

TOWNSHIP OF MERRICKVILLE-WOLFORD

GRAVEL ROAD NEEDS STUDY

2023

August 2023

Jp2g Consultants Inc.
Engineers · Planners · Project Managers
12 International Drive
Pembroke, Ontario K8A 6W5
Telephone (613) 735-2507
Facsimile (613) 735-4513

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TABLE OF CONTENTS

	<u>PAGE NO.</u>
INTRODUCTION	1
THE VILLAGE ROAD SYSTEM	2
ROAD SYSTEM INVENTORY	2
CONDITION RATINGS	2
LIFE CYCLES AND MAINTENANCE	3
ROAD AND DRAINAGE IMPROVEMENTS/BENCHMARK COSTS	4
GRAVEL NEEDS PROGRAM.....	5
UPGRADING GRAVEL ROADS	6
REVIEW OF SELECTED ROADS FOR UPGRADING	7
CONCLUSION.....	8

APPENDICES

- A SAMPLE ROAD APPRAISAL FORM
- B VILLAGE ROAD NETWORK MAP 2023
- C 2023 GRAVEL ROAD APPRAISAL SHEETS
- D ROAD IMPROVEMENT PROGRAM
- E-1 2023 BENCHMARK UNIT COSTS
- E-2 SAMPLE RURAL ROAD CROSS SECTIONS

INTRODUCTION

A substantial portion of a rural Municipality’s annual budget is typically allocated to the road system for the purpose of maintenance and capital improvements. The current replacement value of the Village road system is on the order of \$54,310,000. Of the road system, the municipality has gravel roads totaling \$20,000,000 of replacement value. This is a significant investment to be maintained into the future. Roads, like equipment, wear out and must be maintained, rehabilitated, or replaced at predetermined intervals. Failure to properly maintain and rehabilitate at the appropriate time results in increasing costs and the risk of a more expensive replacement. To ensure that the Municipality is managing the road system effectively, Council must be aware of the condition of the present gravel road system in order to confirm future maintenance and capital works needs.

This Road Management Plan provides the following:

- a) A gravel road system inventory including all municipally maintained gravel roads where segments have been created by taking into account the road condition, geometric elements (road width) and surface type.
- b) Identifies those gravel road sections in need of improvement, the type of improvements, and an estimate of cost.
- c) A maintenance and construction program for the gravel road system.

THE VILLAGE ROAD SYSTEM

The Village had previously commissioned an Asset Management Plan in 2020 for O.REG. 588/17 compliance which included the compilation of relevant road segment information and forms the basis of this report, which was built upon with a field review of gravel road conditions in 2023.

In addition to the municipal maintained road network, there are privately maintained roads within the Village. The maintenance and upkeep of these roads is the responsibility of their respective owners. This report does not address the costs related to private roads.

The total gravel road lengths are as follows:

2023 Gravel Road Need Study (this report)	52.6	km
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The gravel road system distribution (urban, semi-urban, rural) is categorized as follows:

Rural, single lane	48.4	km
Rural, double lane	4.2	km

ROAD SYSTEM INVENTORY

Road Appraisal Forms have been prepared for each road in the road network and the forms contain information such as: geometry (length, width), surface type, condition rating, recommended improvements, and improvement costs based on estimated benchmark costs. A particular road may have one or a number of section numbers assigned to it to distinguish variations in geometrics or the condition rating. A sample Road Appraisal Form is included in Appendix A.

A map of the Village Road System is provided in Appendix B.

CONDITION RATINGS

A condition rating of good, fair, or poor is assigned to each road section. This assignment is based upon a visual assessment of the existing surface, the ride quality, and observable structural condition of the road. “Good” is the best condition (i.e. a newly constructed road or newly graveled and graded), “fair” is a road that is nearing scheduled maintenance/rehabilitation, and “poor” is a road that is past due for maintenance/rehabilitation and may require reconstruction.

For comparison with a numerical system rating: good, fair, and poor correspond with the following numerical ranges:

Good	8-10
Fair	5-7
Poor	Less than 5

Road reviews are normally conducted in the spring, when the frost is leaving the ground and the road base is soft. It is at this time when the structural performance of a road is most evident. In this case, the road system was travelled and each section was assessed for condition rating during April of 2023.

The Village Public Works employee Alec McGregor and Jp2g Civil staff Curtis Millar conducted the field review and agreed to the condition ratings and improvements required for each road section.

The gravel road conditions as reported this spring are:

Rating	2023 Assessment
Good	5%
Fair	49%
Poor	46%

This indicates that the municipal gravel roads fall between a fair and poor condition in 2023. Without continued investment, the roads in good and fair condition will deteriorate to a poor condition.

LIFE CYCLES AND MAINTENANCE

All roads surfaces have different life expectancies and should be resurfaced within their life cycles before the road base is allowed to deteriorate and suffer structural damage. Failure to resurface within the designated timelines can result in premature failure of the road base, and result in a need for reconstruction. The overall traffic volumes, percentage of truck traffic, the existing road base construction standards/condition, and roadside drainage will also impact the road life cycle.

Roads with condition ratings of poor are in need of immediate improvement. If roads rehabilitation does not occur, damage may become more severe and reconstruction may be necessary. The longer that scheduled rehabilitation is deferred, the greater the risk that reconstruction will be required instead, at a greater cost. Roads having a fair condition should typically be accorded to a higher priority for capital rehabilitation and maintenance works. If these rehabilitation works cannot be scheduled in a timely manner, the road should be closely monitored for evidence of safety concerns and issues remedied with appropriate spot maintenance.

Gravel road condition ratings noted on the breakdown sheets are considered a “snapshot” in time due to continued routine maintenance and ongoing upgrading of the granular top surface. A freshly graded road in late-summer might have a superior rating compared to during the spring. Any noted deficiencies that are not related to depth or width should be dealt with through spot improvements and maintenance items rather than

as a capital budgeting item. Upgrading a road surface from gravel to LCB (surface treatment) or HCB (asphalt surface) is always to be considered as a capital item.

Gravel road sections currently at a condition rating of fair or poor have been assigned costs on the Appraisal Sheets. Roads that are in good condition where surface upgrading is warranted have also been assigned costs on the appraisal sheets. Other spot maintenance requirements have also been identified.

ROAD AND DRAINAGE IMPROVEMENTS/BENCHMARK COSTS

Various road and drainage improvements (reconstruction and rehabilitation) have been recommended and costed in this study and are briefly described as follows below:

Rural Section /w Ditch - Reconstruction: Gravel surface and base

- removal of existing gravel surface and base granulars
- excavation of existing road to depth
- replacement of granulars
- centerline and entrance culvert replacement

Rural Section /w Ditch – Upgrade: 1 lift pavement

- freshen granulars
- installation of asphalt – 1 lift
- gravel for shoulders and entrances

Rural Section /w Ditch – Upgrade: Double Surface Treatment (‘tar and chip’)

- freshen granulars
- installation of double surface treatment
- gravel for shoulders and entrances

The benchmark costs are our opinion of the average costs to have a contractor undertake specific improvements. These costs have been developed based on recent construction costs in the Village area (as provided by Public Works), and also based on Jp2g’s experience tendering road projects in Eastern Ontario. These numbers are used to determine a budgetary estimate of costs for the road sections on a per kilometer basis. The benchmark costs used in this report have been included as Appendix E-1. In some situations, additional costs have been assigned to individual road sheets based on site specific features encountered during the road tour (rock, significant slopes, large diameter culverts). These are captured under the spot repairs. All costing is reported using present day values.

The benchmark road cross section is shown in Appendix E-2

GRAVEL NEEDS PROGRAM

Based on this Road Needs Study, the gravel roads will require \$9,000,000 in spot repairs and \$233,000 in widening costs to address deficiencies identified in the Spring 2023 review.

In terms of regular maintenance, it is understood that the municipality has historically allocated \$60,000 for gravel to be purchased and delivered, with municipal forces grading the material. The municipal staff have indicated that this material is spread across 50% of the roads each year. The municipality has 52.6km of road with an average surface width of 5.0m so approximately 131,440 sq.m. of surface area is being graded each year. Based on the results of staff discussions and the road review there is evidence that the road base material and organics are being graded and incorporated into the road surface. This strongly suggests that more gravel needs to be purchased and placed onto the driving surface.

Based upon a purchase price of \$12.45 per tonne, and \$60,000 this represents 4,820 tonnes that can be delivered and graded. A tonne of granular material represents 0.44 cu.m. of material to be spread. Therefore, given a grading lift of 75mm (3 in) of material, the municipality is purchasing enough to permit approximately 4.7 km of roadway per year to be maintained.

Thin lifts of placed granular material are not recommended when the existing granular surface is too thin, as there won't be sufficient material to grade and distribute.

The recommendation is that the municipality try and increase the amount of gravel placed and graded each year such that all the roads are addressed in a 3 year cycle. This should improve the surface riding quality and reduce the frequency of re-grading by ensuring the gravel surface materials are appropriate. The additional material will also make future years regrading easier to smooth out washboarding, fill in potholes, and ruts.

The average rural, single lane road has a surface width of 5.0m and the average rural, double lane road has a surface width of 5.6m. A minimum surface width of 6.0m is a normal standard for the purposes of maintaining access routes for emergency vehicles (fire and ambulance). Few roads, when measured during the field review, met a 6.0m surface width. In most cases the road platform is wide enough, but additional material to widen the driving surface is warranted. A cost for this widening is included in the assessment sheets on a road by road basis, the total cost is estimated to be \$233,000.

To apply 75mm of new gravel to 1/3rd of the gravel roads each year to a surface width of 6.0m is anticipated to require 7,890 cu.m. of granular material, or 17,750 tonnes. The total cost of this is estimated to be \$228,000 per year. Based on the \$20,000,000 replacement cost for gravel roads, this represents a maintenance cost of approximately 1% of the replacement valuation.

UPGRADING OF GRAVEL ROADS

Municipalities often desire to upgrade gravel roadways to surface treated (tar and chip) or asphalt to reduce maintenance and provide a better travelled surface among other reasons. From an engineering perspective, the road that is being upgraded needs to have sufficient strength (thickness) of the granular road base and granular subbase so that it can perform as expected. Many rural roads, due to how they were historically constructed, require work to improve the road base to an acceptable standard to support surface treatment (asphalt or ‘tar and chip’). Otherwise, the surface treatment breaks up quickly and the expensive surface doesn’t last. Engineering design of roadways would normally include a geotechnical assessment to confirm the pavement design including thickness of base and subbase. Drainage of the road base and subbase is also critical to long term performance of the surface and to avoid cracking and moisture intrusion. An engineering design process would address those matters and more.

The municipality should want to have a level of assurance that any money spent on upgrading a surfaced road will perform for years to come and meet ratepayer expectations.

As a rule of thumb, once a roadway is experiencing greater than 200 vehicles per day in traffic, some form of surface treatment can be explored to reduce maintenance costs. The upfront capital costs are higher, however the long term maintenance costs are lower. The lifecycle costs of upgraded roads are also higher than gravel roads, as when they do require rehabilitation a “shave and pave” for asphalt or reapplication of ‘tar and chip’ are both more expensive than additional gravel.

One additional consideration is that “tar and chip” surface treatments do not perform as well under heavy truck or farm equipment traffic loadings. Roads subject to heavy truck and farm traffic should be strongly considered for surfacing by one or two lifts of asphalt, depending on the volume of traffic.

Based upon our review of the current status of roads in the municipality, the only gravel road that could be considered for immediate upgrading is HF McLean Rd. The estimated cost of upgrading this road (including spot repairs) to asphalt is \$435,000.00.

Other gravel roads in the municipality are dead end, narrow travelled surface, low volume roads impacted by tight rock, experiencing ongoing drainage issues, have narrow rights of way, or a combination of these challenges. It is not advisable to consider surface treating these roads until the other challenges are addressed first.

REVIEW OF SELECTED ROADS FOR UPGRADING

Based on discussions with the municipality, it is understood that there is interest in reviewing several roads for upgrading. The municipality has requested that the following roads be reviewed for upgrading:

- Corktown,
- Yule,
- Pioneer,
- Land O'Nod, and
- Carley's Corner

Corktown Road, 4.6 km

Requires shouldering, culverts, grade raise and digouts, new ditching, ditching cleanouts, and allowance for rock removal. Half of road in fair condition, half in poor condition. Part of the road has a deficient ROW width making undertaking any works more challenging.

