River Dam Rd 13	Could use end treatments and outlet stab.		100
	GREEN RIVER DAM RD	2.7	105817	n	n	n	y	partially	15025 Green River Dam Rd 6		Dr cv bringing Sed into stream	100
	GREEN RIVER DAM RD	3.3	105818	n	n	n	n	fully	15025 Green River Dam Rd 7		Stream close to rd, no ditches but not much room for them	100
	GREEN RIVER DAM RD	4.0	105820	n	n	n	n	fully	15025 Green River Dam Rd 9		No issues	100
	GREEN RIVER DAM RD	4.6	105816	n	n	n	y	partially	15025 Green River Dam Rd 5		Tree fell on dr cv; needs header	100
	GREEN RIVER DAM RD	8.1	105812					n/a	15025 Green River Dam Rd 1		not a road, Private Dam access road	100
	GREEN RIVER DAM RD		105830	n	n	y	y	does not	15025 Green River Dam Rd 17	undersized double culvert, needs header at outlet	Steep, needs stone lined ditches, rill erosion both sides, rosses stream	91
	GREEN RIVER DAM RD		105828	n	y	y	n	does not	15025 Green Rvier Dam Rd 16		Steep, needs stone lined ditches, rd shoulder rill erosion near stream	123
	GRIMES RD	1.0	106363	n	n	y	n	partially	15025 Grimes Rd 2		lump with segment 3 to east	20
	GRIMES RD	1.9	106365	n	n	n	y	partially	15025 Grimes Rd 4		Cv needs headers	100
	GRIMES RD	2.1	106364	n	n	y	n	partially	15025 Grimes Rd 3	0	Some erosion in ditch before hitting road drainage culvert	100
	HOULE RD	3.9	114632	n	n	n	y	partially	15025 Houle Rd 1		Drainage culvert drains to pond? Cv needs header on outlet	100
	JONES RD	0.4	118240	n	n	y	y	partially	15025 Jones Rd 17	Stream ditch close to rd Need deeper ditch		100
	JONES RD	0.9	118243	n	n	n	n	fully	15025 Jones Rd 20	St cv just outside segment too		100
	JONES RD	1.0	118225	n	n	n	n	fully	15025 Jones Rd 2	Cv in segment at start of jones rd. Not mapped	Start of segment is paved. Rest is gravel	95
	JONES RD	1.2	118242	n	n	n	n	fully	15025 Jones Rd 19			100
	JONES RD	1.2	118245	n	n	n	y	partially	15025 Jones Rd 22	St cv runs through farmland. Stream not fencedoff		100
	JONES RD	1.5	118227	n	n	n	n	fully	15025 Jones Rd 4			100
	JONES RD	1.8	118244	n	n	n	n	fully	15025 Jones Rd 21			100
	JONES RD	1.8	118259	n	y	n	y	partially	15025 Jones Rd 36	Perched, needs header at outlet	Slight grader berm	100
	JONES RD	2.0	118260	n	n	n	n	fully	15025 Jones Rd 37	Rock slab underneath outlet helping aop		100
	JONES RD	2.2	118261	y	n	n	n	partially	15025 Jones Rd 38		Could be better crowned	100
	JONES RD	2.5	118241	n	n	y	n	partially	15025 Jones Rd 18		Sheet flow one side of rd ditch to stream down rd on one side	100
	JONES RD	2.8	118258	n	n	n	n	fully	15025 Jones Rd 35		No issues	100
	JONES RD	3.9	118237	n	n	n	n	fully	15025 Jones Rd 14	St cv at ends of segment		100
	JONES RD	4.1	118249	n	n	n	n	fully	15025 Jones Rd 26		No issues	100
	JONES RD	4.2	118257	n	n	n	n	fully	15025 Jones Rd 34		Near wetland but no direct connection to it; just sheet flow	100
	JONES RD	4.6	118250	n	n	n	y	partially	15025 Jones Rd 27	Perched, needs header	Dw cv filled in; most of seg drains away from trib; segment to south is hyd. connected; dr cv rusty	100
	JONES RD	5.6	118236	n	n	n	n	fully	15025 Jones Rd 13		Stream culvert at end of segment	100
	JONES RD	6.2	118228	n	n	n	n	fully	15025 Jones Rd 5	Large stream culvert/bridge in segment		100
	Jones Rd		118238	n	n	n	n	fully	15025 Jones Rd 15			106
	Jones Rd		118239	n	n	n	y	partially	15025 Jones Rd 16	one st cv needs header at outlet	Erosion at st cv outlet	94
	Jones Road		118251	n	n	n	n	fully	15025 Jones Rd 28			107



Town 1st 5 year cycle targets	RDFLNAME	Avg_ Road Gr	Segment D	crown issue	shoulder issue	swale issue	culvert issue	meets MRGP? (fully, partially, does not)	ID_Town_Rd	U_ST_CMNT	Comments	SHAPE_ Length
	LANGDELL RD	2.5	123075	n	y	n	n	partially	15025_Langdell_Rd_1		Berm. Need to cut down rd shoulders to allow drainage and sheet flow	100
	LONGMORE HILL RD	2.2	126663	n	n	n	y	partially	15025_Longmore_Hill_Rd_16	E one very rusted & needs header	Wetland pond at us end of w cv; e cv very rusted & no buffer us in yard.	100
	LONGMORE HILL RD	3.5	126662	n	n	n	y	partially	15025_Longmore_Hill_Rd_15		Needs new dr cv	100
	LONGMORE HILL RD	8.1	126648	y	y	y	n	does not	15025_Longmore_Hill_Rd_1		Large swale next to rd but rd not draining well to it. Needs stone lined ditches. Field access.	100
	MARCOUX RD	3.8	130176	n	n	n	n	fully	15025_Marcoux_Rd_9	NA	Drainage to wetland area; well vegetated	98
	MARCOUX RD	4.0	130175	n	n	n	n	fully	15025_Marcoux_Rd_8	Wetland cv not stream	Well vegetated; no stone line but not really neede	100
	MCFARLANE RD	0.3	131694	n	y	n	n	partially	15025_Mcfarlane_Rd_7		High rd shoulder wall near farm field	100
	MCFARLANE RD	0.7	131693	n	n	y	y	does not	15025_Mcfarlane_Rd_6	Needs header	Cv is conveyance cv, inlet area unstable due to field runoff/culvert installation	100
	MCFARLANE RD	1.9	131688	n	y	n	n	partially	15025_Mcfarlane_Rd_1		Not near conveyance, could not find cv outlet; sides need shaving	100
	MCKINSTRY HILL RD	0.6	131925	n	n	n	n	fully	15025_Mckinstry_Hill_Rd_37			100
	MCKINSTRY HILL RD	0.8	131932	n	n	n	n	fully	15025_Mckinstry_Hill_Rd_44		No significant issues	100
	MCKINSTRY HILL RD	1.0	131926	n	n	n	n	fully	15025_Mckinstry_Hill_Rd_38		No issues	100
	MCKINSTRY HILL RD	1.5	131933	n	n	n	n	fully	15025_Mckinstry_Hill_Rd_45		No significant issues	100
	MCKINSTRY HILL RD	1.5	131934	n	n	n	y	fully	15025_Mckinstry_Hill_Rd_46		No significant issues , install culvert header	100
	MCKINSTRY HILL RD	2.0	131892	n	n	n	n	fully	15025_Mckinstry_Hill_Rd_4		No significant issues	100
	MCKINSTRY HILL RD	2.4	131924					n/a	15025_Mckinstry_Hill_Rd_36		No issues	100
	MCKINSTRY HILL RD	2.6	131890	n	n	n	n	fully	15025_Mckinstry_Hill_Rd_2		No significant issues	100
	MCKINSTRY HILL RD	2.8	131891	n	y	n	n	partially	15025_Mckinstry_Hill_Rd_3		No significant issues , shave shoulder	100
	MCKINSTRY HILL RD	4.3	131915					n/a	15025_Mckinstry_Hill_Rd_27			100
	MCKINSTRY HILL RD	5.9	131916					n/a	15025_Mckinstry_Hill_Rd_28			100
	MCKINSTRY HILL RD	5.9	131911	n	n	y	y	does not	15025_Mckinstry_Hill_Rd_23		One Dw cv is at old trail-not a Class 4 Rd! Erosion and slumping into ditch, should be stone lined	100
	MCKINSTRY HILL RD	10.1	131912	n	n	y	y	partially	15025_Mckinstry_Hill_Rd_24	Very perched, stone splash area, bottom rusty	Rd ditch turns into little trib, needs stone, south of st cv ditch is filled in-dig out	100
	MILL ST	2.8	133784					n/a	15025_Mill_St_2	NA	Paved not gravel;shoulder erosion into dw then st; no longer connected as per LCCD 2016 project	63
	MOREY RD	0.6	135370					n/a	15025_Morey_Rd_2		Included with adjacent segment 3	41
	MOREY RD	0.8	135371					n/a	15025_Morey_Rd_3	Not a stream cv- rd cv from gully-dry	Gully remediated; no longer connected as per LCCD 2016 project	100
	MOREY RD	3.4	135373	n	n	n	n	fully	15025_Morey_Rd_5			100
	MOURNING DOVE LN	2.9	137006					n/a	15025_Mourning_Dove_Ln_3		Drains in opposite direction of trib	100
	MOURNING DOVE LN	3.6	137004	n	y	y	y	does not	15025_Mourning_Dove_Ln_1	Plugged a bit us with garbage, ds end needs heade	Some grader berms; drainage cv plugged at outlet with branches & garbage	100
	NOYES FARM RD	1.4	142248	n	n	n	n	fully	15025_Noyes_Farm_Rd_4		Most of rd slopes to east away from stream	100
	NOYES FARM RD	4.6	142247	n	n	n	y	partially	15025_Noyes_Farm_Rd_3	Inlet area has pvc on stream bed; water from pond	Vhd wrong stream at cv point; limited hydro connection; beyond stream 2 conveyances go W	100
	PAROT RD	5.2	147875	n	y	n	n	partially	15025_Parot_Rd_2		Shoulder berm, rill forming	100
	POWER PLANT RD	5.7	153232	y	n	n	y	partially	15025_Power_Plant_Rd_2		Lump with other segment power plant rd 1	47
	POWER PLANT RD	5.9	153231	y	n	n	y	partially	15025_Power_Plant_Rd_1		Rill erosion in rd and an undersized road drainage culvert near pond near power plant	100
	PUCKERBRUSH WEST RD	1.2	153783	n	n	n	y	partially	15025_Puckerbrush_West_Rd_3		Dw cv a little rusted & crushed	100
	PUCKERBRUSH WEST RD	6.7	153784	n	n	y	y	partially	15025_Puckerbrush_West_Rd_4		New driveway near stream, has cv but because no headers eroding into ditch, poor cv on w side of dw	100
	RICHARDSON RD	3.3	156914	n	y	n	y	partially	15025_Richardson_Rd_4		Cv bottom ripped; shave shoulders	100
	RICHARDSON RD	4.4	156918	n	n	n	n	fully	15025_Richardson_Rd_8		Good conveyance zones, conveyance cv, need to size per da	100
	RICHARDSON RD	4.9	156911	y	y	n	n	does not	15025_Richardson_Rd_1		High shoulders, not crowned, ditch on north side, could shave & sheet flow to south	100