Spot Repairs Total \$1,058,000

In order to upgrade this road to asphalt, including other necessary spot repairs a total cost of \$2,656,000 is estimated.

Yule Road, 5.66 km

Requires shouldering, culverts, grade raise and digouts, new ditching, ditching cleanouts, and allowance for rock removal.

Spot Repairs Total \$1,219,000

In order to upgrade this road to asphalt, including other necessary spot repairs a total cost of \$3,242,000 is estimated.

Pioneer Road, 6.02 km

Requires shouldering, culverts, grade raise and digouts, new ditching, ditching cleanouts, and allowance for rock removal. The road has a deficient ROW width making undertaking any works more challenging.

Spot Repairs Total \$884,000

In order to upgrade this road to asphalt, including other necessary spot repairs a total cost of \$3,531,000 is estimated.

Land O'Nod Road, 6.38 km

Requires shouldering, culverts, grade raise and digouts, new ditching, ditching cleanouts, and allowance for rock removal. The road has a deficient ROW width making undertaking any works more challenging. Ends at boundary with Augusta Township, meaning that upgrade works may not be continued further down the road.

Spot Repairs Total \$684,000

In order to upgrade this road to asphalt, including other necessary spot repairs a total cost of \$3,936,000 is estimated.

Carley's Corners Road, 2.3 km

Requires grade raise, new ditching, ditching cleanouts, and allowance for roack removal.

Spot Repairs Total \$457,000

In order to upgrade this road to asphalt, including other necessary spot repairs a total cost of \$1,508,000 is estimated.

The total estimated cost to upgrade these 24.96km of road to asphalt is estimated to be \$12,217,000. Each of these road upgrades would be a significant capital project for the municipality. Based on the number of serviced lots in the area, existing ROW widths, traffic levels, and overall conditions of the roads, upgrades for these roads are not warranted at this time.

CONCLUSION

This report has been compiled to provide Council with a list of road improvements associated with the Village gravel road system. It should be used as a reference document to plan future road improvements, apply for available provincial dollars to ensure that the maximum benefit is being achieved from the roads budget funding.

APPENDIX A

SAMPLE ROAD APPRAISAL FORM

Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name		Length of Road (km)	
From		Platform Width (m)	
To		Surface Width (m)	
Roadside Environment		Shoulder Width (m)	
Surface Type	Gravel	Right of Way Width (m)	
Traffic Counts		Boundary Road (Yes/No)	
Ditching Type		Review Date:	
Original Condition Rating		Prepared By:	Curtis Millar
2023 Condition Rating		Reviewed By:	Michael Fadock

Road Improvements and Costs

Spot Improvement Works

	Cost	Description
Right of Way		
Culverts		
Ditching		
Grade Raise (Vertical Alignment Corrections)		
Spot Digouts or Improvements		
Shouldering Improvements		
Other Works (i.e. Guard Rails)		
Total Cost		

Ongoing Maintenance Works

	Cost	Description
Shouldering		
Ditching		
Annual Gravel Addition (Depth)		
Other Works (i.e. Guard Rail Repair)		
Total Cost		

Construction Works

	Cost	Description
Gravel Addition in Excess of Annual Addition		
Full Depth Reconstruction Back to Gravel Road		
Upgrade to Asphalt without Reconsturtion, Rural Section (Gravel Padding Only)		
Upgrade to Asphalt Full Depth Reconstruction, Rural Section		
Upgade to Asphalt Full Depth Reconstruction, Urban Section (Inc, Gutters and storm system)		

General Notes:	
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APPENDIX B

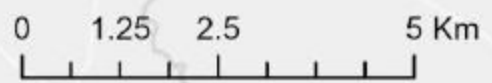
**VILLAGE ROAD SYSTEMS MAPS
ROAD SYSTEM INDEX MAP**



Merrickville
Wolford

Rideau River

Rideau River



-  HCB
-  LCB
-  Gravel
-  Merrickville-Wolford Boundary

APPENDIX C

**2023 GRAVEL ROAD NETWORK SUMMARY SHEET AND
INDIVIDUAL APPRAISAL SHEETS**

Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Barber Road	Length of Road (km)	1.61
From	Maitland Road	Platform Width (m)	5.4
To	County Road #41	Surface Width (m)	3.4
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	20.1
Traffic Counts	N/A	Boundary Road (Yes/No)	No
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	Fair	Prepared By:	Curtis Millar
2023 Condition Rating	Poor	Reviewed By:	Michael Fadock

Road Improvements and Costs

Spot Improvement Works

	Cost	Description
Right of Way		
Culverts		
Ditching	\$ 96,000	-Rock is high is ditches in mulitple areas preventing them from being deeper and getting postive drainage to outlets. '-Between Carkner Road and County Road #41 the road is soft and wet with some water sitting in the ditches. It may require some ditch cleanout and some more material on the surface to build up road base.
Grade Raise (Vertical Alignment Corrections)		-In the Treed area between Maitland Road and Carkner Road water is siting in the ditches on both sides of the road. Road is wet and soft through this area. -North of the treed area the ditches are flowing or dry and they roadbase is still wet and soft. May require a digout and replacement of road subbase and base to allow water under road to drain away to ditches.
Spot Digouts or Improvements	\$ 370,000	1km of full depth digout required
Shouldering Improvements		
Other Works (i.e. Guard Rails)	\$ 75,000	- Rock Removal
Total Cost	\$ 541,000	

Ongoing Maintenance Works

	Cost	Description
Shouldering		
Ditching		
Gravel Addition (Depth)	\$ 20,000	Provide 75mm depth additional granulars
Other Works (i.e. Guard Rail Repair)		
Total Cost	\$ 20,000	

Construction Works

	Cost	Description
Road Widening	\$ 18,000	Widen road to 6.0m
Full Depth Reconstruction	\$ 225,700	Remaining length of road for full depth reconstruction
Upgrade Surface to "tar and chip"	\$ 400,000	Includes full depth reconstruction and widening
Upgrade Surface to Asphalt	\$ 695,000	Includes full depth reconstruction and widening

General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road. Lots of coarse material on surface and has spilled off in ditches from plowing.
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Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	Barber Road		Length of Road (km)	1.06
From	County Road #41		Platform Width (m)	5.4
To	Dead End East		Surface Width (m)	3.4
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	20.1
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	Fair		Prepared By:	Curtis Millar
2023 Condition Rating	Poor		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost	Description		
Right of Way		-At county road #41 intersection there was a berm built up on the south side and it has been removed. Some ditching done but more required to get positive flow to county ditch and get bottom of ditch below subbase. -Grass growing into road surface in areas, shoulders could be rolled off to remove the grass and additional granular material added to build road up.		
Culverts	\$ 2,000			
Ditching	\$ 80,000	-Rock is high and visible in the ditches from county road #41 to bridge. Rock is high in road bed as well at crest of hill before bridge. Rock needs to be removed from road base or material added to be able to grade over rock. -Passed the bridge to th dead end there is not much of a ditch established but the sloping does slope away towards the fields. More Granular 'A' could be added to build road base up more to increase sloping.		
Grade Raise (Vertical Alignment Corrections)		-The interface between the asphalt and the gravel at the county road is potholed and rough, could use more material grade out a proper crown.		
Spot Digouts or Improvements		-#614 the laneway needs an entrance culvert, water is running down from the field and yard on the north side of the laneway and runs over the laneway and then down the side of the road		
Shouldering Improvements				
Other Works (i.e. Guard Rails)	\$ 112,500	rock removal		
Total Cost	\$ 194,500			
Ongoing Maintenance Works				
	Cost	Description		
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 13,000	Provide 75mm depth additional granulars		
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 13,000			
Construction Works				
	Cost	Description		
Road Widening	\$ 12,000	Widen road to 6.0m		
Full Depth Reconstruction	\$ 392,200			
Upgrade Surface to "tar and chip"	\$ 507,000	Includes full depth reconstruction and widening		
Upgrade Surface to Asphalt	\$ 701,000	Includes full depth reconstruction and widening		
General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road. Lots of coarse material on surface and has spilled off in ditches from plowing.			

Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Bolton Road	Length of Road (km)	3.9
From	Harvey Road	Platform Width (m)	7.6
To	Pioneer Road	Surface Width (m)	5.6
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	20.1
Traffic Counts	N/A	Boundary Road (Yes/No)	Yes
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	Poor	Prepared By:	Curtis Millar
2023 Condition Rating	Poor	Reviewed By:	Michael Fadock

Road Improvements and Costs

Spot Improvement Works

	Cost	Description
Right of Way		-The ROW could be brushed back in areas to allow for the construction of ditches.
Culverts		
Ditching	\$ 120,000	-Ditching is needed in many areas along the road where it is not present to convey drainage waters from the road. (3000m ditching) -At the hydro line crossing there is water sitting alongside the road and the road is wet, ditching required to drain water down road to
Grade Raise (Vertical Alignment Corrections)	\$ 67,950	-The road is low throughout, with shallow ditches or none present. Grade needs to be raised to get base material above waterlines in ditches to keep the base material dry. -From #1278 north to the bridge before the Land O'Nod Road stones are being pulled up from the subbase material by the grader, more granular 'A' base material is needed to build road up. 755m of 150mm grade raise allowed
Spot Digouts or Improvements		
Shouldering Improvements		
Other Works (i.e. Guard Rails)	\$ 43,300	-brushing
Total Cost	\$ 231,250	

Ongoing Maintenance Works

	Cost	Description
Shouldering		
Ditching		
Gravel Addition (Depth)	\$ 49,000	Provide 75mm depth additional granulars
Other Works (i.e. Guard Rail Repair)		
Total Cost	\$ 49,000	

Construction Works

	Cost	Description
Road Widening	\$ 7,000	Widen road to 6.0m
Full Depth Reconstruction	\$ 1,443,000	
Upgrade Surface to "tar and chip"	\$ 1,828,000	Includes full depth reconstruction and widening
Upgrade Surface to Asphalt	\$ 2,542,000	Includes full depth reconstruction and widening

General Notes: -Lack of material in areas to grade out a proper crown to drain water off road. Lots of coarse material on surface and has spilled off in ditches from plowing. Speed limit is 80km/h.

Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Carkner Road S		Length of Road (km)	0.3
From	Weedmark Road		Platform Width (m)	5.5
To	Municipal Limit		Surface Width (m)	3.5
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	12.3
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	Poor		Prepared By:	Curtis Millar
2023 Condition Rating	Poor		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost	Description		
Right of Way				
Culverts				
Ditching	\$ 24,000	600m ditching		
Grade Raise (Vertical Alignment Corrections)		-Entire length of road from Weedmark road to municipal maintenance limit is soft and wet. Ditches established on either side are working but could use some cleanout to restore better flow to municipal drain in north. Not a lot of material on road to grade, stones from granular 'B' present on surface, could use some granular 'A' to build road up and re-establish crown.		
Spot Digouts or Improvements	\$ 111,000	300m full depth digout required		
Shouldering Improvements				
Other Works (i.e. Guard Rails)				
Total Cost	\$ 135,000			
Ongoing Maintenance Works				
	Cost	Description		
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 4,000	Provide 75mm depth additional granulars		
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 4,000			
Construction Works				
	Cost	Description		
Road Widening	\$ 3,000	Widen road to 6.0m		
Full Depth Reconstruction	\$ -			
Upgrade Surface to "tar and chip"	\$ 32,000	Includes full depth reconstruction and widening		
Upgrade Surface to Asphalt	\$ 87,000	Includes full depth reconstruction and widening		
General Notes:	-Lots of coarse material on surface and has spilled off in ditches from plowing. Lack of material in areas to grade out a proper crown to drain water off road.			

Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Carkner Road N	Length of Road (km)	0.4
From	Barber Road	Platform Width (m)	5.5
To	Municipal Limit	Surface Width (m)	3.5
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	12.3
Traffic Counts	N/A	Boundary Road (Yes/No)	No
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	Poor	Prepared By:	Curtis Millar
2023 Condition Rating	Poor	Reviewed By:	Michael Fadock

Road Improvements and Costs

Spot Improvement Works

	Cost	Description
Right of Way		-Trees need to be brushed and cut back on east side of road at #183, they are next to the roadway and are potential hazards for vehicles and make it hard to maintain road.
Culverts		
Ditching	\$ 32,000	-At the Barber Road end down to #163 ditch cleanout required to establish a ditch on both side of the road to get water to drain to outlet at #183. Mostly needed on the south side of the road along the field and there is no ditch present there.
Grade Raise (Vertical Alignment Corrections)		-Rough in areas where water cannot get off road or ditchin is required. Add material to build up road to provide drainage off the surface of the road.
Spot Digouts or Improvements		
Shouldering Improvements		
Other Works (i.e. Guard Rails)	\$ 1,900	95m brushing
Total Cost	\$ 33,900	

Ongoing Maintenance Works

	Cost	Description
Shouldering		
Ditching		
Gravel Addition (Depth)	\$ 5,000	Provide 75mm depth additional granulars
Other Works (i.e. Guard Rail Repair)		
Total Cost	\$ 5,000	

Construction Works

	Cost	Description
Road Widening	\$ 4,000	Widen road to 6.0m
Full Depth Reconstruction	\$ 148,000	
Upgrade Surface to "tar and chip"	\$ 191,000	Includes full depth reconstruction and widening
Upgrade Surface to Asphalt	\$ 264,000	Includes full depth reconstruction and widening

General Notes:	-Lots of coarse material on surface and has spilled off in ditches from plowing. Lack of material in areas to grade out a proper crown to drain water off road.
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Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Corkoran Road N		Length of Road (km)	0.6
From	County Road #16		Platform Width (m)	6.1
To	Dead End East		Surface Width (m)	4.1
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	20.1
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	Poor		Prepared By:	Curtis Millar
2023 Condition Rating	Poor		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost	Description		
Right of Way		-Some brushing completed in last year on road.		
Culverts				
Ditching	\$ 32,800	-At the dead end there is rock high in the ditches, water is slowly draining away but could be improved. -At intersection to end of yard of #118 on south side of road there is water sitting in shallow ditch. Could used to be ditched deeper to convey water to outlet at county road.		
Grade Raise (Vertical Alignment Corrections)		-Road profile is flat, needs some gravel to establish a proper crown.		
Spot Digouts or Improvements				
Shouldering Improvements				
Other Works (i.e. Guard Rails)	\$ 50,000	Rock removal		
Total Cost	\$ 82,800			
Ongoing Maintenance Works				
	Cost	Description		
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 8,000	Provide 75mm depth additional granulars		
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 8,000			
Construction Works				
	Cost	Description		
Road Widening	\$ 5,000	Widen road to 6.0m		
Full Depth Reconstruction	\$ 222,000			
Upgrade Surface to "tar and chip"	\$ 285,000	Includes full depth reconstruction and widening		
Upgrade Surface to Asphalt	\$ 395,000	Includes full depth reconstruction and widening		
General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road			

Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	Corktown Road		Length of Road (km)	2.3
From	Read Street		Platform Width (m)	8.5
To	Boyd Landing Lane		Surface Width (m)	6.5
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1.0
Surface Type	Gravel		Right of Way Width (m)	12.2
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	Good		Prepared By:	Curtis Millar
2023 Condition Rating	Fair		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost	Description		
Right of Way				
Culverts				
Ditching	\$ 48,000	-#353 there is no ditching present or sloping to get water away from road. Shoulders are high and holding water on road. #459 road is soft and potholes present, water standing in ditches, no where for water to outlet easily.		
Grade Raise (Vertical Alignment Corrections)	\$ 207,000	-Rock high in the road, grader hits it when grading. Grade needs to be raised or rock removed. 150mm for 2300m of road		
Spot Digouts or Improvements	\$ 103,600	-Where the road is soft and wet at the dead end and other areas a diggout is suggested to install some geotextile cloth on the subgrade and granular 'B' material added to help keep the base material dry and add strength to the road subbase. - 280m allowance		
Shouldering Improvements				
Other Works (i.e. Guard Rails)	\$ 100,000	-Lots of coarse material sitting on roads, large amounts plowed off in the winter into the ditches and yards. Fine material not binding into road from Granular 'A' additions. - Rock removal		
Total Cost	\$ 458,600			
Ongoing Maintenance Works				
	Cost	Description		
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 31,000	Provide 75mm depth additional granulars		
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 31,000			
Construction Works				
	Cost	Description		
Road Widening	\$ -			
Full Depth Reconstruction	\$ 747,400			
Upgrade Surface to "tar and chip"	\$ 971,000	Includes full depth reconstruction		
Upgrade Surface to Asphalt	\$ 1,391,000	Includes full depth reconstruction		
General Notes:	Lots of coarse material on surface and has spilled off in ditches from plowing. Lack of material in areas to grade out a proper crown to drain water off road.			

Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	Corktown Road		Length of Road (km)	2.3
From	Boyd Landing Lane		Platform Width (m)	7.3
To	Corktown Lane		Surface Width (m)	5.3
Roadside Environment	Rural, Double Lane		Shoulder Width (m)	1.0
Surface Type	Gravel		Right of Way Width (m)	20.1
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	Good		Prepared By:	Curtis Millar
2023 Condition Rating	Fair		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost		Description	
Right of Way	\$ 12,000		-Cleared back for most part behind existing ditching, in some areas could use to be cleared back further to allow for ditching where none is present. 600m of brushing allowed for	
Culverts	\$ 19,000		- No entrance culverts or ditches at Cedar Gate Lane and Meadow Lane. Soft area of road and a significant amount of potholing	
Ditching	\$ 120,000		-Rock shallow in ditches in this section, solid rock observed in ditch between #932 and #973 on south side of road impeding flows and keeping water high at subbase material level. -North side of road has sections with no ditching. -Shallow, narrow ditches at #576, water sitting on edge of road as ditch has no positive slope to outlet.	
Grade Raise (Vertical Alignment Corrections)	\$ 63,000		150mm grade raise allowance for 700m	
Spot Digouts or Improvements	\$ 236,800		-#982 to dead end is very soft, visible deflection in surface when driving or walking on it, cracking in surface and wet. Requires a lot of maintenance to keep potholes out. 640m allowance	
Shouldering Improvements			-In some areas the road surface is lower then shoulders and water sits on road.	
Other Works (i.e. Guard Rails)	\$ 150,000		rock removal	
Total Cost	\$ 600,800			
Ongoing Maintenance Works				
	Cost		Description	
Shouldering				
Ditching			-Ditching completed on south side from #932 to dead end recently.	
Annual Gravel Addition (Depth)	\$ 29,000		Provide 75mm depth additional granulars	
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 29,000			
Construction Works				
	Cost		Description	
Road Widening	\$ 7,000		Widen road to 6.0m	
Full Depth Reconstruction	\$ 614,200			
Upgrade Surface to "tar and chip"	\$ 844,000		Includes full depth reconstruction and widening	
Upgrade Surface to Asphalt	\$ 1,265,000		Includes full depth reconstruction and widening	
General Notes:	Rock is high in the ditches in areas where water is sitting preventing positive slope in the ditches to the desired outlets. This section was municipally assumed in the 70's. No proper road cross section was constructed, just granular 'A' material added at over the life of the road. Subbase is likely just clay, silt. Lots of coarse material on surface and has spilled off in ditches from plowing. Lack of material in areas to grade out a proper crown to drain water off road.			

Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Gardiner Road	Length of Road (km)	0.43
From	County Road #15	Platform Width (m)	6.4
To	Dead End East	Surface Width (m)	4.4
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	12.2
Traffic Counts	N/A	Boundary Road (Yes/No)	No
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	Fair	Prepared By:	Curtis Millar
2023 Condition Rating	Fair	Reviewed By:	Michael Fadock

Road Improvements and Costs

Spot Improvement Works

	Cost	Description
Right of Way		-Right of Way was brushed last year to open the road up.
Culverts	\$ 9,000	
Ditching	\$ 34,400	-Ditching has limited outlets as the landscaping around is higher then the road holding water up to road base.
Grade Raise (Vertical Alignment Corrections)	\$ 38,400	-Landscaping along the road is higher then the road base, water stays on the road base and in ditches. 430m grade raise allowance of 150mm
Spot Digouts or Improvements		
Shouldering Improvements		-Shoulders are high along road holding water on road base. The edges of the road were soft when walking on them. No water present on the road during the investagtion but potholing was present indicating water was sitting on the road.
Other Works (i.e. Guard Rails)		
Total Cost	\$ 81,800	

Ongoing Maintenance Works

	Cost	Description
Shouldering		
Ditching		
Annual Gravel Addition (Depth)	\$ 5,000	Provide 75mm depth additional granulars
Other Works (i.e. Guard Rail Repair)		
Total Cost	\$ 5,000	

Construction Works

	Cost	Description
Road Widening	\$ 3,000	Widen road to 6.0m
Full Depth Reconstruction	\$ 159,100	
Upgrade Surface to "tar and chip"	\$ 204,000	Includes full depth reconstruction and widening
Upgrade Surface to Asphalt	\$ 283,000	Includes full depth reconstruction and widening
Upgade to Asphalt Full Depth Reconstruction, Urban Section (Inc, Gutters and storm system)		

General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road. Ditching needed to help convey drainage waters to the limited outlets and gravel needed to raise the road base up above the surrounding landscape.
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Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Gemmell Road	Length of Road (km)	1.36
From	Roses Bridge Road	Platform Width (m)	7.3
To	Dead End North	Surface Width (m)	5.3
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	12.2
Traffic Counts	N/A	Boundary Road (Yes/No)	No
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	Fair	Prepared By:	Curtis Millar
2023 Condition Rating	Fair	Reviewed By:	Michael Fadock

Road Improvements and Costs

Spot Improvement Works

	Cost	Description
Right of Way	\$ 5,000	-Some trees in right of way preventing proper ditching between the 90 degree turn and #253, could use to be removed.
Culverts		
Ditching	\$ 30,000	
Grade Raise (Vertical Alignment Corrections)	\$ 49,500	-Road is level with surroundings in from intersection to 90 turn, could use some grade raise and further ditching to help drain the area. Good outlet to the south at 90 degree turn. -At #253 the road base is soft and wet, ditched on both sides but it is shallow and could use to be deeper to get road base to drain. 550m grade raise allowance
Spot Digouts or Improvements	\$ 81,400	
Shouldering Improvements		-Shoulders are high from 315 to dead end causing water to sit and run down road to river. There are a few other spots between #315 and #253 where the shoulders are high holding water on the road as well. Potholing present at all locations.
Other Works (i.e. Guard Rails)		
Total Cost	\$ 165,900	

Ongoing Maintenance Works

	Cost	Description
Shouldering		
Ditching		-Ditched down to the 90 degree turn in 2017.
Annual Gravel Addition (Depth)	\$ 17,000	Provide 75mm depth additional granulars
Other Works (i.e. Guard Rail Repair)		
Total Cost	\$ 17,000	

Construction Works

	Cost	Description
Road Widening	\$ 4,000	Widen road to 6.0m
Full Depth Reconstruction	\$ 421,800	
Upgrade Surface to "tar and chip"	\$ 558,000	Includes full depth reconstruction and widening
Upgrade Surface to Asphalt	\$ 807,000	Includes full depth reconstruction and widening

General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road. Coarse granular material present in the ditch from plowing operations.
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Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Hawley Road	Length of Road (km)	1.32
From	Dead End West	Platform Width (m)	6.5
To	Kilmarnock Road	Surface Width (m)	4.5
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	18.4
Traffic Counts	N/A	Boundary Road (Yes/No)	No
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	Fair	Prepared By:	Curtis Millar
2023 Condition Rating	Fair	Reviewed By:	Michael Fadock

Road Improvements and Costs

Spot Improvement Works

	Cost	Description
Right of Way	\$ 4,000	-Some brushing needed between #259 and #333 on north side of road.
Culverts		
Ditching	\$ 20,000	
Grade Raise (Vertical Alignment Corrections)		-At the intersection the road is potholed and wet. Ditches are shallow and could be cleaned out.
Spot Digouts or Improvements	\$ 55,500	
Shouldering Improvements		
Other Works (i.e. Guard Rails)		
Total Cost	\$ 79,500	

Ongoing Maintenance Works

	Cost	Description
Shouldering		
Ditching		
Annual Gravel Addition (Depth)	\$ 17,000	Provide 75mm depth additional granulars
Other Works (i.e. Guard Rail Repair)		
Total Cost	\$ 17,000	

Construction Works

	Cost	Description
Road Widening	\$ 8,000	Widen road to 6.0m
Full Depth Reconstruction	\$ 432,900	
Upgrade Surface to "tar and chip"	\$ 569,000	Includes full depth reconstruction and widening
Upgrade Surface to Asphalt	\$ 811,000	Includes full depth reconstruction and widening

General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road. Coarse gravel spilling off on shoulders from winter plowing operations.
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Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	HF Mclean Road		Length of Road (km)	0.96
From	County Road #15		Platform Width (m)	8.5
To	Collar Hill Road		Surface Width (m)	6.5
Roadside Environment	Rural, Double Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	20.1
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	Good		Prepared By:	Curtis Millar
2023 Condition Rating	Good		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost	Description		
Right of Way				
Culverts	\$ 12,000	-Culvert cleanout required at #170, full of silt and gravel.		
Ditching	\$ 36,000	-Water sitting in ditch at county road #15 end in low point between road and bottom of hill. Water is escaping slowly but outlet is in need of improvement to get water away. '-At Collarhill Road limit the ditching is shallow due to high rock in ditch. Some water sitting on north side but it does get away. Grade raise here or rock breaking would help to improve drainage. '-No ditch between #155 and #165. A ditch would help with drainage.		
Grade Raise (Vertical Alignment Corrections)	\$ 54,000	600m allowance for 150mm grade raise		
Spot Digouts or Improvements				
Shouldering Improvements				
Other Works (i.e. Guard Rails)	\$ 63,500	-The storm structures installed at the county road #15 end have perforated lids and gravel is falling into manholes. Should be replaced with sealed lids. - rock removal allowance		
Total Cost	\$ 165,500			
Ongoing Maintenance Works				
	Cost	Description		
Shouldering				
Ditching				
Annual Gravel Addition (Depth)	\$ 13,000	Provide 75mm depth additional granulars		
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 13,000			
Construction Works				
	Cost	Description		
Road Widening	\$ -			
Full Depth Reconstruction	\$ -			
Upgrade Surface to "tar and chip"	\$ 93,000			
Upgrade Surface to Asphalt	\$ 269,000			
General Notes:	-Road surface is smooth, good blending of material, little bit of potholing. Coarse material has been plowed off into the ditch over the winter. Lots of people walking on road and lots of traffic, good candidate for a hard surface upgrade. In general some ditch cleanout and increase in depth in some areas needed to keep water flowing and out of subbase of road.			

Village of Merrickville-Wolford - Road Appraisal Form			
Road/Street Name	Kerford Road	Length of Road (km)	2.57
From	County Road #15	Platform Width (m)	7.3
To	Snowdons Corners Road	Surface Width (m)	5.3
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	20.1
Traffic Counts	N/A	Boundary Road (Yes/No)	No
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	Good	Prepared By:	Curtis Millar
2023 Condition Rating	Fair	Reviewed By:	Michael Fadock
Road Improvements and Costs			
Spot Improvement Works			
	Cost	Description	
Right of Way			
Culverts	\$ 5,000		
Ditching	\$ 120,000	<p>-Water sitting in ditch at county Road #15 and Snowdon's Corners intersection and potholing in the road. Some ditch cleanout to fix these issues.</p> <p>-#210 to #280 the road is soft and wet, there is water sitting in the ditch on the west side of the road but the east side is draining well to the outlet to the south. East side could use some cleanout as well to aide in the drainage. Ditch cleanout and possible cross culvert from the west side to the east.</p>	
Grade Raise (Vertical Alignment Corrections)		<p>-Rock is high in spots along the road causing shallow ditches and standing water in ditches. Grade raise may be required or some rock breaking to get the water to flow towards the outlet in the south.</p>	
Spot Digouts or Improvements	\$ 222,000	<p>-Where the road is soft between #210 and #280 a diggout is suggested to install some geotextile cloth on the subgrade and granular 'B' material to help keep the base material dry and add strength to the road subbase. Another area where this could be applied is at the 90 degree corner where water builds on both sides of the roads, also some cleanout at the outlet may help get the water away from the road faster.</p>	
Shouldering Improvements		600m full digout	
Other Works (i.e. Guard Rails)	\$ 225,000	rock removal	
Total Cost	\$ 572,000		
Ongoing Maintenance Works			
	Cost	Description	
Shouldering			
Ditching			
Gravel Addition (Depth)	\$ 32,000	Provide 75mm depth additional granulars	
Other Works (i.e. Guard Rail Repair)			
Total Cost	\$ 32,000		
Construction Works			
	Cost	Description	
Road Widening	\$ 8,000	Widen road to 6.0m	
Full Depth Reconstruction	\$ 728,900		
Upgrade Surface to "tar and chip"	\$ 986,000	Includes full depth reconstruction and widening	
Upgrade Surface to Asphalt	\$ 1,457,000	Includes full depth reconstruction and widening	
General Notes:	<p>-Rock is high in the ditches preventing positive drainage to outlets and standing water in the ditches. Lots of coarse material on surface and has spilled off in ditches from plowing. Lack of material in areas to grade out a proper crown to drain water off road.</p>		

Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	Land O'Nod Road		Length of Road (km)	6.38
From	Augusta Township Line		Platform Width (m)	7.6
To	Bolton Road		Surface Width (m)	5.6
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	11.6
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-004-12
Original Condition Rating	Good		Prepared By:	Curtis Millar
2023 Condition Rating	Fair		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost	Description		
Right of Way	\$ 20,000	brushing allowance		
Culverts	\$ 12,000	-At 12866 the cross culverts have been replaced.		
Ditching	\$ 240,000	<p>-From township line in the south to Pioneer road intersection there is limited ditching present and road tends to pothole in areas lacking ditching. Some areas of note 12035, 12144, 12320, 12405.</p> <p>-At #12994 there are ditches but water sits in them because there are no grades to convey water away.</p>		
Grade Raise (Vertical Alignment Corrections)	\$ 117,000	<p>-At #12405 it tends to pothole lots, and is wet. Requires ditching.</p> <p>-At 12320 some ditching and granular material added but more is needed as road is still wet and potholes lots. More Granular material required to raise road bed and provide more material to grade a crown back in the road.</p> <p>-Swamp just north of 12641 the road is wet and potholed. Swamp on either side and there is issues with beaver blocking cross culvert.</p> <p>-At 12752 to 12906 through the swamp the road has had 200mm of Granular 'B' added and 100mm of Granular 'A'.</p> <p>-From the bridge at 13117 to 13152 the road is soft and wet. There is ditching present it just needs to be cleaned out to convey water and more material added to road base to build it up.</p> <p>- 1300m of grade raise allowance</p>		
Spot Digouts or Improvements	\$ 220,000	600m full digout		
Shouldering Improvements				
Other Works (i.e. Guard Rails)	\$ 75,000	rock removal		
Total Cost	\$ 684,000			
Ongoing Maintenance Works				
	Cost	Description		
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 80,000	Provide 75mm depth additional granulars		
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 80,000			
Construction Works				
	Cost	Description		
Road Widening	\$ 11,000	Widen road to 6.0m		
Full Depth Reconstruction	\$ 2,138,600			
Upgrade Surface to "tar and chip"	\$ 2,768,000	Includes full depth reconstruction and widening		
Upgrade Surface to Asphalt	\$ 3,936,000	Includes full depth reconstruction and widening		
General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road. Lots of coarse material on surface and has spilled off in ditches from plowing. North of Pioneer road there is rock high in the ditches preventing drainage.			

Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	Montague Road		Length of Road (km)	0.92
From	Gravel Start to South		Platform Width (m)	7.6
To	Municipal Limit at Burchill Road		Surface Width (m)	5.6
Roadside Environment	Rural, Double Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	20.1
Traffic Counts			Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	Good		Prepared By:	Curtis Millar
2023 Condition Rating	Good		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost	Description		
Right of Way				
Culverts				
Ditching	\$ 40,000	-At north township limit there is a low point in road and water is sitting in the ditch and has no where to escape. Significant potholing present. -Along length of road the rock is high in the ditch preventing positive drainage to outlets in areas and standing water in ditches. Ditches are shallow and in areas causing water to infiltrate the subbase.		
Grade Raise (Vertical Alignment Corrections)		-At top of the hill there is rock penetrating through the road base. Will require grade raise or rock removal.		
Spot Digouts or Improvements		-At pavement limit at south end significant potholing present. Ditches are shallow with rock preventing them from getting deeper and getting positive drainage to outlet. Shoulders and landscaping are higher then road west side forcing water to site on road.		
Shouldering Improvements				
Other Works (i.e. Guard Rails)	\$ 150,000	rock removal		
Total Cost	\$ 190,000			
Ongoing Maintenance Works				
	Cost	Description		
Shouldering				
Ditching		-Recent ditching along most of the road to improve drainage.		
Gravel Addition (Depth)	\$ 12,000	Provide 75mm depth additional granulars		
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 12,000			
Construction Works				
	Cost	Description		
Road Widening	\$ 2,000	Widen road to 6.0m		
Full Depth Reconstruction	\$ -			
Upgrade Surface to "tar and chip"	\$ 91,000	Includes widening		
Upgrade Surface to Asphalt	\$ 260,000	Includes widening		
General Notes:	-Rock is high throughout the area preventing positive drainage to outlets in ditches and in some cases protruding through the road base. There is some crown present in the road but could use more granular 'A' to shape it better. Lots of coarse material on surface and has spilled off in ditches from plowing. Lack of material in areas to grade out a proper crown to drain water off road.			

Village of Merrickville-Wolford - Road Appraisal Form			
Road/Street Name	O'Brien Road	Length of Road (km)	1.29
From	Dead End North	Platform Width (m)	6.4
To	Burchill Road	Surface Width (m)	4.4
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	20.1
Traffic Counts	N/A	Boundary Road (Yes/No)	No
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	Good	Prepared By:	Curtis Millar
2023 Condition Rating	Fair	Reviewed By:	Michael Fadock
Road Improvements and Costs			
Spot Improvement Works			
	Cost	Description	
Right of Way			
Culverts			
Ditching	\$ 52,000	-East side ditch is deep and works well, the west side ditch is shallow and does drain but the road would benefit from deeping the ditch to keep the road base dry.	
Grade Raise (Vertical Alignment Corrections)		-Fill Material was brought over and used on shoulders to build them out from the Putnam Road reconstruction. Shoulders are soft and some of the material is in the road way causing soft spots.	
Spot Digouts or Improvements	\$ 148,000	-At the dead end the road has frost boils and is soft, wet and has rutted some. Water sitting in the ditch on the west side at the dead end and close to the top of the road.	
Shouldering Improvements			
Other Works (i.e. Guard Rails)			
Total Cost	\$ 200,000		
Ongoing Maintenance Works			
	Cost	Description	
Shouldering			
Ditching			
Gravel Addition (Depth)	\$ 16,000	Provide 75mm depth additional granulars	
Other Works (i.e. Guard Rail Repair)			
Total Cost	\$ 16,000		
Construction Works			
	Cost	Description	
Road Widening	\$ 9,000	Widen road to 6.0m	
Full Depth Reconstruction	\$ 329,300		
Upgrade Surface to "tar and chip"	\$ 463,000	Includes full depth reconstruction and widening	
Upgrade Surface to Asphalt	\$ 700,000	Includes full depth reconstruction and widening	
General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road.		

Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	Pioneer Road		Length of Road (km)	1.94
From	Land O'Nod Road		Platform Width (m)	7
To	Snowdons Corners Road		Surface Width (m)	5
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	12.3
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	Poor		Prepared By:	Curtis Millar
2023 Condition Rating	Fair		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost	Description		
Right of Way				
Culverts				
Ditching	\$ 60,000	<p>-From Snowdons Corners intersection to towards end of yard of #485 no ditching on either side of the road. Shoulders are high keeping water on road base and has potholed significantly. Ditching should be established to drain water to swamp and creek to the north.</p> <p>'-From #485 towards bridge, the west side of the road has a shallow ditch and the east either slopes down to fields or has no ditch and pushes water onto the road. Some ditching and cleanout to get the water away from the road base is required.</p>		
Grade Raise (Vertical Alignment Corrections)	\$ 81,000	<p>- In the early 90' approximately 200mm of Granular 'B' and 100mm of Granular 'A' was placed on road to raise it up. It flooded and had to be closed and a cross culvert popped out of the road. Grade raise has helped keep road base dry. There is the presence of some granular 'B' that was placed being pulled up through the road base by the grader. More Granular 'A' material needed to allow for grading of road surface. 900m grade raise allowance of 150mm</p>		
Spot Digouts or Improvements				
Shouldering Improvements		<p>-Multiple areas where shoulders are higher then the raod surface and should be cut back or material added to correct it.</p>		
Other Works (i.e. Guard Rails)				
Total Cost	\$ 141,000			
Ongoing Maintenance Works				
	Cost	Description		
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 16,000	Provide 75mm depth additional granulars		
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 16,000			
Construction Works				
	Cost	Description		
Road Widening	\$ 8,000	Widen road to 6.0m		
Full Depth Reconstruction	\$ 717,800			
Upgrade Surface to "tar and chip"	\$ 914,000	Includes full depth reconstruction and widening		
Upgrade Surface to Asphalt	\$ 1,269,000	Includes full depth reconstruction and widening		
General Notes:	<p>-Lots of coarse material on surface and has spilled off in ditches from plowing. Lack of material in areas to grade out a proper crown to drain water off road. From the bridge back north the road requires ditch cleanout and ditch establishment to keep water away from road base.</p>			

Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	Pioneer Road		Length of Road (km)	4.08
From	Bolton Road		Platform Width (m)	7
To	Snowdons Corners Road		Surface Width (m)	5
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	12.3 but varies
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	Poor		Prepared By:	Curtis Millar
2023 Condition Rating	Poor		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost		Description	
Right of Way				
Culverts			-There are 5 cross culverts at the swamp between #542 and #655, most are newer HDPE.	
Ditching	\$ 96,000		-At #1124 there is water sitting in the ditches and the road is soft and wet. Some ditching and road digout required. -At #1213 the road is wet, once frost is out the road grades well and doesn't pothole bad. Some material added to surface would help and some ditch cleanout. -#772 the road is soft at the entrance, ditching was completed and culvert lowered but it still requires more to get sitting water in ditch away. -North from swamp to #542 the road is soft and has no ditching. From #542 south to Snowdons Corners Road there is no ditching present.	
Grade Raise (Vertical Alignment Corrections)	\$ 27,000		-At the Bolton Road Intersection 200mm of Granular 'A' was added as it was soft, it firmed it up considerably. -At #1187 there is rock present in the road base, will require grade raise or rock removal. -From #843 to cross culvert in the south at swamp pit run was added due to soft road. There is some shallow ditching present but requires more to drain water down to swamp.	
Spot Digouts or Improvements	\$ 470,000		-On hill at #1227 there is rock sticking out of the road and should be removed our road built up. -At Snowdons Drive road is lower then shoulders and there is water standing in the ditches. Some ditch clean out required and grade raise in the road.	
Shouldering Improvements			-#722 the shoulders are higher then the road surface causing water to sit on the road and potholing to occur.	
Other Works (i.e. Guard Rails)	\$ 150,000		rock removal	
Total Cost	\$ 743,000			
Ongoing Maintenance Works				
	Cost		Description	
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 24,000		Provide 75mm depth additional granulars	
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 24,000			
Construction Works				
	Cost		Description	
Road Widening	\$ 17,000		Widen road to 6.0m	
Full Depth Reconstruction	\$ 1,102,600			
Upgrade Surface to "tar and chip"	\$ 1,515,000		Includes full depth reconstruction and widening	
Upgrade Surface to Asphalt	\$ 2,262,000		Includes full depth reconstruction and widening	
General Notes:	-Lots of coarse material on surface and has spilled off in ditches from plowing. Lack of material in areas to grade out a proper crown to drain water off road. There is rock high in areas in the ditches and the road base throughout this section of the road preventing proper ditching and grading issues for the road. Many areas need ditches established or cleaned out so that water drains away from the roads.			

Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Snowdon Drive W	Length of Road (km)	0.57
From	Dead End West	Platform Width (m)	6
To	Snowdons Corners Road	Surface Width (m)	4
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	20.1
Traffic Counts	N/A	Boundary Road (Yes/No)	No
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	Fair	Prepared By:	Curtis Millar
2023 Condition Rating	Poor	Reviewed By:	Michael Fadock

Road Improvements and Costs

Spot Improvement Works

	Cost	Description
Right of Way	\$ 12,000	-Small trees and shrubs in ditch and in ROW that should be brushed back.
Culverts		
Ditching	\$ 48,000	-Ditches are shallow or do not exist in most places along the road.
Grade Raise (Vertical Alignment Corrections)	\$ 36,000	-Very little granular material on road, at the dead end the base material has black organic material protruding through the surface. Very soft at dead end, swamp on both sides, shoulders are high holding water on road surface. 400m grade raise allowance 150mm
Spot Digouts or Improvements	\$ 74,000	200m full digout
Shouldering Improvements		
Other Works (i.e. Guard Rails)		
Total Cost	\$ 170,000	

Ongoing Maintenance Works

	Cost	Description
Shouldering		
Ditching		
Gravel Addition (Depth)	\$ 7,000	Provide 75mm depth additional granulars
Other Works (i.e. Guard Rail Repair)		
Total Cost	\$ 7,000	

Construction Works

	Cost	Description
Road Widening	\$ 5,000	Widen road to 6.0m
Full Depth Reconstruction	\$ 136,900	
Upgrade Surface to "tar and chip"	\$ 197,000	Includes full depth reconstruction and widening
Upgrade Surface to Asphalt	\$ 302,000	Includes full depth reconstruction and widening

General Notes: -Lack of material in areas to grade out a proper crown to drain water off road. Only a 2 homes on the road. Road needs granular material to build road up out of the swamp and allow for proper drainage.

Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	Snowdon Drive E		Length of Road (km)	1.17
From	Snowdons Corners Road		Platform Width (m)	6
To	Pioneer Road		Surface Width (m)	4
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	20.1
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	Fair		Prepared By:	Curtis Millar
2023 Condition Rating	Fair		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost	Description		
Right of Way				
Culverts	\$ 3,000			
Ditching	\$ 12,000	<p>-Little to no ditching from #127 to intersection at Pioneer road. Soft at the entrance to #127, water sitting on east side of entrance in landscaping. An entrance culvert to get the water from east to the west side of the lane would resolve this.</p> <p>-Recent ditching done at Snowdons Corners Road intersection down passed #285.</p> <p>-From #285 to #171 on north side of road there has been ditching completed and a berm built by landowner preventing water from the swamp and creek entering their lands.</p>		
Grade Raise (Vertical Alignment Corrections)		-Creek in middle section of road that runs along both sides, dries up some in the summer but still has water on either side of the road near #171.		
Spot Digouts or Improvements	\$ 55,500	150m full digout		
Shouldering Improvements				
Other Works (i.e. Guard Rails)				
Total Cost	\$ 70,500			
Ongoing Maintenance Works				
	Cost	Description		
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 15,000	Provide 75mm depth additional granulars		
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 15,000			
Construction Works				
	Cost	Description		
Road Widening	\$ 10,000	Widen road to 6.0m		
Full Depth Reconstruction	\$ 377,400			
Upgrade Surface to "tar and chip"	\$ 501,000	Includes full depth reconstruction and widening		
Upgrade Surface to Asphalt	\$ 715,000	Includes full depth reconstruction and widening		
General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road. Lots of coarse material on surface and has spilled off in ditches from plowing. Material on the surface is well blended together but more could still use more to raise the grade of the road and provide more crown.			

Village of Merrickville-Wolford - Road Appraisal Form			
Road/Street Name	Sturgess Road	Length of Road (km)	0.69
From	Dead End West	Platform Width (m)	6.1
To	Kilmarnock Road	Surface Width (m)	4.1
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	15.4
Traffic Counts	N/A	Boundary Road (Yes/No)	No
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	Good	Prepared By:	Curtis Millar
2023 Condition Rating	Good	Reviewed By:	Michael Fadock
Road Improvements and Costs			
Spot Improvement Works			
	Cost	Description	
Right of Way			
Culverts	\$ 9,000		
Ditching	\$ 10,000	-Some ditching need at #221 on north side of road. Otherwise good ditching throughout.	
Grade Raise (Vertical Alignment Corrections)	\$ 63,000	-Road profile is flat, would benefit from some additional material to grade into a crown. 700m grade raise 150mm allowance	
Spot Digouts or Improvements			
Shouldering Improvements		-Shoulders are high in areas preventing water from running off the road causing potholing.	
Other Works (i.e. Guard Rails)			
Total Cost	\$ 82,000		
Ongoing Maintenance Works			
	Cost	Description	
Shouldering			
Ditching			
Gravel Addition (Depth)	\$ 9,000	Provide 75mm depth additional granulars	
Other Works (i.e. Guard Rail Repair)			
Total Cost	\$ 9,000		
Construction Works			
	Cost	Description	
Road Widening	\$ 6,000	Widen road to 6.0m	
Full Depth Reconstruction	\$ -		
Upgrade Surface to "tar and chip"	\$ 73,000	Includes widening	
Upgrade Surface to Asphalt	\$ 199,000	Includes widening	
General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road. Lots of heavy farm equipment on the road and lots of mud dragged onto it when working in the fields.		

Village of Merrickville-Wolford - Road Appraisal Form			
Road/Street Name	Weedmark Road	Length of Road (km)	3.1
From	Willis Road	Platform Width (m)	6.1
To	Box Culvert West of Maitland Road	Surface Width (m)	4.1
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	20.1
Traffic Counts	N/A	Boundary Road (Yes/No)	No
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	Poor	Prepared By:	Curtis Millar
2023 Condition Rating	Poor	Reviewed By:	Michael Fadock
Road Improvements and Costs			
Spot Improvement Works			
	Cost	Description	
Right of Way			
Culverts	\$ 12,000		
Ditching	\$ 64,000	<p>-At #1180 the road is wet and soft, shallow ditches.</p> <p>-East of #1180 the road is low and passes through a swamp with water sitting on either side of the road. Road was soft and potholed where it passed through the swamp.</p> <p>-At #1058 there is no ditching present, the rock is high in the ditches preventing them from being established. Roadside is higher then the road causing water to drain out onto the road and sit there.</p> <p>-At #846 the ditching is shallow and close to level with the road base preventing the base material from draining. There is rock high in the ditch preventing the ditch from being deeper. The road base should be raised up so it can drain to the ditch.</p>	
Grade Raise (Vertical Alignment Corrections)	\$ 81,000	<p>-#996 the road is wet and exceptionally soft. Provide some ditching on the north side of the road at this location and some grade raise to get road base up.</p> <p>-East of #996 through swamp to #864 the road had 100mm of granular 'B' added and was capped with Granular 'A' material in the early 90's. Area was potholed and rough to drive. Could use more material to raise the road base up higher out of the swamp to keep road base material dry.</p> <p>-From bridge West of Maitland road to #702 there was granular 'A' added and capped with Granular 'A' to raise road and provide more material for grading.</p> <p>- 900m grade raise allowance 150mm</p>	
Spot Digouts or Improvements	\$ 110,000	300m full digout	
Shouldering Improvements			
Other Works (i.e. Guard Rails)	\$ 100,000	rock removal	
Total Cost	\$ 367,000		
Ongoing Maintenance Works			
	Cost	Description	
Shouldering			
Ditching			
Gravel Addition (Depth)	\$ 39,000	Provide 75mm depth additional granulars	
Other Works (i.e. Guard Rail Repair)			
Total Cost	\$ 39,000		
Construction Works			
	Cost	Description	
Road Widening	\$ 25,000	Widen road to 6.0m	
Full Depth Reconstruction	\$ 1,036,000		
Upgrade Surface to "tar and chip"	\$ 1,362,000	Includes full depth reconstruction and widening	
Upgrade Surface to Asphalt	\$ 1,929,000	Includes full depth reconstruction and widening	
General Notes:	<p>-Lack of material in areas to grade out a proper crown to drain water off road.</p> <p>-Areas of the road are flat and hard to get water to flow to outlets. Rock is high preventing ditch excavation to get ditches low enough to drain the road base.</p>		

Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	Maitland Road		Length of Road (km)	1.55
From	Weedmark Road		Platform Width (m)	7
To	Barber Road		Surface Width (m)	5
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	20.1
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	N/A		Prepared By:	Curtis Millar
2023 Condition Rating	Fair		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost		Description	
Right of Way				
Culverts	\$ 12,000			
Ditching	\$ 40,000.00		-Good ditches from Weedmark Road to #661, some cleanout required to remove vegetation. Shoulders are narrow through this area.	
Grade Raise (Vertical Alignment Corrections)	\$ 18,000.00		-Low area after #595 gets soft and breaks up, could use some material to build up road base and some ditch cleanout to get water flowing to outlets in ditch. Road is also flat and needs a better crown established but more granular material required to accomplish this. -At both pavement limits the gravel is lower then the surface treatment and has potholed significantly. More granular material needed to raise grade, possibly a digout to reestablish road base.	
Spot Digouts or Improvements	\$ 185,000		200m grade raise allowance of 150mm 500m full digout	
Shouldering Improvements				
Other Works (i.e. Guard Rails)				
Total Cost	\$ 255,000			
Ongoing Maintenance Works				
	Cost		Description	
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 20,000		Provide 75mm depth additional granulars	
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 20,000			
Construction Works				
	Cost		Description	
Road Widening	\$ 7,000		Widen road to 6.0m	
Full Depth Reconstruction	\$ 388,500			
Upgrade Surface to "tar and chip"	\$ 546,000		Includes full depth reconstruction and widening	
Upgrade Surface to Asphalt	\$ 830,000		Includes full depth reconstruction and widening	
General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road.			

Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	Wolford Centre Road		Length of Road (km)	2.36
From	County Road #15		Platform Width (m)	6.4
To	Dead End East		Surface Width (m)	4.4
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	20.1
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	Fair		Prepared By:	Curtis Millar
2023 Condition Rating	Fair		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost		Description	
Right of Way			-Brushed the right of way last year.	
Culverts	\$ 8,000			
Ditching	\$ 80,000		-At swamp approximately 200m from intersection there is little ditching and water sits, could use some ditching to get water to drain away.	
Grade Raise (Vertical Alignment Corrections)	\$ 216,000		-#426 to dead end received 100mm of Granular 'B' and a capping of Granular 'A' 6-8 years ago to widen and eliminate some soft areas. Road is firm now but Granular 'B' being pulled up when grading, needs more Granular 'A' for road base. -At #146, water sitting on either side of ditch, has no where to drain to. Road is soft at times until water disappears. -At #269 soft road surface, could use some ditching and granular material. -From #269 to #426, there is no where for water to drain to on the north side of the road. Provide some cross culverts to water to south side of road. Potholed in this area. Area is flat as well making it hard to slope ditches and convey water to outlet areas. - 2400m of 150mm grade raise allowance	
Spot Digouts or Improvements				
Shouldering Improvements				
Other Works (i.e. Guard Rails)				
Total Cost	\$ 304,000			
Ongoing Maintenance Works				
	Cost		Description	
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 30,000		Provide 75mm depth additional granulars	
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 30,000			
Construction Works				
	Cost		Description	
Road Widening	\$ 16,000		Widen road to 6.0m	
Full Depth Reconstruction	\$ 873,200			
Upgrade Surface to "tar and chip"	\$ 1,118,000		Includes full depth reconstruction and widening	
Upgrade Surface to Asphalt	\$ 1,550,000		Includes full depth reconstruction and widening	
General Notes:	-Lots of coarse material on surface and has spilled off in ditches from plowing			

Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	Yule Road		Length of Road (km)	5.66
From	Atkins Lake Road		Platform Width (m)	6.7
To	Weedmark Road		Surface Width (m)	5.7
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	20.1
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	Fair		Prepared By:	Curtis Millar
2023 Condition Rating	Poor		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost	Description		
Right of Way		-Brushed at Atkins lake Intersection to Railroad.		
Culverts	\$ 20,000	-Between #423 and #540 the road narrows as it approaches the the large cross culverts placed in the base of an old box culvert. The culverts are high on the south side of the road causing some ponding on there. If they were lowered on the south side it would reduce the amont of standing water.		
Ditching	\$ 240,000	<p>-From Weedmark Road to #224 the road is potholed and has frost boils present. Ditch cleanout to remove vegetation and regraded ditches to help get water flowing in spots where it is sitting. There was an excpetaionally soft area about mid-way between the Weedmark Road Intersection and #224.</p> <p>-South of #224 to #423, road is in good shape and has good ditches established, just needs some cleanout to prevent standing water.</p> <p>- From #540 to Atkins Lake Road there are large sections with no ditching and the road base is level with the surrounding landscape causing water to sit on the road and create potholes and soft road conditions at times. In some areas the shoulders are higher then the road surface as well having the same effect. There is rock visible in the ditch areas at their current elevations which has prevented proper ditches from being reestablished. Suggest adding more material to raise road grade above surroundings in areas where ditching is not possible.</p>		
Grade Raise (Vertical Alignment Corrections)	\$ 315,000	-At #423 on the corner the road is soft and wet and has some standing water on the east side of the road and on the road. Some ditching and grade raise needed to get water off the road and conveyed to an outlet in the ditches.		
Spot Digouts or Improvements	\$ 444,000	-3500m of 150mm grade raise allowance 1200m full digout		
Shouldering Improvements		-Shoulders in many areas between #540 and Atkins Lake Road are higher then the road surface and are holding water on the road causing soft road edges and shoulders, and potholed areas. Key areas where observed were the treed areas and next to fields.		
Other Works (i.e. Guard Rails)	\$ 200,000	rock removal		
Total Cost	\$ 1,219,000			
Ongoing Maintenance Works				
	Cost	Description		
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 71,000	Provide 75mm depth additional granulars		
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 71,000			
Construction Works				
	Cost	Description		
Road Widening	\$ 7,000	Widen road to 6.0m		
Full Depth Reconstruction	\$ 1,650,200			
Upgrade Surface to "tar and chip"	\$ 2,206,000	Includes full depth reconstruction and widening		
Upgrade Surface to Asphalt	\$ 3,242,000	Includes full depth reconstruction and widening		
General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road. Lots of coarse material on surface and has spilled off in ditches from plowing			

Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Carleys Corners Road	Length of Road (km)	2.3
From	Dead End	Platform Width (m)	6.7
To	Residence #329	Surface Width (m)	4.7
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	20.1
Traffic Counts	N/A	Boundary Road (Yes/No)	No
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	N/A	Prepared By:	Curtis Millar
2023 Condition Rating	Poor	Reviewed By:	Michael Fadock
Road Improvements and Costs			
Spot Improvement Works			
	Cost	Description	
Right of Way	\$ 30,000	-Lots of growth in ditches, could used to be grubbed and brushed out.	
Culverts	\$ 12,000	-Cross Culvert just before #684 could be lowered on the inlet side to reduce some standing water.	
Ditching	\$ 80,000	-Areas where ditching is shallow or not present the road is soft and wet and is potholed. Ditching and grade raise would help eliminate some issues.	
Grade Raise (Vertical Alignment Corrections)	\$ 135,000	-Gravel this year to help fix potholes where the gravel portion of the road starts. Two loads over 300m to 400m. -Rock is high in the road and in the ditches along sections of the road preventing proper ditch construction and grading issues on the road. - 1500m of 150mm grade raise allowance	
Spot Digouts or Improvements			
Shouldering Improvements			
Other Works (i.e. Guard Rails)	\$ 200,000	rock removal	
Total Cost	\$ 457,000		
Ongoing Maintenance Works			
	Cost	Description	
Shouldering			
Ditching			
Gravel Addition (Depth)	\$ 29,000	Provide 75mm depth additional granulars	
Other Works (i.e. Guard Rail Repair)			
Total Cost	\$ 29,000		
Construction Works			
	Cost	Description	
Road Widening	\$ 13,000	Widen road to 6.0m	
Full Depth Reconstruction	\$ 851,000		
Upgrade Surface to "tar and chip"	\$ 1,087,000	Includes full depth reconstruction and widening	
Upgrade Surface to Asphalt	\$ 1,508,000	Includes full depth reconstruction and widening	
General Notes:			
-Lack of material in areas to grade out a proper crown to drain water off road.			

Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Ogilvie Lane		Length of Road (km)	0.075
From	Kilmarnock Road		Platform Width (m)	7.2
To	Property Line		Surface Width (m)	5.2
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	N/A
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	N/A		Prepared By:	Curtis Millar
2023 Condition Rating	Good		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost	Description		
Right of Way		-Short L shaped section of road at entrance to trailer park.		
Culverts	\$ 4,000			
Ditching	\$ 1,200			
Grade Raise (Vertical Alignment Corrections)	\$ 6,750	-The road is lower then the landscaping causing water to sit on the road, additional material to build it up above the surrounding landscape and a cross culvet from the trianglular shaped grassed island to the east to drain it. 75m of grade raise required		
Spot Digouts or Improvements				
Shouldering Improvements				
Other Works (i.e. Guard Rails)				
Total Cost	\$ 11,950			
Ongoing Maintenance Works				
	Cost	Description		
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 1,000	Provide 75mm depth additional granulars		
Other Works (i.e. Guard Rail Repair)				
Total Cost	\$ 1,000			
Construction Works				
	Cost	Description		
Road Widening	\$ -	Widen road to 6.0m		
Full Depth Reconstruction	\$ -			
Upgrade Surface to "tar and chip"	\$ 7,000	Includes full depth reconstruction and widening		
Upgrade Surface to Asphalt	\$ 21,000	Includes full depth reconstruction and widening		
General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road.			

Village of Merrickville-Wolford - Road Appraisal Form				
Road/Street Name	Eastons Corners Roads		Length of Road (km)	1.51
From	Henry Street, Park Street, Baldwin Street, Duncan Street		Platform Width (m)	6.8
To			Surface Width (m)	4.8
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	12.2
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	N/A		Prepared By:	Curtis Millar
2023 Condition Rating	Fair		Reviewed By:	Michael Fadock
Road Improvements and Costs				
Spot Improvement Works				
	Cost		Description	
Right of Way			-Single lane gravel streets in a small hamlet.	
Culverts	\$ 16,000			
Ditching	\$ 80,000		-Very little ditching present but there is not enough room on some street to establish a ditch. There is a good outlet along the south side of Henry Street that drains to a field to the north. If ditching or a storm system was established this would be a good outlet.	
Grade Raise (Vertical Alignment Corrections)	\$ 135,000		-Roads in hamlet are low, shoulders and landscaping in most areas is higher then road surface causing water to sit on and run down the sides of the roads. Add more material to get road surface higher then shoulders and landscaping so water does not sit on the roads causing washouts or potholes. 1500m of 150mm grade raise allowance	
Spot Digouts or Improvements				
Shouldering Improvements				
Other Works (i.e. Guard Rails)				
Total Cost	\$ 231,000			
Ongoing Maintenance Works				
	Cost		Description	
Shouldering				
Ditching				
Gravel Addition (Depth)	\$ 19,000		Provide 75mm depth additional granulars	
Other Works (i.e. Guard Rail Repair)			-Lots of calcium used to keep dust levels down	
Total Cost	\$ 19,000			
Construction Works				
	Cost		Description	
Road Widening	\$ 8,000		Widen road to 6.0m	
Full Depth Reconstruction	\$ 558,700			
Upgrade Surface to "tar and chip"	\$ 713,000		Includes full depth reconstruction and widening	
Upgrade Surface to Asphalt	\$ 990,000		Includes full depth reconstruction and widening	
General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road.			

Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Phillips Road	Length of Road (km)	0.58
From	Ireland Road	Platform Width (m)	6.1
To	Dead End	Surface Width (m)	4.1
Roadside Environment	Rural, Single Lane	Shoulder Width (m)	1
Surface Type	Gravel	Right of Way Width (m)	20.1
Traffic Counts	N/A	Boundary Road (Yes/No)	No
Ditching Type	Open Ditch	Review Date:	2023-04-12
Original Condition Rating	N/A	Prepared By:	Curtis Millar
2023 Condition Rating	Poor	Reviewed By:	Michael Fadock
Road Improvements and Costs			
Spot Improvement Works			
	Cost	Description	
Right of Way		-Brushed last year to edge of right of way.	
Culverts			
Ditching	\$ 48,000	-Ditch cleanout needed to regain positive drainage in ditches and remove vegetation so water flows to outlet in field approximately 100m from intersection and to an existing outlet at dead end. '-The rock is high in the ditches preventing positive drainage to existing outlets in areas.	
Grade Raise (Vertical Alignment Corrections)	\$ 54,000	-Material needed to shape road into a proper crown and to raise the road base up to keep it dry. 600m of 150mm grade raise	
Spot Digouts or Improvements			
Shouldering Improvements			
Other Works (i.e. Guard Rails)	\$ 150,000	rock removal	
Total Cost	\$ 252,000		
Ongoing Maintenance Works			
	Cost	Description	
Shouldering			
Ditching			
Gravel Addition (Depth)	\$ 7,000	Provide 75mm depth additional granulars	
Other Works (i.e. Guard Rail Repair)			
Total Cost	\$ 7,000		
Construction Works			
	Cost	Description	
Road Widening	\$ 5,000	Widen road to 6.0m	
Full Depth Reconstruction	\$ 214,600		
Upgrade Surface to "tar and chip"	\$ 276,000	Includes full depth reconstruction and widening	
Upgrade Surface to Asphalt	\$ 382,000	Includes full depth reconstruction and widening	
General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road.		