Town 1st 5 year cycle targets	RDFLNAME	Avg_ Road Gr	Segment D	crown issue	shoulder issue	swale issue	culvert issue	meets MRGP? (fully, partially, does not)	ID_Town_Rd	U_ST_CMNT	Comments	SHAPE_ Length
	RICHARDSON RD	5.0	156917	n	y	n	n	partially	15025_Richardson_Rd_7		Raise rd a bit; shave off shoulder	100
	RICHARDSON RD	5.4	156913	n	n	n	n	fully	15025_Richardson_Rd_3		Cv small but no problems	100
	RICHARDSON RD	7.1	156916	n	n	y	n	partially	15025_Richardson_Rd_6		needs ditch on south side; erosion present	100
	RICHARDSON RD	8.9	156912					n/a	15025_Richardson_Rd_2		Driveway, not a road	39
	RICHARDSON RD	10.9	156915	n	n	n	n	fully	15025_Richardson_Rd_5			100
	SILVER RIDGE RD	1.0	167270	n	n	n	y	partially	15025_Silver_Ridge_Rd_16	Small for st cv. Needs stabilization.	Slumping at stream culvert. Perched	100
	SILVER RIDGE RD	4.1	167268	n	n	n	n	fully	15025_Silver_Ridge_Rd_14	Needs better head wall treatment		100
	SILVER RIDGE RD	4.7	167257	n	y	y	n	does not	15025_Silver_Ridge_Rd_3	Not a cv	Bridge crossing; sed going in via br; turnout poorly conveyed, created berm	100
	SILVER RIDGE RD	5.1	167258	n	y	n	n	partially	15025_Silver_Ridge_Rd_4		Some minor grader berm and rd shoulder erosion	100
	SILVER RIDGE RD	5.3	167269	n	n	n	n	fully	15025_Silver_Ridge_Rd_15		Conveys to 2 streams, no issues	100
	SLOBODA RD	1.4	168434	n	n	n	n	fully	15025_Sloboda_Rd_1	Double cv very large 3-4'?		100
	SLOBODA RD	5.0	168436	n	n	n	n	fully	15025_Sloboda_Rd_3			100
	TENNEY HILL RD	4.1	177476	n	n	n	n	fully	15025_Tenney_Hill_Rd_9		Dry at inlet, drains upstream pond into another pond	100
	TH 50	1.2	182972					n/a	15025_Th_50_2			6
	TH 50	5.4	182973					n/a	15025_Th_50_3		Not a class 3 or 4 rd. It's a field!	100
	THOMPSON HILL RD	6.5	185094	n	n	n	n	fully	15025_Thompson_Hill_Rd_3	Large stream cv/bridge in segment	Pavement starts at stream crossing	100
	WHITAKER RD	0.1	197330	n	n	n	n	fully	15025_Whitaker_Rd_5		Half drains to east away from stream	100
	WHITAKER RD	1.3	197326	n	n	n	y	partially	15025_Whitaker_Rd_1		Undersized rd drainage culvert near stop sign. Stone header collapsed	100
	WHITAKER RD	2.6	197329	n	n	n	y	partially	15025_Whitaker_Rd_4	Stream not running; needs end treatment	Erosion near rd drainage culvert	100
	WHITAKER RD	3.4	197334	n	n	n	y	partially	15025_Whitaker_Rd_9	Needs end treatments; plugged on us end, perched	Cows in vicinity ; fenced out of stream but still close	100
	WHITAKER RD	3.7	197335	n	n	y	n	partially	15025_Whitaker_Rd_10		Poor conveyance from south side; sediment off rd; cows in conveyance zone too	100
	WHITCOMB ISLAND RD	6.0	197394	n	y	n	n	partially	15025_Whitcomb_Island_Rd_1		Slight grader berm, vhd wrong. Trib on other side but just a tiny trickle, no defined channel	100



Town 1st 5 year cycle targets	RDFLNAME	Avg_ Road Gr	SegmentI D	meets MRGP? (fully, partially, does not)	ID_Town_Rd	Comments	SHAPE_ Length
	BENSON RD	4.3	7866	fully	15025_Benson_Rd_8	No mjr issues, continue practices from prv seg #9 class3	100
	BENSON RD	4.6	7865	n/a	15025_Benson_Rd_7	Not a road	100
	BENSON RD	5.0	7864	n/a	15025_Benson_Rd_6	Not a road	100
	BENSON RD	5.2	7861	n/a	15025_Benson_Rd_3	Not a road	100
	BENSON RD	8.1	7863	n/a	15025_Benson_Rd_5	Not a road	100
	BENSON RD	8.4	7862	n/a	15025_Benson_Rd_4	Not a road	100
	BENSON RD	8.5	7860	n/a	15025_Benson_Rd_2	Not a road	17
	BOURDEAU RD	2.5	11384	fully	15025_Bourdeau_Rd_4	No gully erosion	100
	BOURDEAU RD	3.3	11383	fully	15025_Bourdeau_Rd_3	No gully erosion , part of segment is driveway	100
	DIGGINS RD	2.1	33043	fully	15025_Diggins_Rd_12	No issues, shave shoulder	100
	DIGGINS RD	3.0	33045	fully	15025_Diggins_Rd_14	No issues	100
	DIGGINS RD	3.8	33044	fully	15025_Diggins_Rd_13	No issues	100
	DIGGINS RD	4.3	33052	fully	15025_Diggins_Rd_21	No issues	100
	DIGGINS RD	7.1	33046	fully	15025_Diggins_Rd_15	No issues	100
	DIGGINS RD	9.5	33042	partially	15025_Diggins_Rd_11	Some ditch slumping and gully in ditch	100
	DIGGINS RD	10.8	33047	fully	15025_Diggins_Rd_16	No issues	100
	DIGGINS RD	12.4	33040	partially	15025_Diggins_Rd_9	Some ditch slumping and gully in ditch	100
	DIGGINS RD	12.6	33041	partially	15025_Diggins_Rd_10	Some ditch slumping and gully in ditch	100
	FLEURY RD	0.8	98534	unknown	15025_Fleury_Rd_2		90
	FLEURY RD	2.5	98535	unknown	15025_Fleury_Rd_3		100
	JANE ANN RD	9.4	116760	n/a	15025_Jane_Ann_Rd_6	Not a road	100
	JANE ANN RD	11.2	116755	n/a	15025_Jane_Ann_Rd_1	Not a road, forest	100
	JANE ANN RD	12.7	116761	n/a	15025_Jane_Ann_Rd_7	Not a road	100
	JANE ANN RD	13.2	116763	n/a	15025_Jane_Ann_Rd_9	Not a road	100
	JANE ANN RD	18.8	116762	n/a	15025_Jane_Ann_Rd_8	Not a road	100
	JANE ANN RD	19.0	116759	n/a	15025_Jane_Ann_Rd_5	Not a road	100
	MOREY RD	3.0	135374	fully	15025_Morey_Rd_6	No issues	100
	TEN BENDS DR	7.5	177401	n/a	15025_Ten_Bends_Dr_1	Not a road	42
	TH 31	2.0	180839	n/a	15025_Th_31_5	Not a road	101
	TH 31	4.8	180840	n/a	15025_Th_31_6	Not a road	100
	TH 50	4.5	182986	n/a	15025_Th_50_16	Does not drain to stream. Ends at dw not connected	100
	TH 50	6.7	182979	n/a	15025_Th_50_9	Not a road	100
	TH 50	7.1	182984	n/a	15025_Th_50_14	Not a road	100
	TH 50	7.2	182980	n/a	15025_Th_50_10	Not a road	86
	TH 50	7.7	182981	n/a	15025_Th_50_11	Not a road	100
	TH 50	8.2	182985	n/a	15025_Th_50_15	Road does not continue to stream; ends at trailer not connected	100
	TH 50	10.3	182978	n/a	15025_Th_50_8	Not a road	100
	TH 62	8.0	183791	n/a	15025_Th_62_1	Not a road	80
	TH 72	4.6	184175	n/a	15025_Th_72_1	Not a road	93
	TH 73	17.7	184184	n/a	15025_Th_73_1	Not a road	81
	TH 76	3.1	184229	n/a	15025_Th_76_4	No class 4 rd access here. Private drives only	100
	TH 76	3.5	184228	n/a	15025_Th_76_3	No class 4 rd access here. Only private drives	100
	TH 76	4.3	184226	n/a	15025_Th_76_1	No class 4 rd here. Just private driveways.	100
	TH 76	5.7	184227	n/a	15025_Th_76_2	No class 4 rd access here. Only private drives	92
	TH 76	6.5	184230	n/a	15025_Th_76_5	No class 4 rd here. Private driveways only.	100
	THOMPSON HILL RD	2.8	185100	n/a	15025_Thompson_Hill_Rd_9	Not a road	100
	THOMPSON HILL RD	3.8	185098	n/a	15025_Thompson_Hill_Rd_7	Not a road	100
	THOMPSON HILL RD	4.1	185097	n/a	15025_Thompson_Hill_Rd_6	Not a road, in Eden?	35
	THOMPSON HILL RD	5.7	185099	n/a	15025_Thompson_Hill_Rd_8	Not a road	100

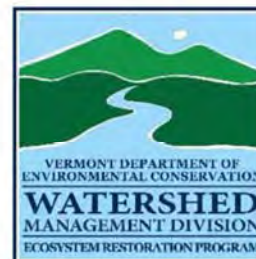


Town 1st 5 year cycle targets	RDFLNAME	Avg_ Road Gr	SegmentID	meets MRGP? (fully, partially, does not)	ID_Town_Rd	Comments	SHAPE_ Length
	WAITE PLACE RD	6.0	193516	n/a	15025_Waite_Place_Rd_1	Not a road, in Eden?	0
	WEBSTER RD	1.0	195287	n/a	15025_Webster_Rd_17	Not a road	100
	WEBSTER RD	1.1	195289	n/a	15025_Webster_Rd_19	Not a road	100
	WEBSTER RD	1.3	195288	n/a	15025_Webster_Rd_18	Not a road	100
	WEBSTER RD	2.0	195281	fully	15025_Webster_Rd_11	No issues	100
	WEBSTER RD	2.4	195271	fully	15025_Webster_Rd_1	No issues	100
	WEBSTER RD	4.2	195292	fully	15025_Webster_Rd_22	No issues	100
	WEBSTER RD	5.2	195291	fully	15025_Webster_Rd_21	No gully erosion, messy logging	100
	WOODLANDS LN	1.7	200337	fully	15025_Woodlands_Ln_5	Incorrect road name "railroad dr", no issues	100
	WOODLANDS LN	2.0	200336	fully	15025_Woodlands_Ln_4	Incorrect road name "railroad dr", no issues	100
	WOODLANDS LN	2.1	200338	fully	15025_Woodlands_Ln_6	Incorrect road name "railroad dr", no issues	100
	WOODLANDS LN	3.5	200333	n/a	15025_Woodlands_Ln_1	Not a road	100
	WOODLANDS LN	5.4	200334	n/a	15025_Woodlands_Ln_2	Incorrect road name "railroad dr", not connected	99
	WOODLANDS LN	5.5	200335	fully	15025_Woodlands_Ln_3	Incorrect road name "railroad dr", no issues	100
	ZACK WOODS RD	1.8	201470	fully	15025_Zack_Woods_Rd_7	Minor Erosion due to no culvert	100
	ZACK WOODS RD	2.8	201469	fully	15025_Zack_Woods_Rd_6	No issues	100