Village of Merrickville-Wolford - Road Appraisal Form

Road/Street Name	Willis Road		Length of Road (km)	0.8
From	Crystal Road		Platform Width (m)	6.4
To	Dead End		Surface Width (m)	4.4
Roadside Environment	Rural, Single Lane		Shoulder Width (m)	1
Surface Type	Gravel		Right of Way Width (m)	20.1
Traffic Counts	N/A		Boundary Road (Yes/No)	No
Ditching Type	Open Ditch		Review Date:	2023-04-12
Original Condition Rating	N/A		Prepared By:	Curtis Millar
2023 Condition Rating	Fair		Reviewed By:	Michael Fadock

Road Improvements and Costs

Spot Improvement Works

	Cost	Description
Right of Way	\$ 4,000	-Dead end gets narrow and needs brushing to open up the sight lines.
Culverts	\$ 8,000	-Cross culvert before #16 has water sitting on either side of the road, flows to the south side of the road but landscaping on private lands prevents it from getting away.
Ditching	\$ 40,000	-Ditching is shallow or non-existent in areas along the road. Rock is visible in the ditches preventing them from being excavated deeper. Raise the road base to keep it dry and establish ditches.
Grade Raise (Vertical Alignment Corrections)	\$ 72,000	150mm grade raise for 800m
Spot Digouts or Improvements		-At intersection where it transitions from surface treatment to gravel there is potholing. Some material needed to shape the transition.
Shouldering Improvements		
Other Works (i.e. Guard Rails)	\$ 100,000	rock removal
Total Cost	\$ 224,000	

Ongoing Maintenance Works

	Cost	Description
Shouldering		
Ditching		
Gravel Addition (Depth)	\$ 10,000	Provide 75mm depth additional granulars
Other Works (i.e. Guard Rail Repair)		
Total Cost	\$ 10,000	

Construction Works

	Cost	Description
Road Widening	\$ 5,000	Widen road to 6.0m
Full Depth Reconstruction	\$ 296,000	
Upgrade Surface to "tar and chip"	\$ 379,000	Includes full depth reconstruction and widening
Upgrade Surface to Asphalt	\$ 525,000	Includes full depth reconstruction and widening

General Notes:	-Lack of material in areas to grade out a proper crown to drain water off road.
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APPENDIX D

ROAD IMPROVEMENT PROGRAM

GRAVEL ROADS

1. Widen all gravel roads to a minimum surface width of 6.0m. The total one-time cost is estimated to be \$233,000.
2. Apply 75mm of new gravel to 1/3rd of the gravel roads each year to a surface width of 6.0m is anticipated to require 7,890 cu.m. of granular material, or 17,750 tonnes per year. The total cost of this is estimated to be \$228,000 per year.
3. HF McLean Rd. is the only gravel road that is in a condition to be considered for upgrading to an asphalt surface at this time. The estimated cost of upgrading this road (including spot repairs) to asphalt is \$435,000.00.

Summary Table of Road Needs Study 2023 Findings

Prepared By: Curtis Millar
 Reviewed By: Michael Fadock
 Review Date: 2023-08-04
 Issue Date: 2023-08-04 Job No 23-5018A

Road/Street Name	Surface Type	Start location	End Location	Length (km)	2023 Condition Rating	Platform Width (m)	Surface Width (m)	Shoulder Width (m)	Right of Way Width (m)	Roadside Environment	Ditching Type	Spot Repairs & Construction Cost	Gravel		Full Depth Reconstruction Cost	Upgrade to Surface Treat Cost ('Chip and dip')	Upgrade to Asphalt Cost
													12.45 \$/tonne	2.25 tonne/cu.m.			
													Costs (\$ / m)	370			
Barber Rd	Gravel	Maitland Road	County Road #41	1.61	Poor	5.4	3.4	1	20.1	Rural, Single Lane	Open Ditch	\$ 541,000	\$ 18,000	\$ 20,000	\$ 225,700	\$ 400,000	\$ 695,000
Barber Rd	Gravel	County Road #41	Dead End East	1.06	Poor	5.4	3.4	1	20.1	Rural, Single Lane	Open Ditch	\$ 194,500	\$ 12,000	\$ 13,000	\$ 392,200	\$ 507,000	\$ 701,000
Bolton Rd	Gravel	Harvey Road	Pioneer Road	3.9	Poor	7.6	5.6	1	20.1	Rural, Single Lane	Open Ditch	\$ 231,250	\$ 7,000	\$ 49,000	\$ 1,443,000	\$ 1,828,000	\$ 2,542,000
Carkner Rd South	Gravel	Weedmark Road	Municipal Limit	0.3	Poor	5.5	3.5	1	12.3	Rural, Single Lane	Open Ditch	\$ 135,000	\$ 3,000	\$ 4,000	\$ -	\$ 32,000	\$ 87,000
Carkner Rd North	Gravel	Barber Road	Municipal Limit	0.4	Poor	5.5	3.5	1	12.3	Rural, Single Lane	Open Ditch	\$ 33,900	\$ 4,000	\$ 5,000	\$ 148,000	\$ 191,000	\$ 264,000
Corkoran Rd N	Gravel	County Road #16	Dead End East	0.6	Poor	6.1	4.1	1	20.1	Rural, Single Lane	Open Ditch	\$ 82,800	\$ 5,000	\$ 8,000	\$ 222,000	\$ 285,000	\$ 395,000
Corktown Rd	Gravel	Read Street	Boyd Landing Lane	2.3	Fair	8.5	6.5	1	12.2	Rural, Single Lane	Open Ditch	\$ 458,600	\$ -	\$ 31,000	\$ 747,400	\$ 971,000	\$ 1,391,000
Corktown Rd	Gravel	Boyd Landing Lane	Corktown Lane	2.3	Fair	7.3	5.3	1	20.1	Rural, Double Lane	Open Ditch	\$ 600,800	\$ 7,000	\$ 29,000	\$ 614,200	\$ 844,000	\$ 1,265,000
Gardiner Rd	Gravel	County Road #15	Dead End East	0.43	Fair	6.4	4.4	1	12.2	Rural, Single Lane	Open Ditch	\$ 81,800	\$ 3,000	\$ 5,000	\$ 159,100	\$ 204,000	\$ 283,000
Gemmell Rd	Gravel	Roses Bridge Road	Dead End North	1.36	Fair	7.3	5.3	1	12.2	Rural, Single Lane	Open Ditch	\$ 165,900	\$ 4,000	\$ 17,000	\$ 421,800	\$ 558,000	\$ 807,000
Hawley Rd	Gravel	Dead End West	Kilmarnock Road	1.32	Fair	6.5	4.5	1		Rural, Single Lane	Open Ditch	\$ 79,500	\$ 8,000	\$ 17,000	\$ 432,900	\$ 569,000	\$ 811,000
HF McLean Rd	Gravel	County Road #15	Collar Hill Road	0.96	Good	8.5	6.5	1	20.1	Rural, Double Lane	Open Ditch	\$ 165,500	\$ -	\$ 13,000	\$ -	\$ 93,000	\$ 269,000
Kerford Rd	Gravel	County Road #15	Snowdons Corners Road	2.57	Fair	7.3	5.3	1	20.1	Rural, Single Lane	Open Ditch	\$ 572,000	\$ 8,000	\$ 32,000	\$ 728,900	\$ 986,000	\$ 1,457,000
Land O'Nod Rd	Gravel	Augusta Township Line	Bolton Road	6.38	Fair	7.6	5.6	1	11.6	Rural, Single Lane	Open Ditch	\$ 684,000	\$ 11,000	\$ 80,000	\$ 2,138,600	\$ 2,768,000	\$ 3,936,000
Montague St.	Gravel	Gravel Start to South	Municipal Limit at Burchill Road	0.92	Good	7.6	5.6	1	20.1	Rural, Double Lane	Open Ditch	\$ 190,000	\$ 2,000	\$ 12,000	\$ -	\$ 91,000	\$ 260,000
O'Brien Rd	Gravel	Dead End North	Burchill Road	1.29	Fair	6.4	4.4	1	20.1	Rural, Single Lane	Open Ditch	\$ 200,000	\$ 9,000	\$ 16,000	\$ 329,300	\$ 463,000	\$ 700,000
Pioneer Rd	Gravel	Land O'Nod Road	Snowdons Corners Road	1.94	Fair	7	5	1	12.3	Rural, Single Lane	Open Ditch	\$ 141,000	\$ 8,000	\$ 24,000	\$ 717,800	\$ 914,000	\$ 1,269,000
Pioneer Rd	Gravel	Bolton Road	Snowdons Corners Road	4.08	Poor	7	5	1	12.3 but varies	Rural, Single Lane	Open Ditch	\$ 743,000	\$ 17,000	\$ 51,000	\$ 1,102,600	\$ 1,515,000	\$ 2,262,000
Snowdon Drive West	Gravel	Dead End West	Snowdons Corners Road	0.57	Poor	6	4	1	20.1	Rural, Single Lane	Open Ditch	\$ 170,000	\$ 5,000	\$ 7,000	\$ 136,900	\$ 197,000	\$ 302,000
Snowdon Drive East	Gravel	Snowdons Corners Road	Pioneer Road	1.17	Fair	6	4	1	20.1	Rural, Single Lane	Open Ditch	\$ 70,500	\$ 10,000	\$ 15,000	\$ 377,400	\$ 501,000	\$ 715,000
Sturgess Rd	Gravel	Dead End West	Kilmarnock Road	0.69	Good	6.1	4.1	1	15.4	Rural, Single Lane	Open Ditch	\$ 82,000	\$ 6,000	\$ 9,000	\$ -	\$ 73,000	\$ 199,000
Weedmark Rd	Gravel	Willis Road	Box Culvert West of Maitland Road	3.1	Poor	6.1	4.1	1	20.1	Rural, Single Lane	Open Ditch	\$ 367,000	\$ 25,000	\$ 39,000	\$ 1,036,000	\$ 1,362,000	\$ 1,929,000
Maitland Road	Gravel	Weedmark Road	Barber Road	1.55	Fair	7	5	1	20.1	Rural, Single Lane	Open Ditch	\$ 255,000	\$ 7,000	\$ 20,000	\$ 388,500	\$ 546,000	\$ 830,000
Wolford Centre Rd	Gravel	County Road #15	Dead End East	2.36	Fair	6.4	4.4	1	20.1	Rural, Single Lane	Open Ditch	\$ 304,000	\$ 16,000	\$ 30,000	\$ 873,200	\$ 1,118,000	\$ 1,550,000
Yule Rd.	Gravel	Atkins Lake Road	Weedmark Road	5.66	Poor	6.7	5.7	1	20.1	Rural, Single Lane	Open Ditch	\$ 1,219,000	\$ 7,000	\$ 71,000	\$ 1,650,200	\$ 2,206,000	\$ 3,242,000
Carley's Corners Road	Gravel	Dead End	Residence #329	2.3	Poor	6.7	4.7	1	20.1	Rural, Single Lane	Open Ditch	\$ 457,000	\$ 13,000	\$ 29,000	\$ 851,000	\$ 1,087,000	\$ 1,508,000
Ogilvie Lane	Gravel	Kilmarnock Road	Property Line	0.075	Good	7.2	5.2	1	N/A	Rural, Single Lane	Open Ditch	\$ 11,950	\$ -	\$ 1,000	\$ -	\$ 7,000	\$ 21,000
Eastons Corners Roads	Gravel	Henry Street, Park Street, Baldwin Street, Duncan Street		1.51	Fair	6.8	4.8	1	12.2	Rural, Single Lane	Open Ditch	\$ 231,000	\$ 8,000	\$ 19,000	\$ 558,700	\$ 713,000	\$ 990,000
Phillips Road	Gravel	Ireland Road	Dead End	0.58	Poor	6.1	4.1	1	20.1	Rural, Single Lane	Open Ditch	\$ 252,000	\$ 5,000	\$ 7,000	\$ 214,600	\$ 276,000	\$ 382,000
Willis Road	Gravel	Crystal Road	Dead End	0.8	Fair	6.4	4.4	1	20.1	Rural, Single Lane	Open Ditch	\$ 224,000	\$ 5,000	\$ 10,000	\$ 296,000	\$ 379,000	\$ 525,000
Total												\$ 8,944,000	\$ 233,000	\$ 683,000	\$ 16,206,000	\$ 21,684,000	\$ 31,587,000

Note: 1. 'chip and dip' and asphalt upgrades include widening, and reconstruction costs, in addition to the surface cost
 2. costs for 'good' rated roads in 2023 do not include full depth reconstruction prices in the upgrade costs. This does not guarantee that selected areas of reconstruction (full depth digouts) are not required.

APPENDIX E-1

2023 BENCHMARK UNIT COSTS

**ROAD UPGRADE
RURAL - DOUBLE SURFACE TREATMENT**

**OPINION OF PROBABLE CONSTRUCTION COSTS
COSTS PER 100m and 1m of ROADWORK**

R_US

2023

Item Description	Quantity	Unit	Unit Price	Estimated Cost	Estimated Cost
	(per 100 m)			(per 100 m)	(per 1 m)
Earth Excavation (Grading)		m ³	\$15.00	\$0.00	\$0.00
Scarify Existing		m ²	\$2.00	\$0.00	\$0.00
Pulverize existing asphalt (200mm)		m ²	\$2.25	\$0.00	\$0.00
Hot Mix HL 3 - Road (40mm)		m ²	\$24.00	\$0.00	\$0.00
Hot Mix HL 3 - Road (50mm)		m ²	\$28.50	\$0.00	\$0.00
Hot Mix HL 8 - Road (50mm)		m ²	\$28.50	\$0.00	\$0.00
Granular 'A' (150mm)		m ²	\$9.00	\$0.00	\$0.00
Granular 'A' (50mm)	700	m ²	\$3.00	\$2,100.00	\$21.00
Granular 'B' (300mm)		m ²	\$11.00	\$0.00	\$0.00
Asphalt Curb & Gutter		m	\$50.00	\$0.00	\$0.00
Asphalt Driveways Inc. 150mm of 'A' (50mm)		m ²	\$55.00	\$0.00	\$0.00
Asphalt Driveways (50mm)		m ²	\$40.00	\$0.00	\$0.00
Granular 'A' for Driveways (75mm)	41	m ²	\$6.00	\$246.00	\$2.46
Granular 'A' for Boulevards (150mm)		m ²	\$6.30	\$0.00	\$0.00
Granular 'A' for Shoulders (50mm)	300	m ²	\$3.50	\$1,050.00	\$10.50
RAP material for Shoulders (50mm)		m ²	\$6.00	\$0.00	\$0.00
150mm dia. Subdrains		m	\$40.00	\$0.00	\$0.00
SINGLE SURFACE TREATMENT		m ²	\$2.83	\$0.00	\$0.00
DOUBLE SURFACE TREATMENT	700	m ²	\$5.66	\$3,962.00	\$39.62
Grinding Asphalt (Single Lift)		m ²	\$6.00	\$0.00	\$0.00
Removal of Asphalt (Full Depth)		m ²	\$3.00	\$0.00	\$0.00
Removal of Culverts		m	\$30.00	\$0.00	\$0.00
Adjust Manholes / CB'S		ea	\$600.00	\$0.00	\$0.00
300mm dia. Entrance CSP Culvert (Galvanized)		m	\$175.00	\$0.00	\$0.00
400mm dia. Entrance CSP Culvert (Galvanized)		m	\$200.00	\$0.00	\$0.00
600mm dia. Centreline CSP Culvert (Galvanized)		m	\$400.00	\$0.00	\$0.00
Allowance for Storm Outlet		m	\$100.00	\$0.00	\$0.00
Topsoil (100mm)		m ²	\$12.00	\$0.00	\$0.00
Seed and Mulch		m ²	\$1.50	\$0.00	\$0.00
Calcium Chloride Flake (PROV)	50	kg	\$1.85	\$92.50	\$0.93
Traffic Signage	1	ea	\$250.00	\$250.00	\$2.50
Ditching (Topsoil and Sod)		m	\$52.00	\$0.00	\$0.00
Ditching (Topsoil and Seed)		m	\$33.00	\$0.00	\$0.00

SUBTOTAL **\$7,701** **\$77**

Contingency Allowance (10%) **\$770** **\$8**

SUBTOTAL **\$8,471** **\$85**

Engineering (15) **\$1,271** **\$13**

TOTAL **\$9,741** **\$97**

+HST +HST

**ROAD UPGRADE
RURAL - PAVE WITH 1 LIFT OF ASPHALT**

**OPINION OF PROBABLE CONSTRUCTION COSTS
COSTS PER 100m and 1m of ROADWORK**

R_UP

2023

Item Description	Quantity (per 100 m)	Unit	Unit Price	Estimated Cost (per 100 m)	Estimated Cost (per 1 m)
Earth Excavation (Grading)		m ³	\$15.00	\$0.00	\$0.00
Scarify Existing		m ²	\$2.00	\$0.00	\$0.00
Pulverize existing asphalt (200mm)		m ²	\$2.25	\$0.00	\$0.00
Hot Mix HL 3 - Road (40mm)		m ²	\$24.00	\$0.00	\$0.00
Hot Mix HL 3 - Road (50mm)	650	m ²	\$28.50	\$18,525.00	\$185.25
Hot Mix HL 8 - Road (50mm)		m ²	\$28.50	\$0.00	\$0.00
Granular 'A' (150mm)		m ²	\$9.00	\$0.00	\$0.00
Granular 'A' (50mm)	650	m ²	\$3.00	\$1,950.00	\$19.50
Granular 'B' (300mm)		m ²	\$11.00	\$0.00	\$0.00
Asphalt Curb & Gutter		m	\$50.00	\$0.00	\$0.00
Asphalt Driveways Inc. 150mm of 'A' (50mm)		m ²	\$55.00	\$0.00	\$0.00
Asphalt Driveways (50mm)		m ²	\$40.00	\$0.00	\$0.00
Granular 'A' for Driveways (75mm)	41	m ²	\$6.00	\$246.00	\$2.46
Granular 'A' for Boulevards (150mm)		m ²	\$6.30	\$0.00	\$0.00
Granular 'A' for Shoulders (50mm)	300	m ²	\$3.50	\$1,050.00	\$10.50
RAP material for Shoulders (50mm)		m ²	\$6.00	\$0.00	\$0.00
150mm dia. Subdrains		m	\$40.00	\$0.00	\$0.00
SINGLE SURFACE TREATMENT		m ²	\$2.83	\$0.00	\$0.00
DOUBLE SURFACE TREATMENT		m ²	\$5.66	\$0.00	\$0.00
Grinding Asphalt (Single Lift)		m ²	\$6.00	\$0.00	\$0.00
Removal of Asphalt (Full Depth)		m ²	\$3.00	\$0.00	\$0.00
Removal of Culverts		m	\$30.00	\$0.00	\$0.00
Adjust Manholes / CB'S		ea	\$600.00	\$0.00	\$0.00
300mm dia. Entrance CSP Culvert (Galvanized)		m	\$175.00	\$0.00	\$0.00
400mm dia. Entrance CSP Culvert (Galvanized)		m	\$200.00	\$0.00	\$0.00
600mm dia. Centreline CSP Culvert (Galvanized)		m	\$400.00	\$0.00	\$0.00
Allowance for Storm Outlet		m	\$100.00	\$0.00	\$0.00
Topsoil (100mm)		m ²	\$12.00	\$0.00	\$0.00
Seed and Mulch		m ²	\$1.50	\$0.00	\$0.00
Calcium Chloride Flake (PROV)	50	kg	\$1.85	\$92.50	\$0.93
Traffic Signage	1	ea	\$250.00	\$250.00	\$2.50
Ditching (Topsoil and Sod)		m	\$52.00	\$0.00	\$0.00
Ditching (Topsoil and Seed)		m	\$33.00	\$0.00	\$0.00

SUBTOTAL **\$22,114** **\$221**

Contingency Allowance (10%) **\$2,211** **\$22**

SUBTOTAL **\$24,325** **\$243**

Engineering (15) **\$3,649** **\$36**

TOTAL **\$27,974** **\$280**

+HST

+HST

ROAD RECONSTRUCTION
RURAL SECTION - GRANULAR SHOULDERS w/ DITCHING
GRAVEL SURFACE AND BASE
OPINION OF PROBABLE CONSTRUCTION COSTS
COSTS PER 100m and 1m of ROADWORK

GBS

2023

Item Description	Quantity	Unit	Unit Price	Estimated Cost	Estimated Cost
	(per 100 m)			(per 100 m)	(per 1 m)
Earth Excavation (Grading)	600	m ³	\$15.00	\$9,000.00	\$90.00
Scarify Existing		m ²	\$2.00	\$0.00	\$0.00
Pulverize existing asphalt (200mm)		m ²	\$2.25	\$0.00	\$0.00
Hot Mix HL 3 - Road (40mm)		m ²	\$24.00	\$0.00	\$0.00
Hot Mix HL 3 - Road (50mm)		m ²	\$28.50	\$0.00	\$0.00
Hot Mix HL 8 - Road (50mm)		m ²	\$28.50	\$0.00	\$0.00
Granular 'A' (150mm)	700	m ²	\$9.00	\$6,300.00	\$63.00
Granular 'A' (50mm)		m ²	\$3.00	\$0.00	\$0.00
Granular 'B' (300mm)	950	m ²	\$11.00	\$10,450.00	\$104.50
Asphalt Curb & Gutter		m	\$50.00	\$0.00	\$0.00
Asphalt Driveways Inc. 150mm of 'A' (50mm)		m ²	\$55.00	\$0.00	\$0.00
Asphalt Driveways (50mm)		m ²	\$40.00	\$0.00	\$0.00
Granular 'A' for Driveways (150mm)	41	m ²	\$12.00	\$492.00	\$4.92
Granular 'A' for Boulevards (150mm)		m ²	\$6.30	\$0.00	\$0.00
Granular 'A' for Shoulders (50mm)		m ²	\$3.50	\$0.00	\$0.00
RAP material for Shoulders (50mm)		m ²	\$6.00	\$0.00	\$0.00
150mm dia. Subdrains		m	\$40.00	\$0.00	\$0.00
SINGLE SURFACE TREATMENT		m ²	\$2.83	\$0.00	\$0.00
DOUBLE SURFACE TREATMENT		m ²	\$5.66	\$0.00	\$0.00
Grinding Asphalt (Single Lift)		m ²	\$6.00	\$0.00	\$0.00
Removal of Asphalt (Full Depth)		m ²	\$3.00	\$0.00	\$0.00
Removal of Culverts		m	\$30.00	\$0.00	\$0.00
Adjust Manholes / CB'S		ea	\$600.00	\$0.00	\$0.00
300mm dia. Entrance CSP Culvert (Galvanized)		m	\$175.00	\$0.00	\$0.00
400mm dia. Entrance CSP Culvert (Galvanized)	5	m	\$200.00	\$1,000.00	\$10.00
600mm dia. Centreline CSP Culvert (Galvanized)	3	m	\$400.00	\$1,200.00	\$12.00
Allowance for Storm Outlet		m	\$100.00	\$0.00	\$0.00
Topsoil (100mm)		m ²	\$12.00	\$0.00	\$0.00
Seed and Mulch		m ²	\$1.50	\$0.00	\$0.00
Calcium Chloride Flake (PROV)	50	kg	\$1.85	\$92.50	\$0.93
Traffic Signage	1	ea	\$1.00	\$1.00	\$0.01
Ditching (Topsoil and Sod)		m	\$52.00	\$0.00	\$0.00
Ditching (Topsoil and Seed)		m	\$33.00	\$0.00	\$0.00

SUBTOTAL **\$28,536** **\$285**

Contingency Allowance (10%) **\$2,854** **\$29**

SUBTOTAL **\$31,389** **\$314**

Engineering (15) **\$4,708** **\$47**

TOTAL **\$36,097** **\$370**
+HST +HST

APPENDIX E-2

SAMPLE RURAL ROAD CROSS SECTION

D:\gname\15-Civil\2023\23-5018A - Merrickville - Gravel Road Needs Study\03 Design\R-1.dwg Layout\k11 Plot.dwg July 28 2023