# Vermont Better Backroads – Road Erosion Inventory

## Erosion Solutions – Quick Reference Guide





## Table of Contents

### **Design Details from the Better Backroads Manual:**

#### *Bank Stabilization Solutions*

*Pages 3 – 5*

#### *Culvert Solutions*

*Page 6*

#### *Ditch Stabilization Solutions*

*Page 7*

#### *Velocity Control Solutions*

*Page 8-11*

### **Design Details from Others:**

#### *Ditch / Swale Erosion Control Solutions*

*Pages 12 – 13*

#### *Level Spreader*

*Page 14*

#### *Stone Check Dam*

*Page 15*

#### *Culvert Header*

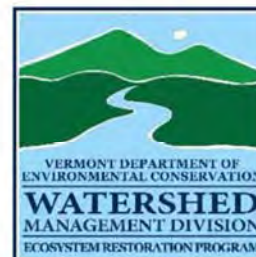
*Page 16*

#### *Culvert Discharge Stabilization*

*Page 17*

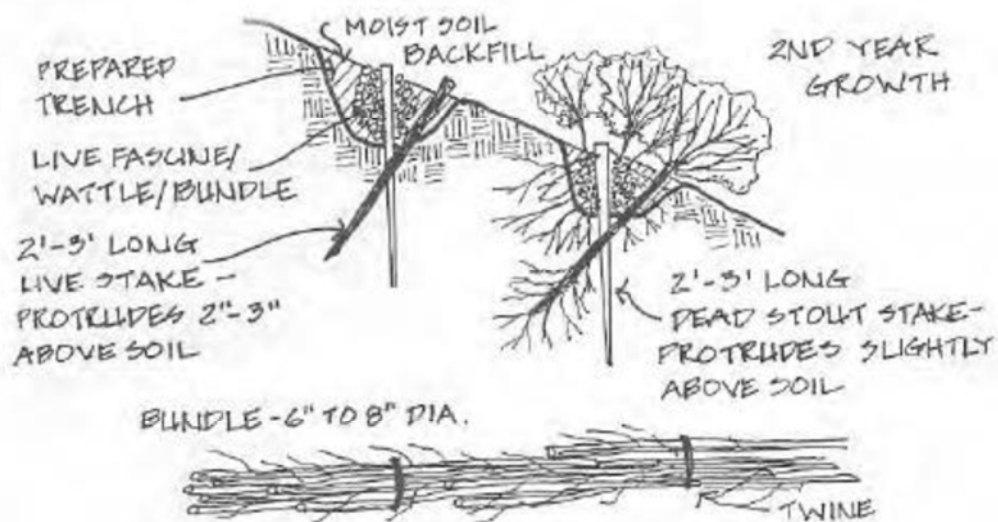
#### *Typical Road Crown – Cross Section*

*Page 18*



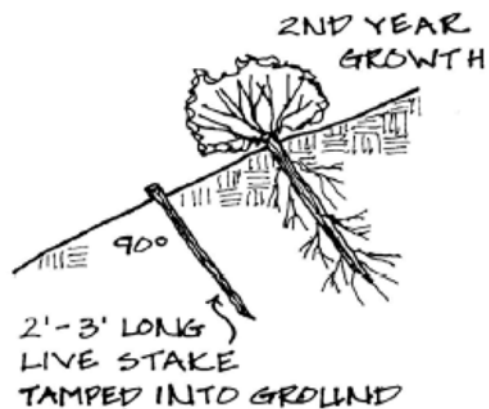


# Bank Stabilization Solutions – Better Backroads Manual



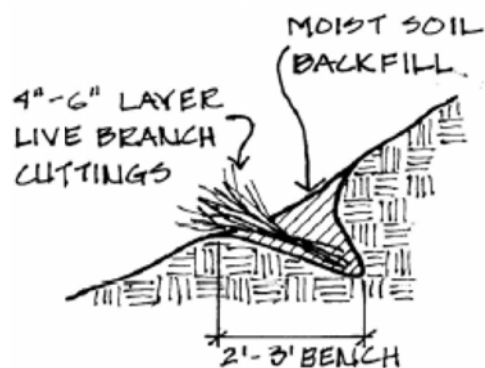
## LIVE FASCINES/WATTLES/BUNDLES

(BBR Manual – pg. 35)



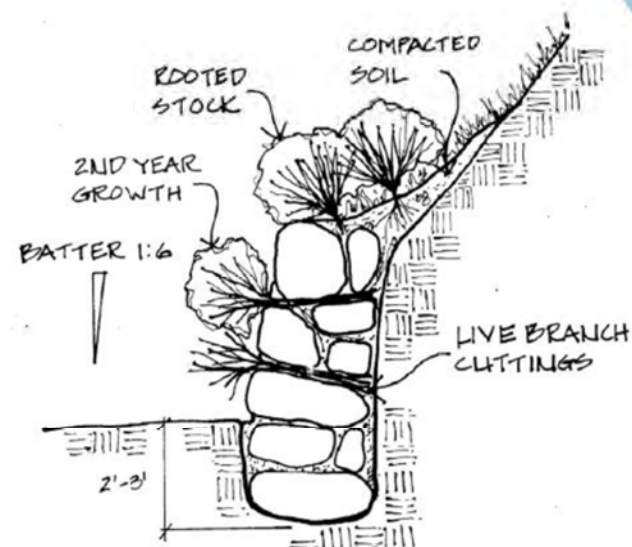
## LIVE STAKES

(BBR Manual – pg. 36)

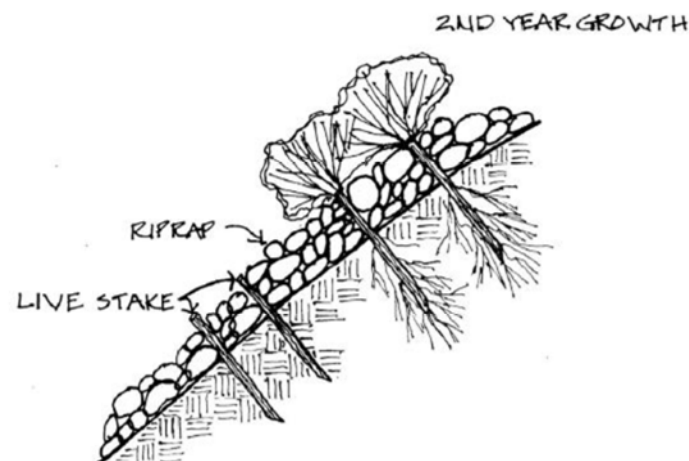


## BRUSHLAYERING

(BBR Manual – pg. 36)



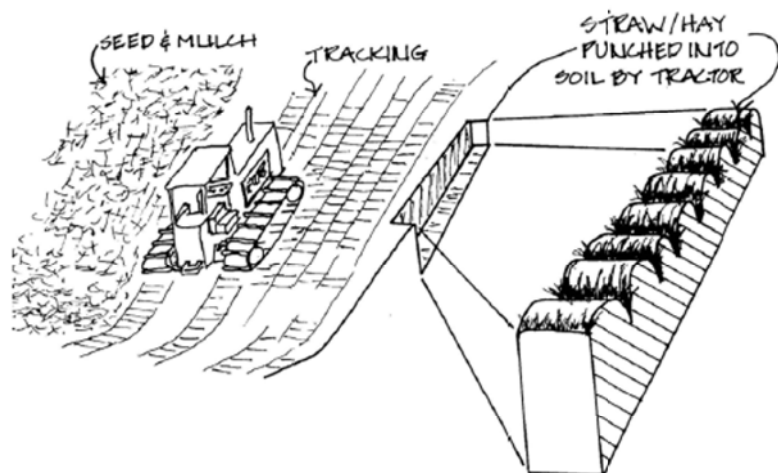
## VEGETATED ROCK WALL (BBR Manual – pg. 44)



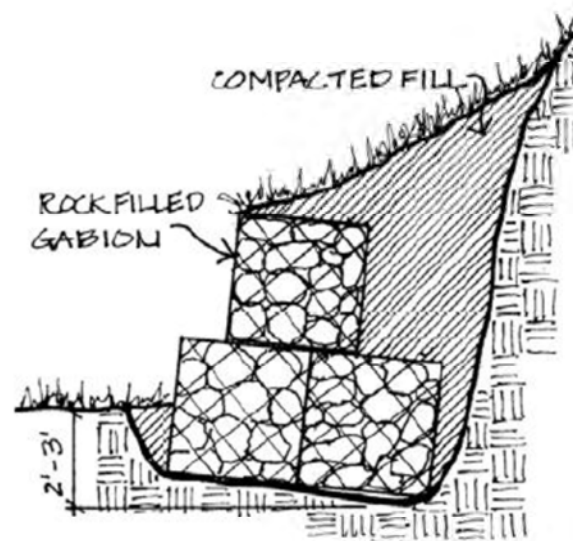
## VEGETATED RIPRAP (BBR Manual – pg. 45)



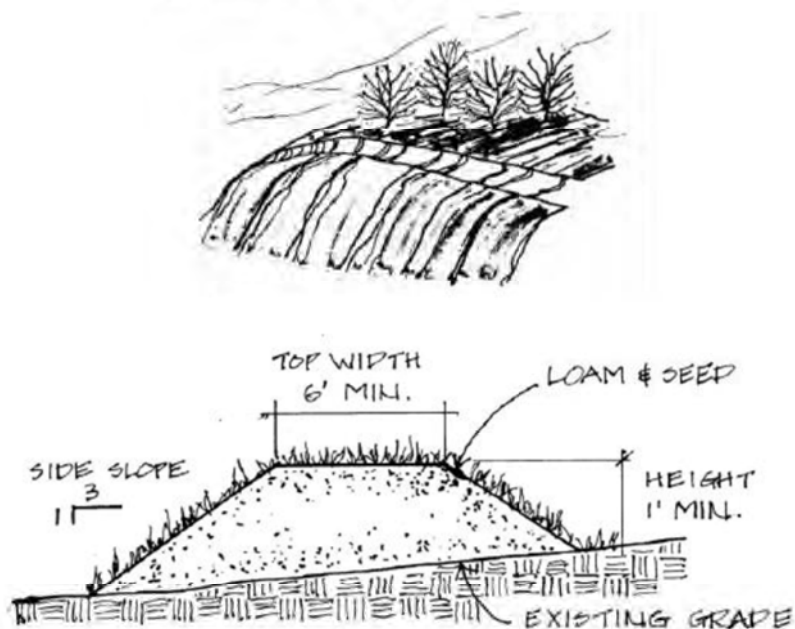
# Bank Stabilization Solutions – Better Backroads Manual



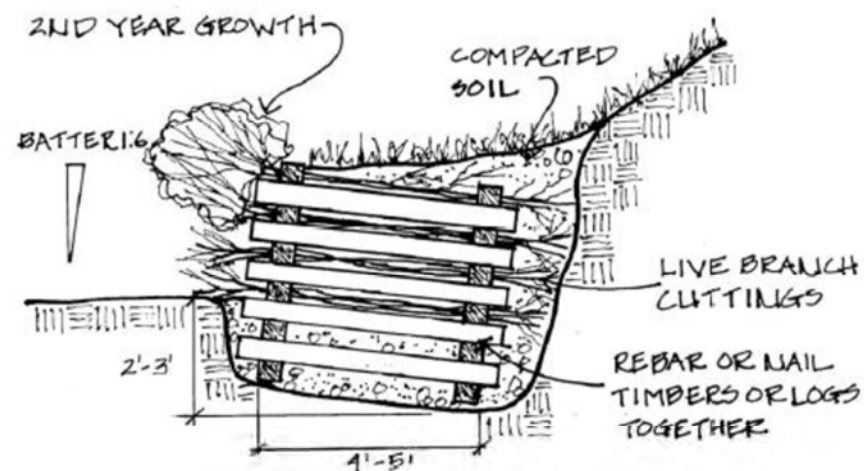
**SURFACE ROUGHENING**  
(BBR Manual – pg. 34)



**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:

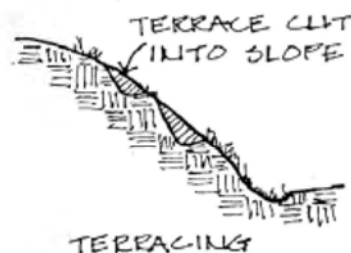
Proper grading or regrading of slopes can often stabilize banks without the use of structures.

- 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.

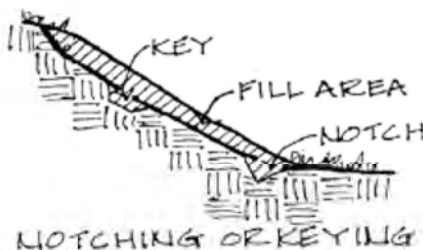
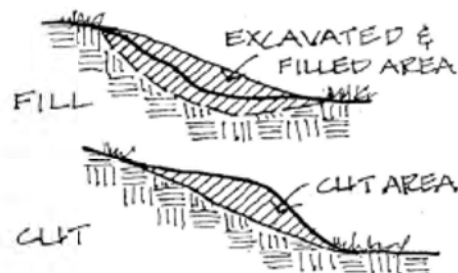


### Counterweight:

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.

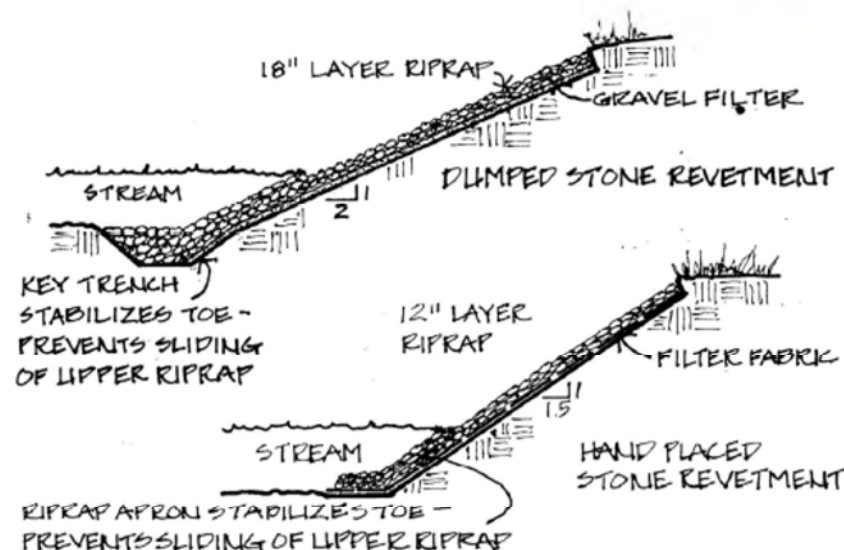
### Cut and/or Fill:

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.

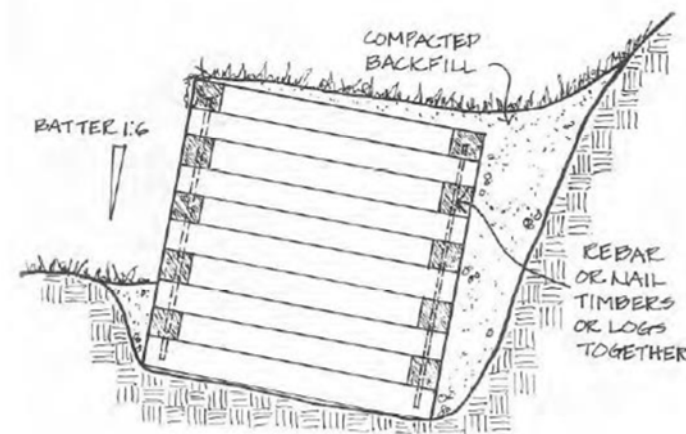


### Notching or Keying:

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



RIPRAP REVETMENT  
(BBR Manual – pg. 41)



LOG OR TIMBER CRIB  
(BBR Manual – pg. 40)





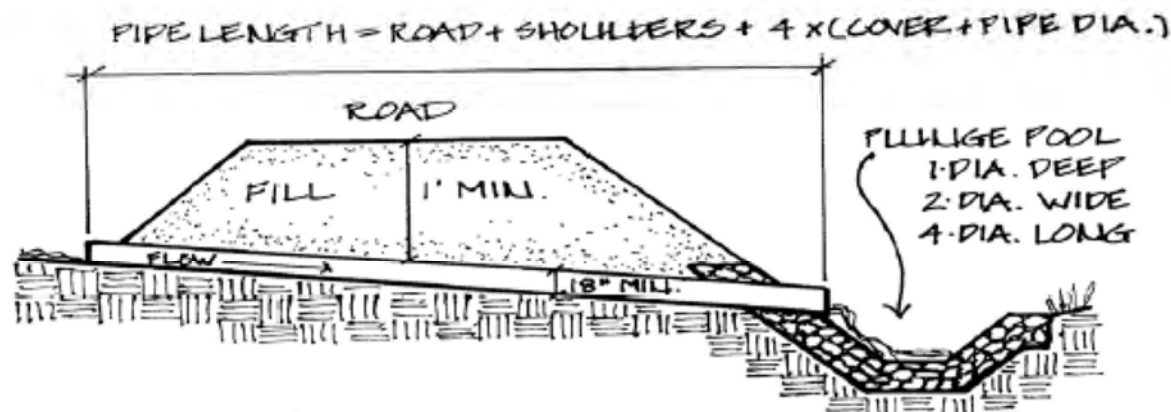
## Culvert Solutions – Better Backroads Manual

**Culvert length example calculation:**

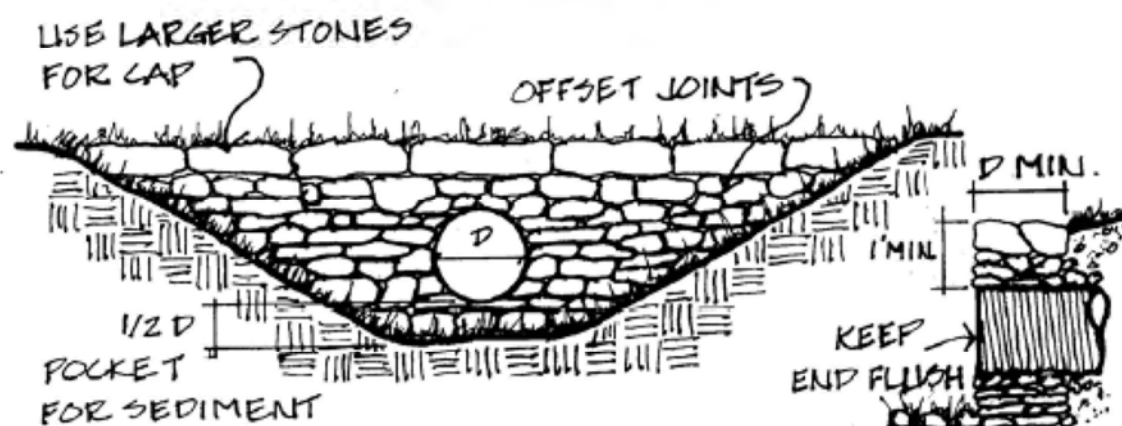
Using 18 inch (1.5 ft.) culvert with 1.5 ft. of cover and 28 ft. road + shoulder width.

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)

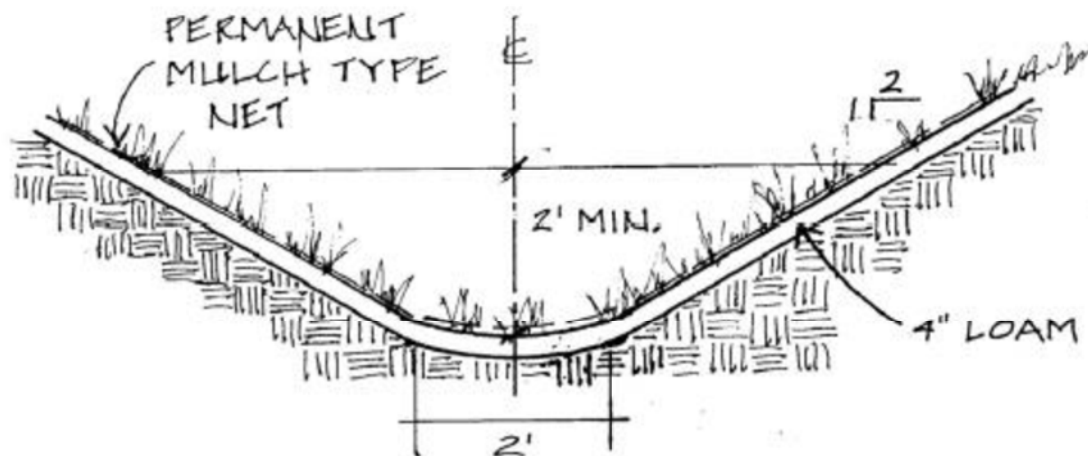
**HEADER**

(BBR Manual – pg. 24)





# Ditch Stabilization Solutions – Better Backroads Manual

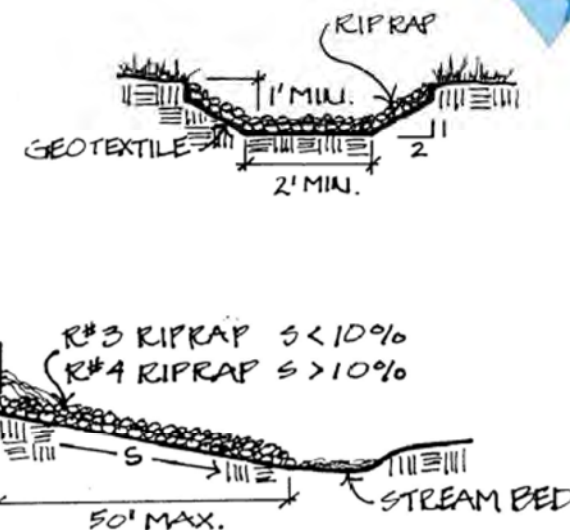


**GRASS LINED DITCH**

(BBR Manual – pg. 12)

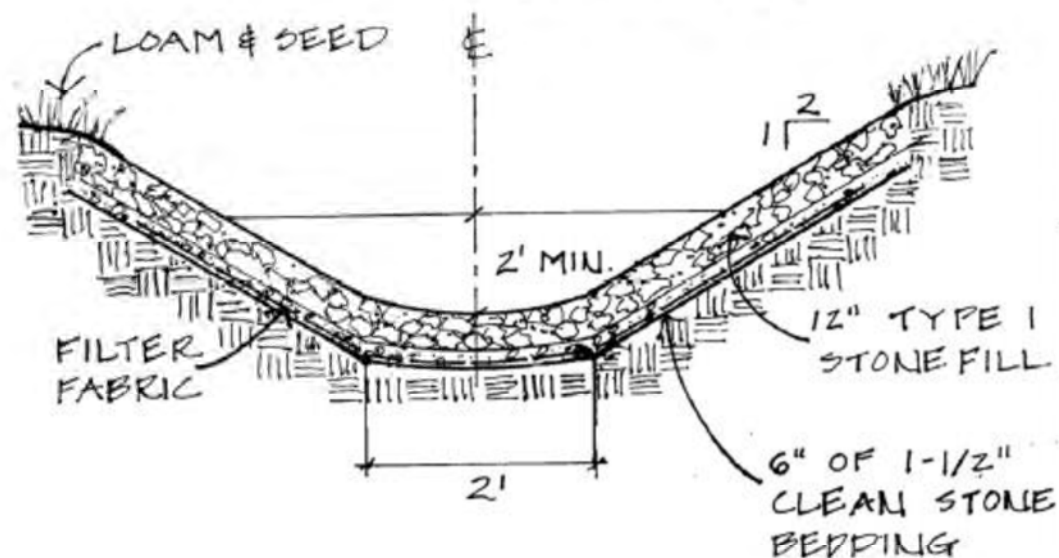
TABLE 1: DITCH LININGS		
Channel Slope	Lining	Thickness
0-5%	grass	
5-10%	R#3 (2 - 6 inch) diameter rock	7.5"
> 10%	R#4 (3-12 inch) diameter rock	12"

(BBR Manual – pg. 14)



**RIPRAP CONVEYANCE CHANNEL**

(BBR Manual – pg. 30)



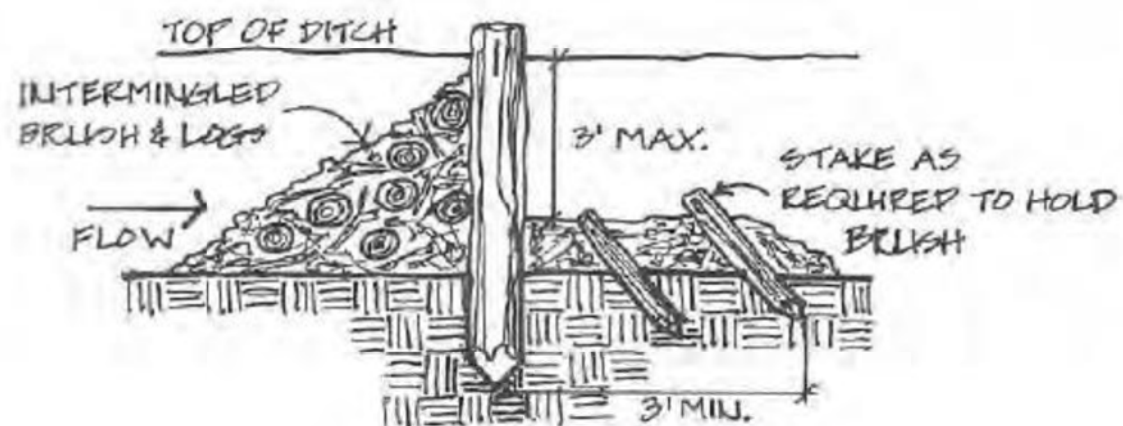
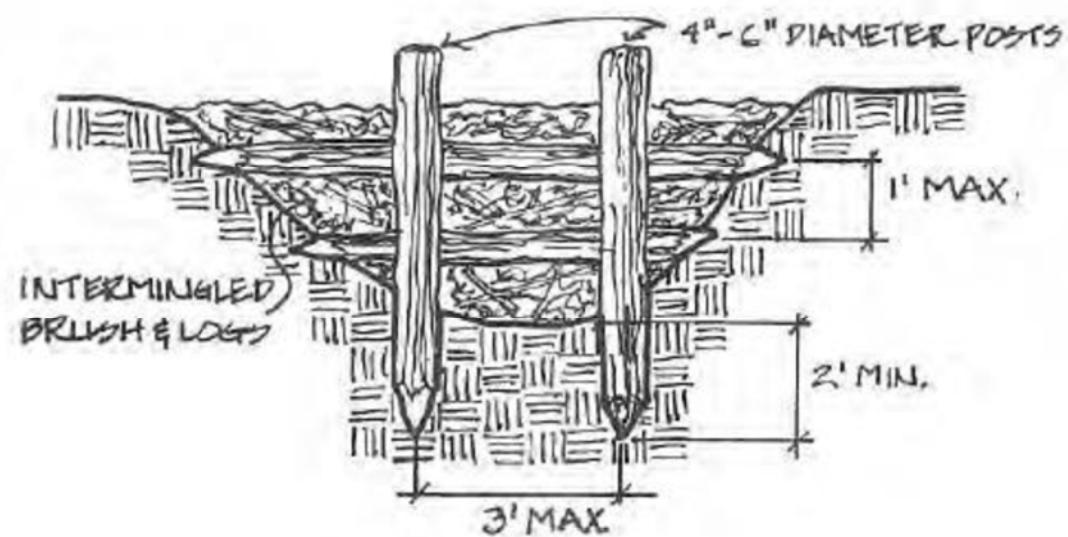
**STONE LINED DITCH**

(BBR Manual – pg. 13)





## Velocity Control Solutions – Better Backroads Manual

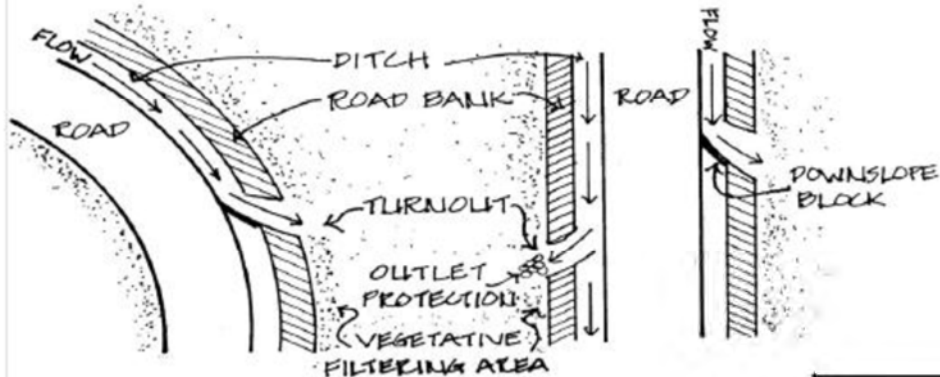
**LOG & BRUSH CHECK DAMS**

(BBR Manual – pg. 18)





## Velocity Control Solutions – Better Backroads Manual

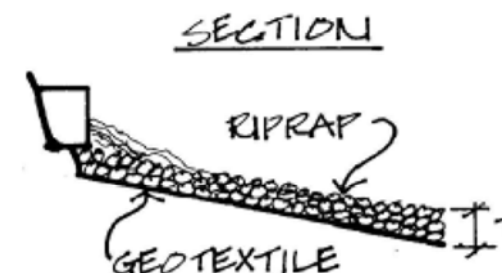
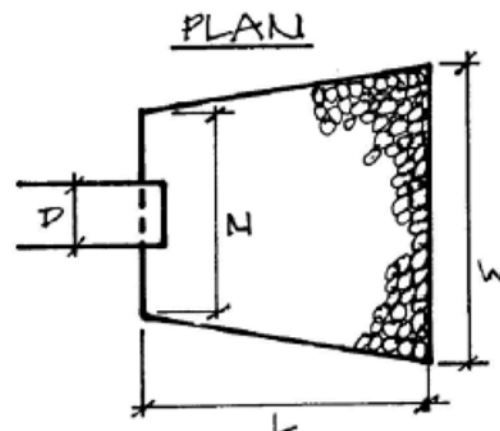
**TURNOUTS**

(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

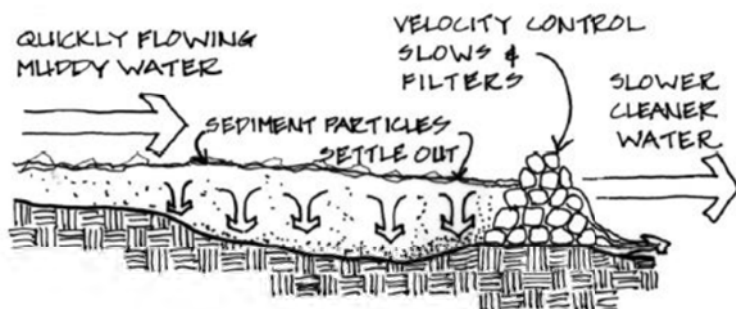
**ROCK APRON**

(BBR Manual – pg. 29)





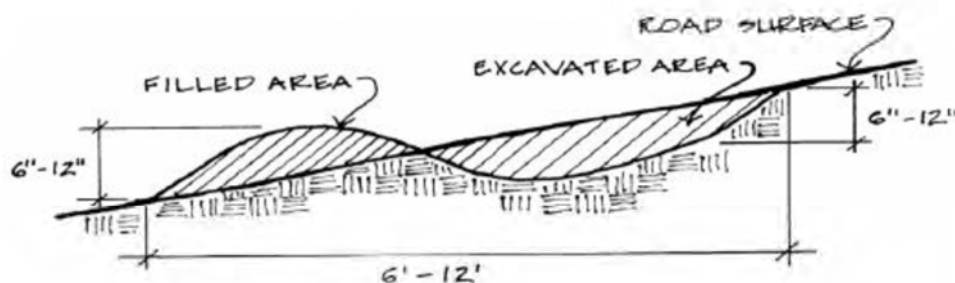
# Velocity Control Solutions – Better Backroads Manual



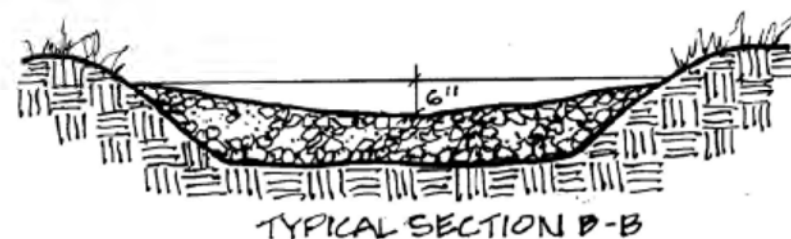
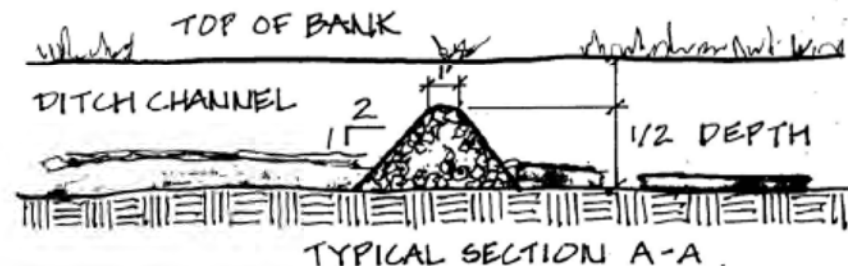
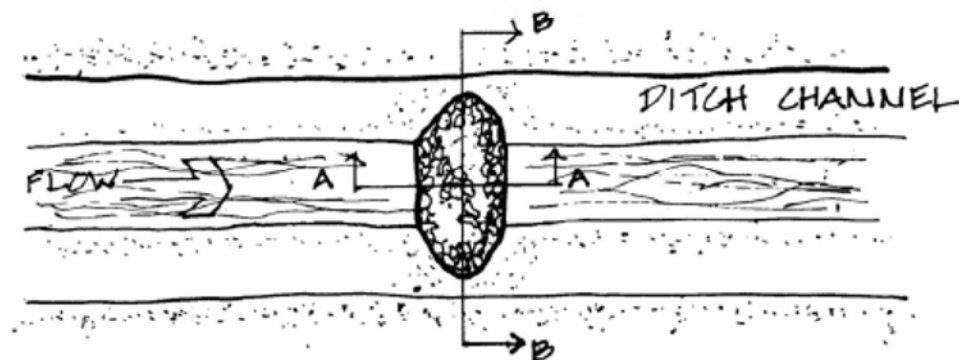
VELOCITY CONTROL  
(BBR Manual – pg. 16)



LEVEL SPREADER  
(BBR Manual – pg. 50)



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



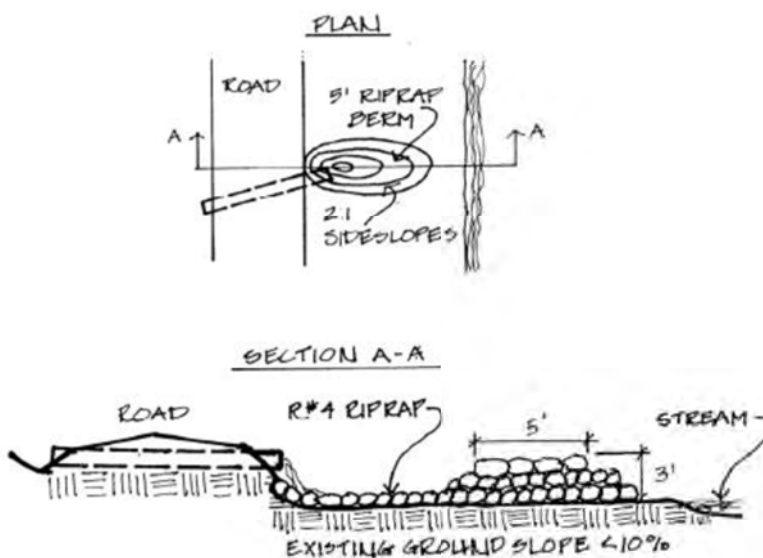
STONE CHECK DAMS  
(BBR Manual – pg. 17)



### 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



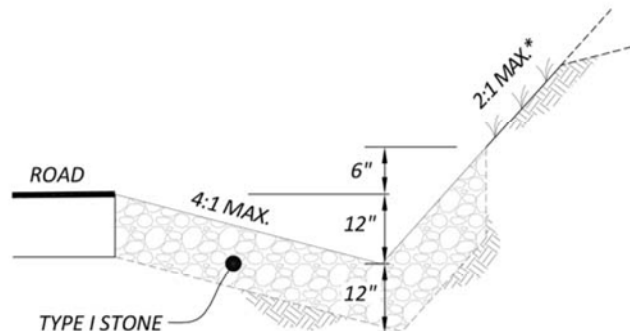
Splash/Plunge Pool Capacity Requirements		
Distance Between Culverts (ft.)	Pool Capacity (cu. ft.)	
	Crowned road	Banked road
500	230	460
400	180	360
350	160	320
300	140	280
250	120	240
200	100	200



**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.

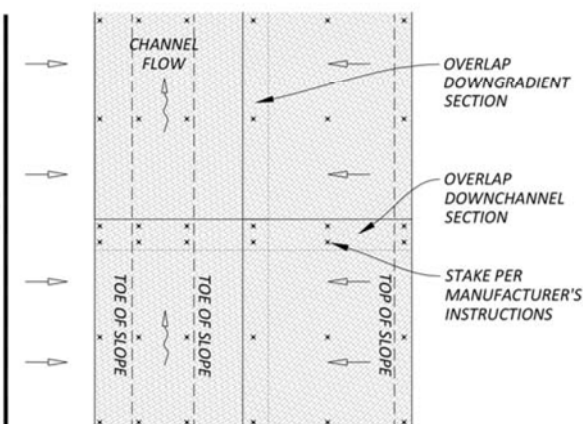
## DETAIL A NARROW ROADSIDE SWALE STABILIZATION

NTS

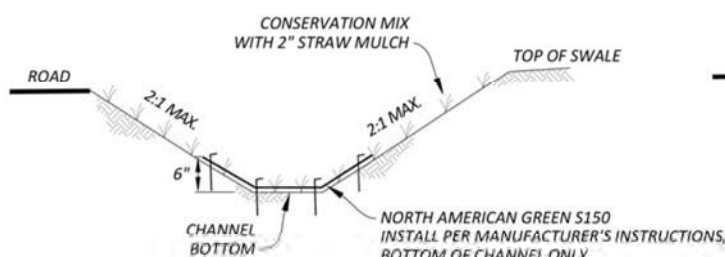
**NOTE:**

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.

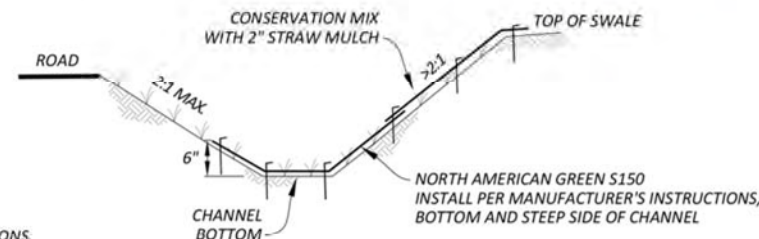
Details Produced By:



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 STEEP BACKSIDE SLOPES.

Details Produced By:





## VTrans Detail Name: Ditch Scour Repair

**TYPE I STONE FILL**

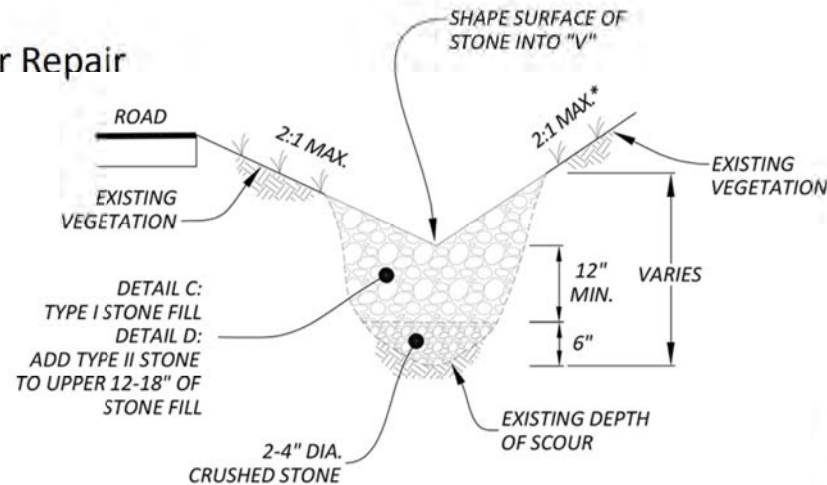
(VAOT SEC. 706.04(A))

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.

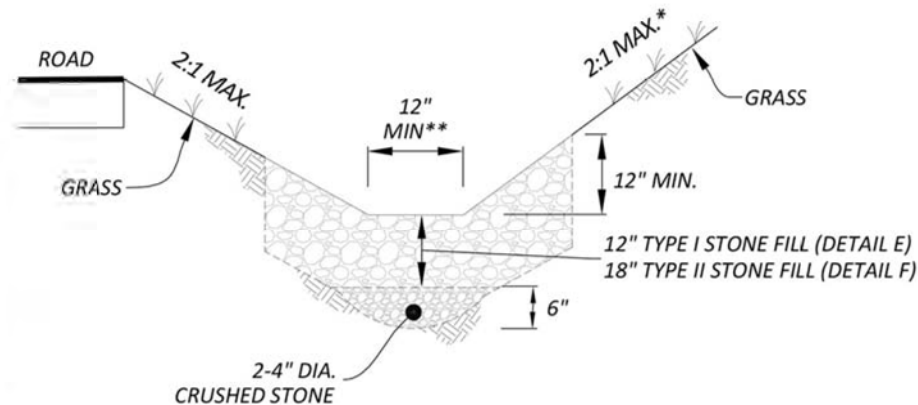


### DETAIL C/D SWALE SCOUR REPAIR

\* 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.



### 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 SURFACE AS "V" IF SPACE FOR SWALE IS TOO NARROW FOR FLAT SURFACE

**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.

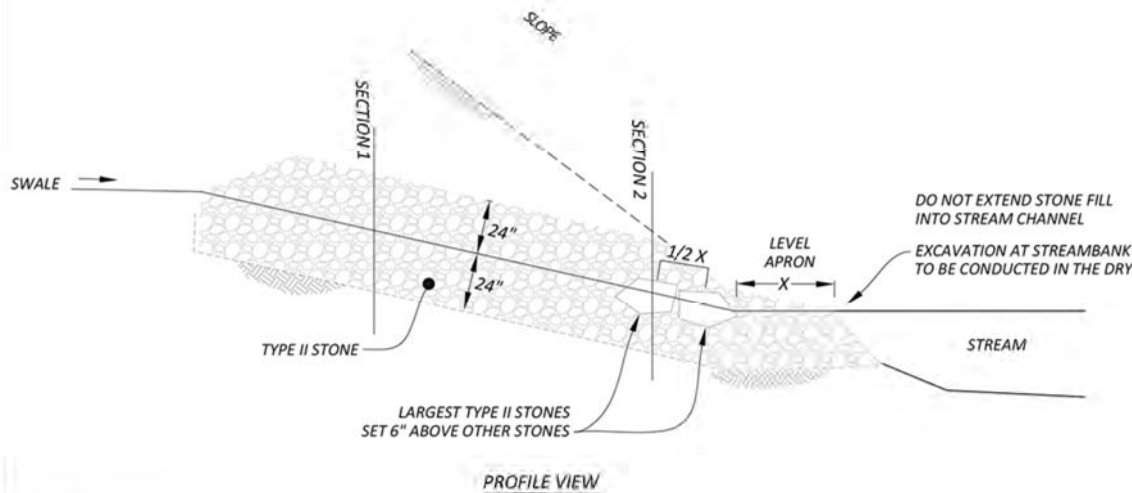
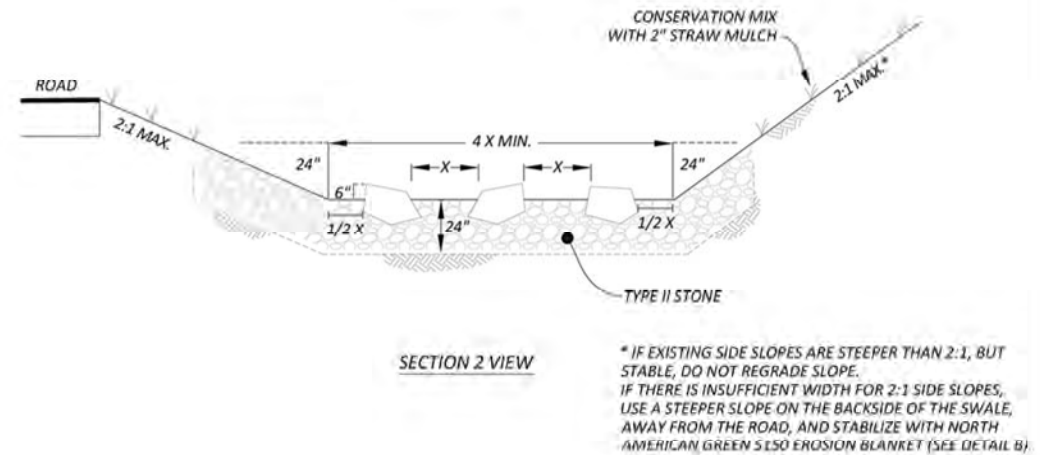
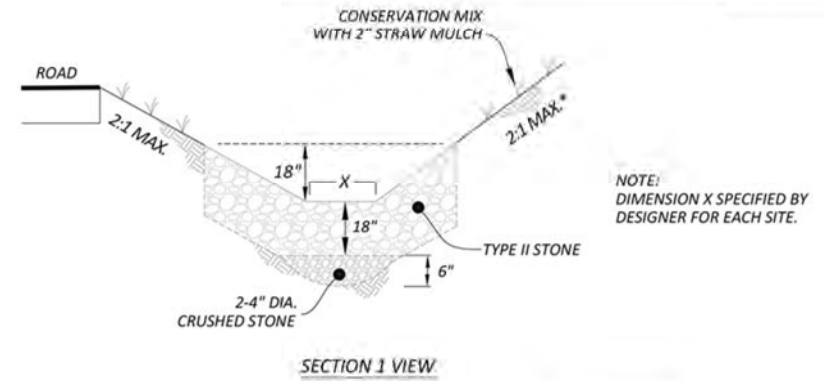
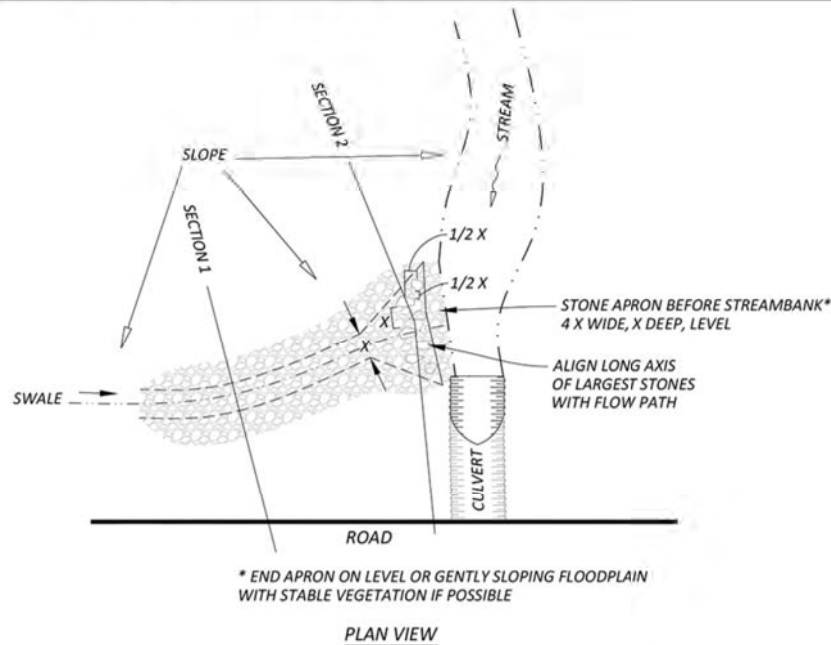
**TYPE II STONE FILL**

(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.

Details Produced By:





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

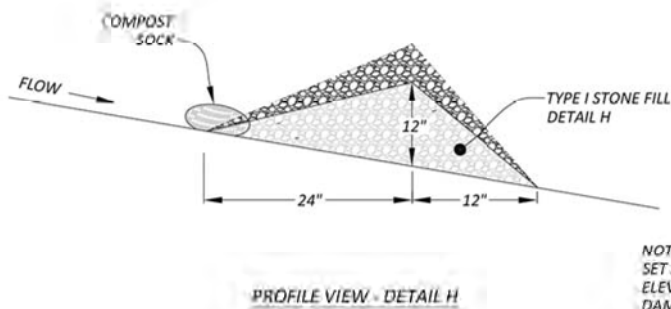
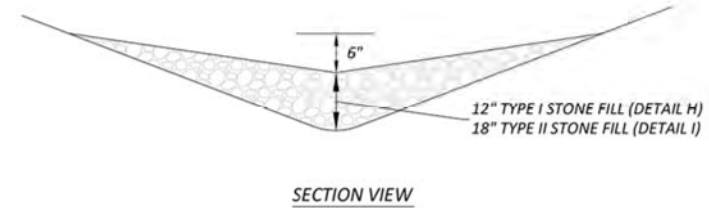
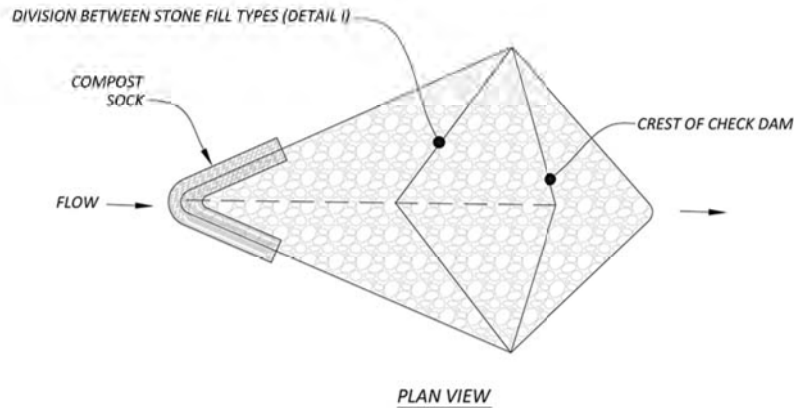
NTS

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.

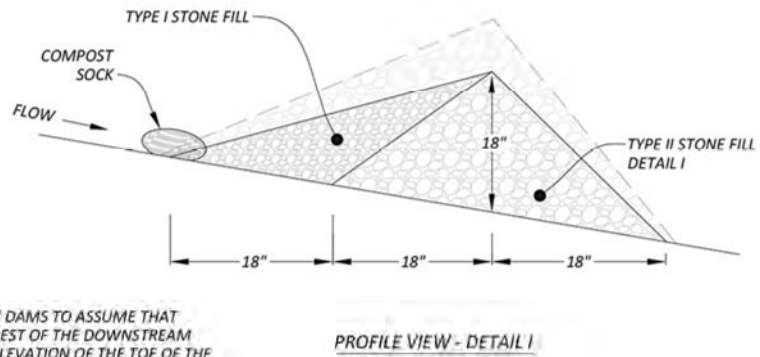
Details Produced By:







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

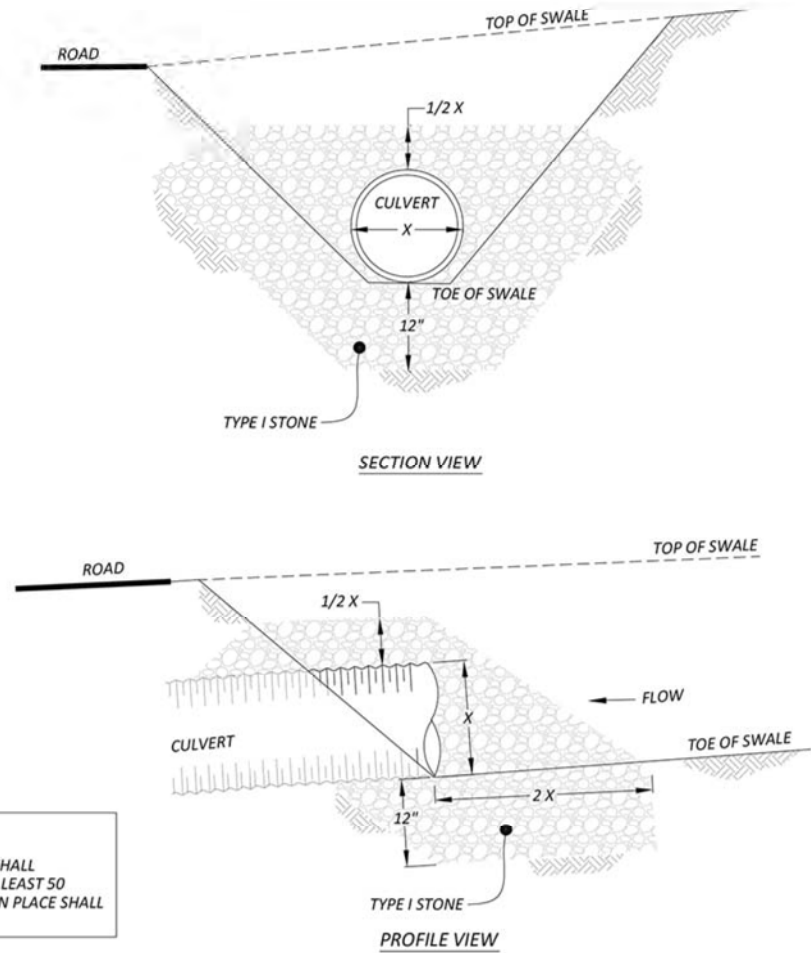
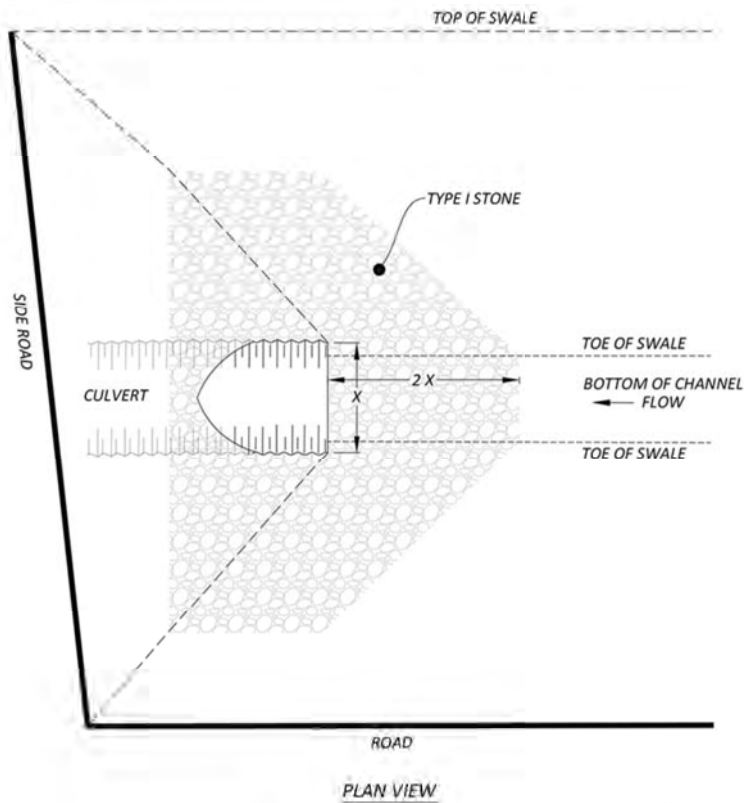
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(VAOT SEC. 706.04(A))  
THE LONGEST DIMENSION OF THE STONE SHALL  
VARY FROM 1 INCH TO 12 INCHES, AND AT LEAST 50  
PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL  
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**TYPE II STONE FILL**  
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Details Produced By:







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## DETAIL J CULVERT ENTRANCE STABILIZATION

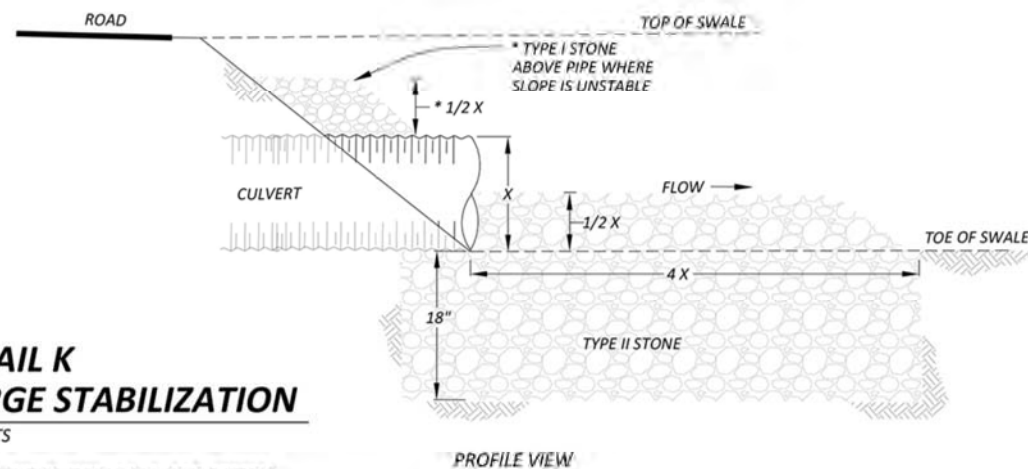
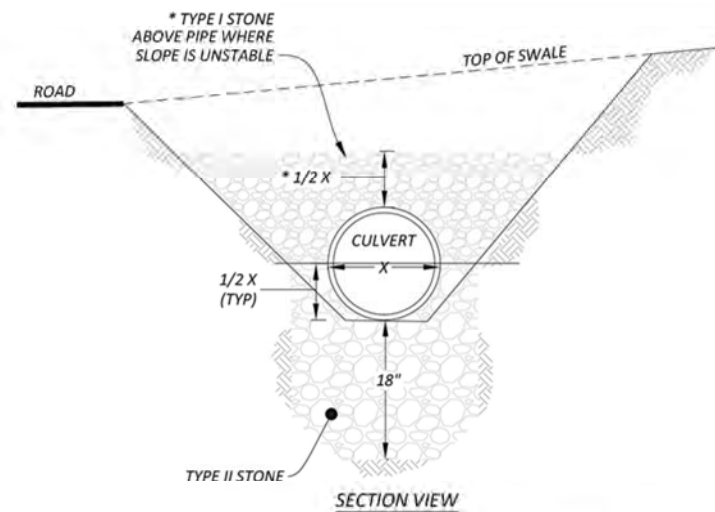
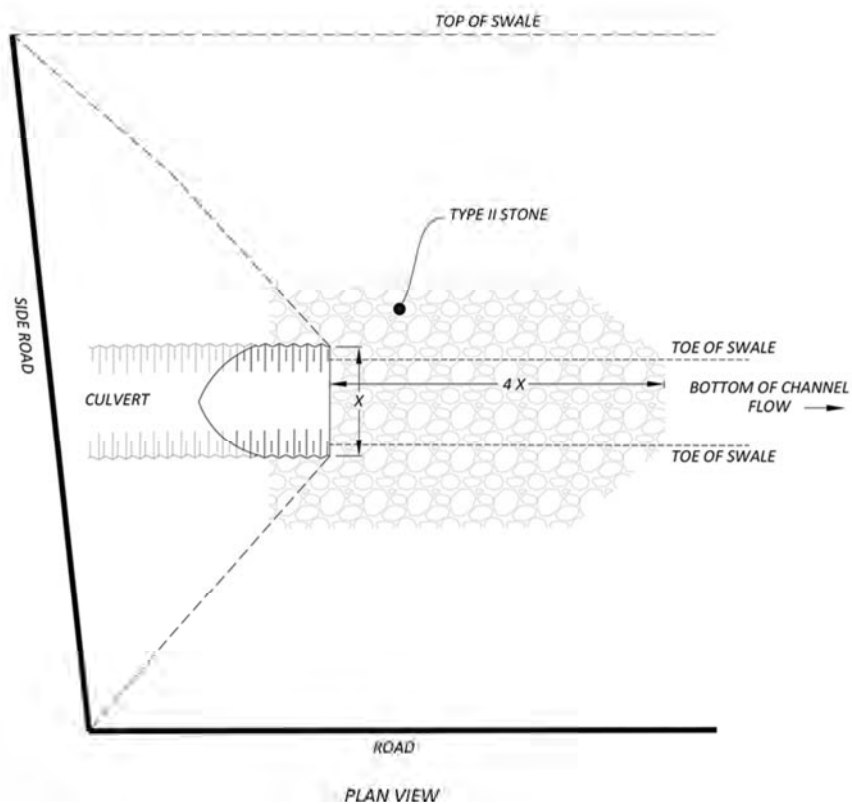
NTS

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

Details Produced By:







## DETAIL K CULVERT DISCHARGE STABILIZATION

NTS

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

**TYPE I STONE FILL**  
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PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL  
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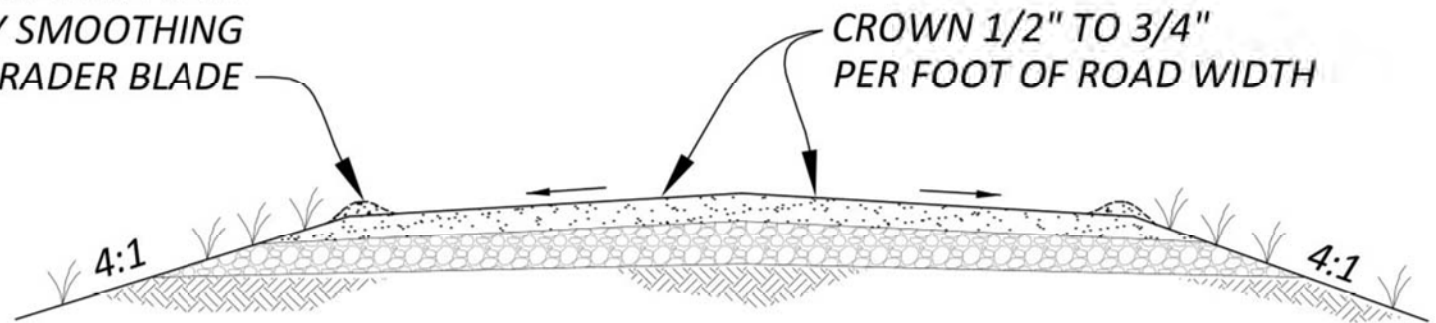
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OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A  
LEAST DIMENSION OF 12 INCHES.

Details Produced By:





WINTER SAND BUILD-UP AND  
SAND FROM GRADER TO BE  
ELIMINATED BY SMOOTHING  
EDGE OF ROAD WITH GRADER BLADE



## **DETAIL L**

# **TYPICAL ROAD CROWN SECTION**

NTS

Details Produced By:

