

4

**APPROVAL OF
PREVIOUS
MINUTES**



Corporation of the Municipality of Calvin

REGULAR MEETING OF COUNCIL

Date: November 25, 2025

Time: 6:00pm

1355 Peddlers Drive, Calvin, ON

Attendance: Mayor Gould, Councillors Grant, Latimer (TEAMS), Manson, Moreton;

Staff: CAO Maitland, Public Works Superintendent Carr and Deputy Clerk Araujo.

Regrets:

Guests: Dr. Suzanne Mills-Western University

1. CALL TO ORDER

Resolution Number: 2025-340

Moved By: Councillor Manson

Seconded By: Councillor Moreton

NOW THEREFORE BE IT RESOLVED THAT this November 25, 2025, Regular Meeting of Council be called to order @6:02 p.m. by Mayor Gould who indicates that quorum has been achieved

Result: Carried

2. APPROVAL OF AGENDA

Resolution Number: 2025-341

Moved By: Councillor Manson

Seconded By: Councillor Moreton

NOW THEREFORE BE IT RESOLVED THAT the Council for the Corporation of the Municipality of Calvin hereby approves the agenda as circulated.

Result: Carried

3. DECLARATIONS OF PECUNIARY OR CONFLICT OF INTEREST

Councillor Dean Grant declared a conflict of interest with agenda item number 8.1, matter Tulloch Engineering, Planner of Record Pre-Application Consultation Report: 232099- Whalley- Highway 17 as potential litigation.

4. APPROVAL OF PREVIOUS MEETING MINUTES

Resolution Number: 2025-342

Moved By: Councillor Grant

Seconded By: Councillor Manson

NOW THEREFORE BE IT RESOLVED THAT the minutes for the Regular Council Meeting of November 11, 2025, be approved as presented and circulated.

Result: Carried

5. DELEGATIONS TO COUNCIL –

5.1 Suzanne Mills, Western University, Migration Study

Resolution Number: 2025-343

Moved By: Councillor Latimer

Seconded By: Councillor Manson

NOW THEREFORE BE IT RESOLVED THAT Suzanne Mills, Western University was before Council as a delegation to Council with respect to Western University's Migration Study.

Result: Carried

6. BUSINESS ARISING FROM PREVIOUS COUNCIL MEETINGS-

6.1 Municipality of Calvin Expected Code of Conduct-Repeal and Replace By-Law 2022-027 By-Law Number 2025-48

Resolution Number: 2025-344

Moved By: Councillor Moreton

Seconded By: Councillor Manson

WHEREAS by Resolution Number 2025-074 Council for the Corporation of the Municipality of Calvin directed staff to search the by-laws of the Municipality of Calvin for any copywritten by-laws and bring them before Council as a list for further direction;

AND WHEREAS Council for the Corporation of the Municipality of Calvin received and discussed CAO Report 20-2025 reporting that all but one by-law or policy protected by copyright has since they were adopted been repealed or replaced, that being the Expected Code of Conduct Policy, by-law 2022-027; AND WHEREAS the policy as written was determined to be clear and required no immediate adjustments, but Council desired for it to be re-written in order to remove copyrighted policies from the record;

NOW THEREFORE BE IT RESOLVED THAT Council for the Corporation of the Municipality of Calvin hereby receives for adoption, a new Expected Code of Conduct Policy to replace and repeal by-law 2022-027.

Result: Deferred to a future meeting for repeal and replace

6.2 Report Mayor Gould Resolution on Strengthening Self Defense

Resolution Number: 2025-345

Moved By: Mayor Gould

Seconded By: Councillor Manson

WHEREAS violent home invasions have increased in several regions of Ontario, creating growing fear and frustration among residents;

AND WHEREAS Ontario homeowners increasingly believe that current self-defence laws do not provide sufficient or clear protection for individuals who lawfully defend themselves and their families during violent intrusions;

AND WHEREAS rural residents often experience police response times that can exceed 30 minutes or more, leaving citizens without immediate protection when confronted with life-threatening emergencies;

AND WHEREAS the absence of "home invasion" as a distinct offence in the national Uniform Crime Reporting system prevents governments from understanding the true scale of this crime and responding appropriately;

AND WHEREAS the Province of Ontario has repeatedly called for strengthened homeowner protections, including consideration of castle-law-style provisions, and for the federal government to act;

AND WHEREAS residents expect all levels of government to take decisive action to address gaps that leave families vulnerable in their own homes;

NOW THEREFORE BE IT RESOLVED THAT:

1. The Municipality of Calvin strongly supports the Province of Ontario's call for strengthened homeowner self-defence protections, including the adoption of clear and robust "castle law"-type provisions to ensure that law-abiding residents can protect themselves without fear of unjust prosecution.
2. Council calls on the Government of Canada to immediately prioritize reforms to the Criminal Code that strengthen and clarify the rights of homeowners who act in legitimate self-defence during violent home invasions.
3. Council demands that the federal government amend the Uniform Crime Reporting system to classify "home invasion" as a distinct criminal offence, allowing for accurate tracking, targeted enforcement, and informed public policy.
4. Council urges the Province of Ontario to take stronger action to monitor, publish, and improve police response times in rural and northern communities, and to ensure that residents are not left unprotected due to resourcing shortages.
5. Council encourages all Ontario municipalities to adopt similar resolutions to demonstrate a unified municipal voice calling for urgent reforms that protect citizens in their homes.

BE IT FURTHER RESOLVED THAT copies of this resolution be forwarded to:

The Prime Minister of Canada, The Minister of Justice and Attorney General of Canada.

The Premier of Ontario, The Attorney General of Ontario, The Solicitor General of Ontario, MPP Vic Fedeli, and all Ontario municipalities.

Result: Carried

7. CONSENT AGENDA ITEMS FOR INFORMATION PURPOSES

Resolution Number: 2025-346

Moved By: Councillor Grant

Seconded By: Councillor Moreton

- 7.1 AMO Policy Update
- 7.2 FONOM Welcomes Northern Commitments in Ontario's Fall Economic Statement (1)
- 7.3 DNSSAB Highlights-Poverty reduction strategy survey
- 7.4 FCM Budget 2025
- 7.5 FINAL - MFOA 2025 Federal Budget Summary (2025.11.04)
- 7.6 Chief Building Report October
- 7.7 Northern Ontario Women's Association Upholding Women's Right-Bill 5
- 7.8 A letter from Minister Rob Flack-234-2025-4857 Building Faster Bill to Hoc SIGNED
- 7.9 AORS ADVANCE Newsletter Fall 2025
- 7.10 Notice of Motion Curbside Recycling - Non Profits
- 7.11 Twp of Chapple Elect Respect RES-173-2025

NOW THEREFORE BE IT RESOLVED THAT Council for the Corporation of the Municipality of Calvin hereby receive the Consent Agenda Items as presented and move the following forward for discussion at the next meeting: 7.10 Notice of Motion Curbside Recycling - Non Profits

Result: Carried

8. ADMINISTRATIVE MATTERS:

Councillor Dean Grant leaves his seat at 7:33pm having declared a Conflict of Interest with Item 8.1

8.1 Tulloch Engineering, Planner of Record Pre-Application Consultation Report: 232099-Whalley- Highway 17

Resolution Number: 2025-347

Moved by: Councillor Manson

Seconded by: Councillor Moreton

THAT Council for the Corporation of the Municipality of Calvin receives Tulloch Engineering's Planner of Record Pre-Application Consultation Report 232099, Whalley Highway 17, noting a copy was shared with the East Nipissing Planning Board and the Chief Building Code Official.

Result: Carried

Councillor Dean Grant returned to his seat at 7:34pm

8.2 Request from Jodi and Dan Maxwell -Designation of the Maxwell Retirement Event as an Event of Municipal Significance

Resolution Number: 2025-348

Moved by: Councillor Grant

Seconded by: Councillor Moreton

WHEREAS Council has received a request from Jodi and Dan Maxwell to have their retirement event, scheduled for December 5, 2025, designated as an event of municipal significance; and
WHEREAS the Municipality's designation of the event as being of municipal significance, through a resolution of Council, is required in order for the organizers to obtain a permit from the Alcohol and Gaming Commission of Ontario (AGCO) to serve alcohol at their publicly advertised event; and
WHEREAS the Municipality will bear no responsibility or liability for any matters arising from or related to the service or consumption of alcohol at the Maxwell retirement event;
NOW THEREFORE BE IT RESOLVED THAT the Council of the Municipality of Calvin hereby designates the Maxwell Retirement Event, to be held on December 5, 2025, and
BE IT FURTHER RESOLVED THAT a certified, copy of this motion, as required by the AGCO, be furnished by the Clerk to Jodi and Dan Maxwell.

Result: Carried

8.3 Support for East Ferris Resolution 2025-239 -North Bay Mattawa Conservation Authority

Resolution Number: 2025-349

Moved By: Councillor Latimer

Seconded By: Councillor Grant

WHEREAS Council for the Corporation of the Municipality of East Farris requests support from all NBMCA member municipalities to replace their representative on the NBMCA Board by January 1st 2026. So that a new Board can begin the process of getting the Authority past its current state of disorder and

turmoil, and hire a Chief Administrative Officer to lead the day-to-day operations and the organization's staff;

NOW THEREFORE BE IT RESOLVED THAT Council for the Corporation of the Municipality of Calvin supports the Municipality of East Farris' Resolution 2025-239;

AND FURTHERMORE that a copy of this resolution be sent to the NBMCA Board, all NBMCA member municipalities, Nipissing MPP Vic Fedeli, and Ontario Minister of the Environment, Conservation and Parks and its originator.

Recorded Vote:

<u>Member of Council</u>	<u>In Favour</u>	<u>Opposed</u>
Grant	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Latimer	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Manson	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Moreton	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mayor Gould	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Result: Defeated

8.4 ROMA Conference Preliminary Agenda

Resolution Number: 2025-350

Moved By: Councillor Manson

Seconded By: Councillor Moreton

WHEREAS Council has approved of Mayor Gould, Councillor Latimer and CAO Maitland to attend the ROMA Conference who will be reporting back to Council on their participation, now therefore it be resolved that for information purposes Council receive the preliminary conference agenda as posted by ROMA on Nov 13, 2025.

Result: Carried

8.5 Deputy Clerk report to Council- Schedule of Regular Council Meetings

Resolution Number: 2025-351

Moved By: Councillor Moreton

Seconded By: Councillor Manson

WHEREAS By-Law 2024 indicates there will be but one meeting of Council in each of the month of July, August and December, the date/time/location chosen by the CAO, and the recommendation is that those meetings be held On July 14th, August 11th and December 08th;

NOW THEREFORE be it resolved that Council for the Corporation of the Municipality of Calvin accepts the 2026 Schedule of Regular Meetings of Council as presented by the Deputy Clerk;

And that staff be directed to post that schedule to the Municipality's website.

Result: Carried

8.6 CAO Report to Council- CA051-2025 Recommendation to Amend Procedural By-Law 2024-49 By-Law 2025-049

Resolution Number: 2025-352

Moved By: Councillor Latimer

Seconded By: Councillor Manson

WHEREAS section 238 of the Municipal Act, 2001, as amended, provides that every municipality shall pass a procedure By-Law for governing the calling, place and proceeding of meetings,

AND WHEREAS past Council for the Corporation of the Municipality of Calvin adopted By-Law 2024-49 Being a By-Law to govern and regulate the meetings and proceedings of council and committees commonly called "The Procedural By-Law",

AND WHEREAS staff have recommended minor amendments to Bylaw 2024-49, and the introduction of a Committee of the Whole;

NOW THEREFORE BE IT RESOLVED THAT:

1. Council of the Corporation of the Municipality of Calvin agrees it is in the best interest of the Corporation to accept and adopt the staff's recommendations;
2. That the Deputy Mayor and CAO are designated as the Signing Officers and are authorized to execute on behalf of the Corporation of the Municipality of Calvin.
3. That the attached form part and parcel of this By-Law.
4. That By-Law 2024-49 and any other By-law inconsistent with the attached By-Law is hereby repealed.
5. This By-Law shall be enacted and in effect upon the signing thereof.

Result: Carried

**8.7 PWS-2025-23 Non-Eligible (Institutional, Commercial and Industrial) Recycling-Post Transition
Resolution Number: 2025-353
Moved By: Councillor Grant**

Seconded By: Councillor Manson

WHEREAS the Province of Ontario, through the Blue Box Regulation (O. Reg. 391/21), defines eligible sources as "any residence or facility in an eligible community," and only these eligible sources fall under producer responsibility for Blue Box materials;

AND WHEREAS the Province has thereby determined that all other generators of recyclable materials are non-eligible sources, including but not limited to: industrial, commercial, and institutional (IC&I) properties; businesses; day cares; places of worship; post-secondary institutions; non-profit or charitable organizations; shelters; campgrounds and trailer parks; and certain municipal or community facilities;

AND WHEREAS the Province has further established that these non-eligible sources are not permitted to bring their Blue Box materials to municipal depots unless another party pays for the collection, hauling, or processing of those materials, since producers are not responsible for them under O. Reg. 391/21;

AND WHEREAS Council for the Municipality of Calvin received a detailed report outlining options for how to treat Blue Box materials originating from non-eligible sources, including whether to allow continued access to the landfill depot, to prohibit access, or to implement cost-recovery or third-party-funded arrangements;

AND WHEREAS Council, after review and deliberation, wishes to formally select its preferred policy direction;

NOW THEREFORE BE IT RESOLVED that the Council of the Municipality of Calvin hereby confirms its decision regarding the management of Blue Box materials from non-eligible sources in accordance with O. Reg. 391/21, and selects the following options:

☐ Accepts recyclables in a separate container from all non-eligible sources, excluding Provincial Parks, Canadian Ecology Centre and Industrial facilities at the cost of Calvin taxpayers;

AND

☐ Strengthen By-law 2024-46 (Being a by-law to establish and maintain a system of disposal of garbage and other refuse to include a phased in educational component to encourage recycling

BE IT FURTHER RESOLVED that the Municipality of Calvin reaffirms its commitment to compliance with provincial regulation while maintaining responsible and sustainable waste management practices and will continue to advocate for full producer responsibility for all recyclable materials.

RECORDED VOTE REQUESTED BY: Mayor Gould

Member	Yay	Nay
Councillor Grant	x	
Councillor Latimer	x	
Councillor Manson	x	
Councillor Moreton	x	
Mayor Gould	x	

Result: Carried

8.8 Support for United Counties of SDG- Resolution 2025-159- Conservation Authorities

Resolution Number 2025-354

Moved by: Councillor Moreton

Seconded by: Councillor Manson

WHEREAS the United Counties of Stormont, Dundas & Glengarry has requested support from municipalities calling of the Government of Ontario to maintain local, independent, municipally governed, watershed-based conservation authorities to ensure strong local representation in decisions related to municipal levies, community-focused service delivery, and the protection and management of conservation lands;

NOW THEREFORE BE IT RESOLVED THAT Council for the Corporation of the Municipality of Calvin supports the United Counties of SDG's Resolution 2025-159;

AND FURTHERMORE that a copy of this resolution be sent to the Ontario Minister of the Environment, Conservation and Parks, Nipissing MPP Vic Fedeli, AMO, ROMA and its originator.

Result: Defeated

8.9 PWS-2025-25 Public Works Superintendent's Report -Public Works, Landfill and Recreational Departments

Resolution Number: 2025-355

Moved By: Councillor Moreton

Seconded By: Councillor Manson

WHEREAS, the Public Works Superintendent has provided a report for Council,
AND THEREFORE, be it resolved that Council accepts the report.

Result: Carried

9. AGENCIES, BOARDS, COMMITTEES

Resolution Number: 2025-356

Moved By: Councillor Moreton

Seconded By: Councillor Manson

9.1 North Bay Mattawa Conservation Authority – Councillor Moreton

9.2 East Nipissing Planning Board- Councillor Grant, Mayor Gould

9.3 Physician Recruitment -Mayor Gould

9.4 Mattawa Regional Police Services Board -Councillor Grant

9.5 Canadian Ecology Centre - Mayor Gould

9.6 Cassellholme Exit Strategy- Mayor Gould

NOW THEREFORE BE IT RESOLVED THAT Council for the Corporation of the Municipality of Calvin accepts the Agencies, Board, Committee Reports and/or Minutes provided by Council members at this meeting;

AND FURTHER THAT Council directs the CAO to re-instate the Canadian Ecology Centre's Landfill and Fire Agreements effective the date of their re-opening.

Result: Carried

10. CLOSED MEETING –

Resolution Number: 2025-357

Moved By: Councillor Moreton

Seconded By: Councillor Manson

NOW THEREFORE BE IT RESOLVED THAT Council for the Corporation of the Municipality of Calvin move into Closed Session at 9:29 p.m. and agree to go beyond the 4 hour limit to discuss:

- Advice that is subject to solicitor-client privilege, including communications necessary for that purpose (s.239(2)(f))

Result: Carried

11. RETURN TO OPEN SESSION

Resolution Number: 2025-358

Moved By: Councillor Grant

Seconded By: Councillor Moreton

NOW THEREFORE BE IT RESOLVED THAT Council for the Corporation of the Municipality of Calvin move back into Open Session at 10:30 p.m. and report that it discussed:

- Advice that is subject to solicitor-client privilege, including communications necessary for that purpose (s.239(2)(f))

Result: Carried

12. CONFIRMATORY BY-LAW

By-Law # 2025-50

Resolution Number: 2025-359

Moved By: Councillor Moreton

Seconded By: Councillor Manson

NOW THEREFORE BE IT RESOLVED THAT By-Law 2025-50 being a By-Law to confirm the proceedings of Council be approved.

Result: Carried

12. ADJOURNMENT

Resolution Number: 2025-360

Moved By: Councillor Latimer

Seconded By: Councillor Moreton

NOW THEREFORE BE IT RESOLVED THAT Council for the Corporation of the Municipality of Calvin now be adjourned @10:31 p.m.

Result: Carried

Road Needs Study

Corporation of the Municipality of Calvin

Final Report

December 11, 2025

Jp2g Project # 25-5304A

Client Ref #: 2025-04



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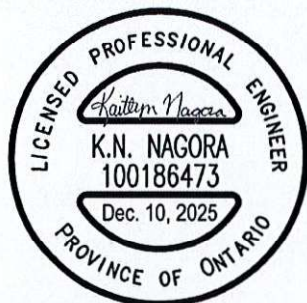
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Author and Review Panel

Prepared by:

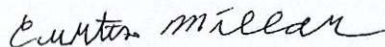


Kaitlyn Nagora, P.Eng
Civil Team Lead | Civil Engineer

Reviewed by:

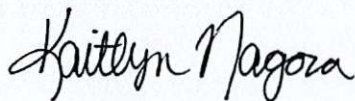


Will Frederick, P.Eng
Civil Engineer



Curtis Millar, P.Eng
Civil Engineer

Approved by:



Kaitlyn Nagora, P.Eng
Civil Team Lead | Civil Engineer



Executive Summary

Jp2g Consultants Inc. was retained by the Municipality of Calvin to complete a Road Needs Study of their municipal road system to determine a priority list for road improvements within the Municipality. Two Jp2g Civil Engineering staff members conducted the road condition review in October 2025, observing the existing conditions of the roads, assigning road condition ratings, and providing recommendations for spot improvements, specific maintenance and construction works.

The results of the study indicated the road network will require a total of \$2.52 million over the next 5 years. This is an annual average expenditure of approximately \$503K. An additional \$1.19 million (in 2025 dollars) of road improvements are recommended in years 6-10.

In addition to the road needs, a number of additional considerations are noted within the report. It is recommended that the Municipality prioritize the safety concerns related to intersection configurations and sight lines concerns at intersections, road speed limit review (specifically at curves in the horizontal and vertical alignment) and flatten steep ditches or provide roadside safety barriers (such as guide rails).

1 Introduction

1.1 Project Background

The Municipality of Calvin has retained Jp2g Consultants to conduct a Road Needs Study to analyze the municipal roadway system and the following components: road condition assessment and methodology used; roadside conditions related to drainage, ditching, brushing and signage; assess road section by road section with asset IDs **from the municipality's current asset inventory**; summarize the required maintenance and recommended optimum timelines; and provide estimated costs of proposed practical improvements to eliminate deficiencies and to bring the municipal road system to proper standards.

The purpose of this study is to:

- Inform the Council on the existing conditions and needs of the road system.
- Develop the most cost-effective long-term maintenance and construction strategy, considering budgetary limits.
- Provide a projection of the future conditions and adequacy of the road system.
- Present a suggested year by year work plan, operating and capital budget for ten years.
- **Inform and update the Municipality's Asset Management Plan**

Roads, like equipment, wear out or deteriorate over time and must be rehabilitated or replaced at predetermined intervals. Failure to properly maintain and rehabilitate the road system components at the appropriate time will result in ever increasing costs and risk of full replacement of the road and its components at a premature date. To ensure that the Municipality of Calvin is obtaining cost effectiveness for its investment in the road system, the condition of the existing road system must be monitored and a maintenance and construction strategy for the future must be established. A Road Needs Study provides the fundamental background documentation and is a good basis to determine cost effective maintenance and construction strategies for the road system.

1.2 Study Methodology

The methodology for this study was in general accordance with the Ministry of Transportation (MTO) "Road Management Plan for Small Lower Tier Municipalities – Methods and Inventory Manual" [1].

Direction was provided by the Municipality to perform the following:

- Site investigation of the existing road network to review the following elements:
 - Visually assess the surface treatment for surface distresses and frost heave locations
 - Visually assess the granular surface condition and frost heave locations
 - Review the surface widths and crossfalls and shoulder widths
 - Review areas of roadside hazard conditions
 - Review surface rutting (where applicable)
 - Review drainage items (ditching, culvert replacements, rock removals, brushing)
- **Compile and input the data from our site investigations into the Municipality's GIS shape files**
- Prepare a Road Needs Study Report, addressing the following:
 - Road maintenance needs analysis (recommendations) based on life cycle forecast for capital budgeting.
 - Timing for major and minor repairs (immediate, 1-5 years, 6-10 years)
 - Recommendations for on-going maintenance requirements.
 - Recommendations for minimum budget levels for operating and capital expenditures.

Evaluation of the bridges within the Municipality of Calvin was completed in November 2023 under a separate study. Therefore, the bridges were not assessed as part of this study.

The Transportation Association of Canada (TAC) “Geometric Design Guide for Canadian Roads: Chapter 11 – Special Roads” [2] was used when analyzing the road geometry design and providing typical cross-section recommendations as part of this study. Chapter 11 provides design guidance for special roads such as low-volume rural roads, including gravel roads. The chapter also includes discussion on when 1-lane 2-way roads could be considered and provides guidance for roadside safety for low-volume roads.

2 Road System Breakdown

As of October 2025, the Municipality of Calvin Road System consists of approximately 64.5 km of roads. The road surfaces are a mixture of LCB (Low Class Bituminous) and gravel surfaced roads, as summarized in Table 1. All roads maintained by the Municipality are classified as Rural.

Table 1 – Municipality of Calvin Roads System Surface Type Summary

Surface Type	Length
LCB (Low Class Bituminous)	11.7 km
Gravel	52.8 km
TOTAL	64.5 km

3 Road System Inventory

The Road Inventory and Needs Summary Table in Appendix D includes information such as road geometry (length, surface width, shoulder width, platform width), travelled way lane type (2-lane 2-way vs 1-lane 2-way), surface type (LCB vs gravel), traffic counts, condition rating, observations (from site investigation), recommended improvements, and estimated improvement costs. The roads are separated into sections from intersection to intersection, with section numbers that match the Municipality’s asset management dataset.

4 Condition Ratings

In order to classify the roads, a visual inspection of the road section was performed and classified with a condition rating between 1-10. A score of 10 being newly constructed or in excellent condition and a score of 1 indicated the road has failed and significant efforts are needed to fully reconstruct the road. The rating was determined through visual inspections during the field review and took into account the rating of the road surface but also took into account other components of the road including drainage facilities such as storm drains and ditches, roadside elements such as roadway & travelled way widths, brushing needs, shouldering, sight line distances and horizontal and vertical alignment of the roads.

Table 2 provides a further explanation of the Structural Condition associated with the Condition Rating. Possible actions for maintenance, rehabilitation and reconstruction are also noted for both Low Class Bituminous (LCB) and Gravel roads. The “Possible Actions” noted in this table are to address the structural condition of the roadway only. Additional actions may be required to address other roadside concerns (ditching, brushing, widening, etc.).

In October of 2025, two of Jp2g Consultants Civil Engineering staff met with staff from Municipality of Calvin and conducted field reviews of all the roads maintained by the Municipality and assigned updated condition ratings. The ratings between similar roads of similar condition may vary slightly due to their usage and surroundings, however the variation is not anticipated to have a significant impact upon the need for improvements just the hierarchy on when the roads are scheduled for improvement. A map of the Municipality Road System indicating the 2025 Road Conditions Ratings and road surface type is provided in Appendix A.

Table 2 – Condition Ratings and Road Segment Conditions

Condition Rating	Road Segment Condition	Possible Actions
10 to 8	Good Structural Condition. Some local improvements may be warranted.	LCB – Consider cold patching trouble spots and minor crack sealing. No rehabilitation expected within 5-year plan period. Gravel – Normal maintenance activities should maintain current condition rating. No rehabilitation expected within 5-year plan period.
7 to 6	Average/Fair Structural Condition. Continued improvements may be required.	LCB – Consider crack sealing roadway when condition is approximately 7 to prevent water from affecting road base. Roads may require rehabilitation at a condition of approximately 6. Gravel – Normal maintenance activities should maintain current condition rating. Roads may require gravel resurfacing and/or widening.
5 or 4	Poor Structural Condition. Improvements required throughout road system.	LCB – Road requires rehabilitation and may warrant full-depth reconstruction. Gravel – Road requires gravel resurfacing and/or widening
3 or less	Very Poor Structural Condition. Poor riding condition and possible Safety hazard.	LCB – Full-depth reconstruction of the roadway Gravel – Road requires gravel resurfacing and/or widening. Full-depth reconstruction of the roadway may be warranted.

LCB (surface treated) road surfaces should be resurfaced within their life span 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 volume of truck traffic, overall traffic volumes, the existing road base construction standards/condition and roadside drainage will also impact the road surface life span.

The condition ratings have been projected for a 5-year period for the purpose of scheduling capital maintenance items using the results of this Road Needs Study and typical life spans for the road surface types. Gravel road conditions were not projected forwards as it is assumed that normal maintenance activities are sufficient to maintain the roads in constant condition. The total kilometers of anticipated road that are considered to require scheduled capital projects over the next 5 years is approximately 14.07 km.

The lifespan of a double surface treated road surface (including LCB) ranges from 15 years (with a 'good' structural road base) to as short as 5 years (with a 'poor' structural road base with underlying structural problems, inadequate drainage, weak subgrade material, etc.). For the purposes of this report, LCB surfaces will be assumed to have a life span of 10 years, under normal conditions. With the continued monitoring of road conditions over time, it is anticipated that this assumed life span may be increased or decreased.

The condition rating of each road section is projected to decrease by a fixed amount per year, based upon the assumed life expectancy. Given a 10-year life cycle, an assumed rehabilitation once the road reaches a condition rating of 5, this means the condition rating of a street will decrease by 0.5 points per year.

LCB

$$\frac{5 \text{ Point Condition Rating}}{10 \text{ Year Life Cycle}} = 0.5 \text{ points per year}$$

Roads with condition ratings of 5 or less have reached the end of the lifespan of the surface and are in need of improvement. If road rehabilitation does not occur at these predetermined condition ratings, reconstruction

may be necessary, as the road base material becomes compromised by moisture intrusion over time. The longer that scheduled rehabilitation is deferred, the greater the risk that total reconstruction will be required instead, and at a much greater cost. Roads having a condition rating of approximately 5 should typically be accorded to a higher priority for capital rehabilitation or reconstruction works. The road should be closely monitored for evidence of safety concerns, surface breakup and any issues remedied with appropriate spot maintenance.

Gravel road condition ratings are noted on the map in Appendix A and are not considered to change due to continued routine maintenance and ongoing upgrading of the granular top surface. 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 is always to be considered as a capital item.

5 Road Construction Needs

The Road Inventory and Needs Summary Table in Appendix D provides the condition ratings for each road section, a summary of the onsite investigation observations, and recommended spot improvements, specific maintenance and construction works.

A brief summary of the various types of spot improvements, specific maintenance and construction activities are explained in the sections below.

5.1 Spot Improvements

Spot improvements are typically recommended on road sections that are generally structurally and geometrically adequate for most of its length, but require some type of road, roadside or drainage improvement at isolated location(s).

5.1.1 Brushing

- Brushing overgrown trees, bushes and tall grass within 150m of intersections; or
- Brushing along length of road section (assumed 25% of road length, both sides)

5.1.2 Ditching

- Roadside ditch spot cleanout (assumed 25% of road length, both sides); or
- Flattening steep ditches so slope is 3H:1V or flatter

5.1.3 Guiderails

- Installation of steel beam guiderails (approximately 100m either side of road) at steep ditches or other roadside hazards
- Install guiderail end treatments at each exposed end of the guiderail system

5.1.4 Spot Dig-outs

- Excavate to subgrade in select areas where the base or subbase has failed
- Add new Granular B subbase, and Granular A base
- Repair surface (grading for gravel roads, double surface treatment for LCB roads)

5.1.5 Shouldering (spot areas)

- Grade shoulder to cut down "berm" (remove humps in shoulders to provide continuous slope to ditch)
- 100mm Granular 'A' (1.0m wide) and grade at 4% slope (re-establish 0.5m shoulder and 0.5m rounding) (assumed 25% of road length, both sides)

5.1.6 Construct Turnaround (dead-end roads)

- Tree removal (clearing and grubbing)
- Earth excavation
- 150mm depth Granular 'A' (construct turnaround as per OPSD 500.010 [3])

Note: Does not include any land acquisition or easements that may be required.

5.1.7 Construct Turnout (1-lane, 2-way roads)

- Tree removal (clearing and grubbing)
- Earth excavation
- 150mm depth Granular 'A' (construct turnout as shown in drawing TO-1 in Appendix F)

Note: Does not include any land acquisition or easements that may be required.

5.2 Specific Maintenance

Specific maintenance improvements are activities that maintain the existing level of service and can improve the quality of the road.

5.2.1 Shouldering (entire road section)

- Grade shoulder to cut down "berm" (remove humps in shoulders to provide continuous slope to ditch)
- 100mm Granular 'A' (1.0m wide) and grade at 4% slope (re-establish 0.5m shoulder and 0.5m rounding)

5.2.2 Gravel Resurfacing, incl shoulders

- 100mm Granular 'A' lift for entire road section
- Grade shoulder to cut down "berm"
- 100mm Granular 'A' shoulder (1.0m wide) and grade at 4% slope (re-establish 0.5m shoulder and 0.5m rounding)

5.3 Construction

Construction improvements are activities that improve the structural adequacy or geometry of the road.

5.3.1 Gravel Resurfacing and Widening

- 100mm Granular 'A' lift for entire road section and widen, including shoulders, at 4% cross-fall
 - 1-lane, 2-way roads: minimum 4.0m roadway width, plus 0.5m rounding both sides
 - 2-lane, 2-way roads: minimum 7.0m roadway width (includes 0.5m shoulders both sides), plus 0.5m rounding both sides

5.3.2 LCB Overlay - Rural Road Rehabilitation

- Spot Improvements prior to overlay (Grinding or Padding)
- Double Surface Treatment (2 Lifts of LCB)
- 100mm Granular 'A' shoulders (1.0m wide) and grade at 4% slope (re-establish 0.5m shoulder and 0.5m rounding)

5.3.3 Full-Depth Processing - Rural Road Reconstruction

- Full-depth in-place processing (pulverize) of existing asphalt and granular base (approx. 250mm depth)
- 150mm Granular 'A' base
- Woven geotextile (if warranted)
- Double Surface Treatment (2 lifts of LCB)
- 100mm Granular 'A' shoulders (1.0m wide) and grade at 4% slope (re-establish 0.5m shoulder and 0.5m rounding)

5.4 Benchmark Costing

Benchmark unit rates have been developed based on recently completed construction projects in Municipality of Calvin and within the nearby Renfrew County. The rates have been applied to the different road sections for various types of recommended road improvements based on the unit (i.e. length or area). The unit rates are summarized in Table 3 below. Normal maintenance activities (such as grading and re-establishing the crown on gravel roads, winter sanding and snow clearing, etc.) are considered normal maintenance needs and are not

included in the costing. Additional costs for site specific features that were not observed (such as bedrock, and shallow culverts) have not been included in the costing and would have to be considered during the detailed design phase of works. All costing is reported using present day values and does not include the any consideration of tariffs.

Table 3 – Municipality of Calvin Benchmark Costing Summary

ITEM	2025 UNIT RATE	UNIT
Asphalt/LCB Removal	\$ 8.00	m ²
Earth Excavation	\$ 20.00	m ³
Pulverize	\$ 2.50	m ²
Granular 'A' - Road (per tonne)	\$ 40.00	t
Granular 'A' - Road (100mm)	\$ 8.00	m ²
Granular 'A' - Road (150mm)	\$ 12.00	m ²
Granular 'B' - Road (300mm)	\$ 30.00	m ²
Geotextile	\$ 2.50	m ²
Granular 'A' Shouldering (incl. cut down "berms", 100mm Granular A)	\$ 10.00	m
Ditching	\$ 12.00	m
Double Surface Treatment	\$ 11.00	m ²
Road Cross Culverts	\$ 1,000.00	m
Entrance Culverts	\$ 750.00	m
Brushing	\$ 7.00	m
Construct turnout (incl tree removal, earth excavation, 150mm Granular 'A'), excl land acquisition	\$ 4,975.00	ea
Construct turnaround - OPSD 500.010 (incl tree removal, earth excavation, 150mm Granular 'A'), excl land acquisition	\$ 10,475.00	ea
Guiderail	\$ 330.00	m
Guiderail (End treatments)	\$ 19,000.00	set

6 Road Needs Summary

6.1 Existing Program

The Municipality currently does not have an annual budget for Capital Works.

Based on past Road Improvements data (from 2022 to 2025) provided by the Municipality, it appears the Municipality resurfaces on average 5.0 km of their gravel roads per year. In 2024, the Municipality also overlaid approximately 2.0 km of LCB roads (with a single surface treatment), and roto-milled another 2.0 km of LCB roads (with double surface treatment). However, there are no records of when the LCB roads were rehabilitated or reconstruction prior to 2024. The annual budget for roadside works (such as ditching, brushing, etc.) is unknown. Based on the Benchmark Costing, it is assumed that the Municipality spent an average of \$230,000 per year on gravel resurfacing and an unknown amount on rehabilitation or reconstructing LCB roads.

6.2 5-Year Program

Based on the Roads Needs Study, the road network will require a total of \$2.52 million over the next 5 years. This is an annual average expenditure of approximately \$503K. The proposed roads requiring capital works over the next 5 years and a yearly cost breakdown is summarized in Table 4 below. The road improvements have been prioritized not only based on their condition ratings, but also based on other factors such as traffic volumes, and trying to keep costs consistent year over year. The complete Road Needs Costs Yearly Breakdown and Capital Planning Summary table can be found in Appendix E. A map showing the recommended road improvements over the next 5 years can be found in Appendix C.

Table 4 – Summary of roads recommended for improvements and annual cost breakdown.

Section Number	Road Name	From	To	Section Length (km)	2025 Condition Rating (Jp2g)	2026	2027	2028	2029	2030
RD_5301_5	Peddlers Dr	HWY 630	Donalds Rd	2.02	6	\$595,700				
RD_5301_1	Peddlers Dr	HWY 630	Peaceful Lane	2.04	5		\$480,500			
RD_5301_4	Peddlers Dr	Daventry Rd	Boundary Rd	2.05	5			\$483,900		
RD_5301_3	Peddlers Dr	Donalds Rd	Pautois Rd	1.87	6				\$454,700	
RD_5301_6	Peddlers Dr	Pautois Rd	Daventry Rd	0.19	6				\$46,200	
RD_5311	Beach Rd	HWY 630	End	0.2	5					\$22,000
RD_5319_1	Beckett Ln	Galston Rd	East Dead End	0.05	5					\$15,300
RD_5316	Gated Rd	Peddlers Dr	Northernly	1.05	5					\$68,400
RD_5305_1	Suzannes Rd	HWY 630	Donalds Rd	2.63	6					\$199,800
RD_5305	Suzannes Rd	Donalds Rd	Dead End	1.55	6					\$111,500
RD_5303	Pautois Rd	Peddlers Dr	Northernly	0.32	6					\$27,300
RD_5330	Peddlers Dr	Peddlers Dr	911-2682	0.1	6					\$10,500
						\$595,700	\$480,500	\$483,900	\$500,900	\$454,800

Based on the capital works expenditures of the road network within the past few years, it is assumed that the current budget will not cover all the costs associated with the proposed road works over the next 5 years. The Municipality may look at some of the following options to cover the difference:

1. Develop an annual Capital Works budget to match the needs of the road
2. Apply for grants to cover the difference
3. Split up the road sections into smaller sections and spreading the construction costs over multiple years.

A few safety concerns related to the road system were observed during the site investigation. These safety concerns are noted in Section 7 below. A risk assessment should be conducted on the safety concerns and items with a high likelihood (high probability of an event happening) and a high severity of the consequences should be prioritized first.

6.3 Future Needs

Additional proposed road improvements are identified in the Appendix E table that could be completed in Years 6 to 10 (2031 to 2035), if funding allows. The total value for the additional improvements is \$1.19 million (in 2025

dollars) and are mainly focused on roadside improvements (i.e. brushing, ditching and shouldering) on the gravel roads. Many of these items could be addressed a little each year by developing annual programs for shouldering, ditching/ditch-cleanout and brushing.

7 Additional Considerations

During the site investigation, the Jp2g Consultants Civil Engineering staff noticed a few site conditions that warrant some additional considerations. Specific observations regarding localized road conditions and safety concerns are noted on Specific Road Condition/Safety Observations map in the Appendix B and summarized in Section 7.1 to Section 7.3 below.

Section 7.4 to Section 7.5 provides some additional recommendations to Municipal staff for future implementation of Capital works and maintenance programs.

7.1 Safety

7.1.1.1 *Speed Limit Review*

Most of the roads within the Municipality of Calvin are left unposted and therefore are treated as 80 km/hr limits. However, during the site investigation, it was observed that the operating speed on the gravel roads was generally less than 80km/hr, with many vehicles driving significantly less than 80km/hr. Even though posted speed limits are typically 10km/hr lower than the design speed of a road (or more), considerations should be made for the operating speed of a road. Therefore, design speeds referred to throughout this report is a reference point only, but should not be taken as the recommended posted speed limit.

As noted in TAC Chapter 11 [2], low design speeds are not always appropriate for special roads, as drivers do not adjust their speeds to the posted speed limit of a road, but rather to its physical limitations and traffic. Selecting low design speeds where terrain is open and flat is likely to increase collisions and driver costs. However, under difficult terrain conditions (such as rolling or mountainous terrains, or sharp horizontal curves), drivers accept lower speed operation. Design speed of 1-lane 2-way special roads should not exceed 50km/hr.

It is recommended that the Municipality conduct a speed review of their roads and introduce a posted speed limit on their gravel roads. At a minimum, it is recommended to conduct speed reviews at horizontal and vertical (hills) curves and post cautionary speed signage. Sight distances (as noted in the section below) will assist with determining the posted speed limits.

7.1.1.2 *Sight Distances*

The sight distance is the unobstructed distance a driver can see (typically ahead along a roadway) from any given point. The minimum stopping sight distance is the least sight distance required to come to a complete stop. Overgrown trees, tall grass and bushes affect visibility (i.e. sight lines) and therefore brushing at intersections and curves should be conducted annually. In accordance with TAC Chapter 11 [2], the minimum stopping sight distance on 2-lane 2-way special roads is 115m to 140m (depending on road conditions) based on a design speed of 80km/hr. Design speeds of 90km/hr have a stopping sight distance of 130m to 170m.

Minimum stopping sight distance for 1-lane 2-way special roads is 130m (based on a design speed of 50km/hr).

During the site investigation, there were various locations where there may be an insufficient sight distance to meet the minimum stopping sight distance requirement for the assumed speed limit. Some of the specific locations observed are noted on the map in Appendix B. It is recommended that the Municipality review sight distances on all their roads and consider implementing an annual brushing program, or post speed reductions where required to match the sight distance limitations.



7.1.1.3 Intersections

During the site investigation, four (4) intersections were observed to have configuration or sight line safety concerns that would not be rectified by regular roadside maintenance.

Galston Rd at Peddlers Dr

This intersection has multiple merge lanes, combined with yield conditions. Should multiple vehicles from the intersecting roads meet at the intersection at the same time, there is a potential for a collision. It is recommended that this intersection be reviewed, potentially remove merge lanes and re-aligned the road with new stop conditions.

Pratt Rd at Galston Rd

This intersection is very wide and has no lane delineation (i.e. there is the potential for vehicles to pull-up side by side when stopped at the intersection). There are also maintenance difficulties with this intersection (grading and snow clearing) associated to the wide turn. Lastly, limited sight lines make it difficult to see vehicles who are driving on Galston Rd. It is recommended that this intersection be narrowed to alleviate these issues.

Daventry Rd at Peddlers Dr

Peddlers Dr is one of the highest traffic volume LCB roads in the Municipality. The intersection where Daventry Rd meets Peddlers Dr has very limited line of sight to oncoming traffic from the west due to the horizontal and vertical alignment curves, and a large rock outcrop at the intersection. It is recommended that the speed and sight lines at this intersection be further reviewed.

Pautois Rd at Peddlers Dr

Similar to the Daventry Rd intersection, there are line of sight concerns with this intersection due to vertical and horizontal curves along the higher traffic Peddlers Drive. It is recommended that the speed and sight lines at this intersection be further reviewed.

The review, design and reconstruction of the above noted intersections have not been included in the 5-year capital works plan. However, the Municipality should consider doing a detailed review of these intersections to determine the best path forward to bring these intersections to proper design standard. In the short term, the Municipality should consider installing signage (reduce speed, hidden intersection, replace yield sign with stop signs, etc.) to address the immediate safety concerns.

7.1.1.4 Steep ditches

In a few locations, notably on Adams Road (between Pratt and Hwy 630), on Bronson Lake Road, and on Peddlers Drive (330m west of Donalds Rd), there were steep ditches in localized areas along the road sections. Steep slopes can create a significant safety risk to drivers as it makes it more difficult for a vehicle to recover if they leave the roadway. Slopes that are steeper than 3H:1V increases the likelihood of a vehicle tip or roll-over once it leaves the roadway. Aside from the roll-over risk, steep slopes can increase the severity of crashes and more dangerous collision impacts. From a maintenance perspective, steep side slopes erode quickly, decreasing the granular shoulder stability and increasing the maintenance needs of the specific road.

Ditches should have a maximum 3H:1V slope, and ideally 4H:1V (or flatter), to give drivers more space to recover and regain control if their vehicle leaves the road. In areas where steep slopes are unavoidable, the Municipality should consider guiderails to protect cars from leaving the road, especially on roads with high speed and high traffic.

It is recommended that flattening the steep side slopes on Adams Road and on Bronson Lake Road be prioritized. It is also recommended that guiderails be considered at the new culvert installation on Peddlers Dr (330m west of Donalds Rd) when this road section is reconstructed, to protect the traffic from the steep side slopes.

7.2 Railway Crossings

There are two (2) railway road crossings in the Municipality of Calvin, one crossing Boundary Road (approximately 1.1km south of Highway 17) and one crossing Suzannes Rd (approximately 630m east of Donals Road). According to Transport Canada's Grade Crossing Handbook [4], there are requirements for the road geometry (horizontal and vertical alignment) of the road approach, sight lines, and signage.

Grade crossings that existed prior to November 28, 2014, are grandfathered from some of the road geometry requirements set out in the Grade Crossing Regulations. If at any time a grade crossing sees a change to its location, gradient or crossing angle, the road geometry requirements are to be reviewed and the grade crossing must comply with the Grade Crossing Regulations.

Since the class of the track is unknown at the time of this study, minimum sightlines could not be calculated. It is recommended the Municipality determine the minimum sightlines requirements for this class of track and confirm the sightlines meet the minimum requirements.

The signage at both crossings should be upgraded to meet current standards, including a sign that indicates the number of tracks at the grade crossing. The existing railway crossing signs should also be reviewed for compliance with the current Grade Crossing Regulations signage requirements. A sign providing advanced warning of a grade crossing (Railway Crossing Ahead sign) with a sign specifying a recommended speed (Advisory Speed Tab sign), and a Stop Ahead sign may be warranted, depending on the sightline requirements.

7.3 Culverts

According to the inventory list provided, the Municipality of Calvin has 331 culverts. Approximately half of the culverts are cross-road culverts, while the remaining half are entrance culverts. Most of the culverts are CSP (corrugated steel pipe), with only 12 of the culverts identified as poly material. Records of the most recent inspections of all the culvert were from 2009. Several of the existing culverts were replaced this year as part of the road repairs required after the Municipality was subject to a severe storm and downburst in June 2025.

Many factors can affect the lifespan of a culvert, including groundwater pH, high flows through the culvert, stream flows with high sediment, and accelerated corrosion from road de-icing salts.

During the site investigation, the condition of some of the existing cross-road culverts (not replaced in 2025) was assessed. The site around the culverts were found to be stable (no soft shoulders, sink holes or cave-ins); There was no signs of distress on the LCB roads that could be contributed solely to culvert failure; There was no structural deformation and there was no visible evidence of soil infiltration when looking through the culverts. There was some evidence of rusting, but due to poor visibility of the culvert bottoms it could not be determined if the bottoms of the culverts (inverts) had rusted through. Generally, the culverts were considered in good to fair condition.

It is recommended the Municipality do an updated condition review of all the culverts. When a section of the road has significant rehabilitation or reconstruction works, the culverts should be inspected again to determine if they should be replaced. It is recommended that any culverts that need replacement be replaced with HDPE culverts, as HDPE has a longer lifespan than CSP.

7.4 Frost Heaves

Frost heaves form when water in the ground freezes and expands, pushing up against the gravel road or hard pavement, creating a bump in the road. Sometimes frost heaves transition to a sag once ice melts. Frost heaves are typically caused by frost-susceptible soils (such as silts, very fine sands mixed with silt, and some clays), poor roadway drainage (i.e. roads without a crown to allow water to drain off), high groundwater table beneath the road, and are more likely to occur around culverts.

The best time to review frost heaves is during the spring thaw. This is when the frost heaves are most prevalent and the extent of the heave and proposed corrective actions can be determined. Due to the time of year when the site investigation was conducted, frost heaves were not observed. However, the Municipality provided a map and marked out in the field locations of repeated seasonal frost heaves. It should be noted that some of the frost heaves marked in the field were near culverts, and therefore are assumed to be related to typical frost-heave around culverts. However, it should be noted that some of the frost heaves marked were not located near culverts or low points in the road.

To prevent frost heave at culverts, one of the best prevention methods is to install well-draining material (such as Granular 'A' or Granular 'B') around the culverts during installation, instead of backfilling with native material. Installing frost tapers at culvert installations as per OPSD 803.030 [3], insulating with extruded polystyrene (XPS) insulation (typically at shallow culvert locations), and replacing culverts with HDPE are other ways to help prevent frost heaves at culvert locations.

Other ways to improve drainage to prevent frost heaves include: Grade roadway surface to ensure crossfall slopes towards ditches; Slope the subgrade (below the Granular 'A' road base) towards the ditches, and ensure ditches are deeper than the bottom of the granular base to ensure groundwater flows to the ditches; Introduce a geotextile to separate the base from frost-susceptible soils (if warranted); or increase the thickness of the granular base or subbase (thicker material means it takes longer for frost to reach the underlying frost-susceptible subgrade material).

7.5 Typical Cross-Sections

In 2020, the Transportation Association of Canada (TAC) published the "Geometric Design Guide for Canadian Roads: Chapter 11 – Special Roads" [2] as it was recognized there a need to provide design guidance for special roads such as low-volume rural roads, resource roads, recreational roads, and winter roads. The chapter also includes discussion on when 1-lane 2-way roads could be considered and provides guidance for roadside safety for low-volume roads. With the low traffic volume on the Municipality of Calvin roads, Chapter 11 was used as a basis for evaluating the road geometry as part of this study. To assist the Municipality with rehabilitation and reconstruction of their roads in the future, four (4) typical road cross sections have been provided and are included in Appendix F.

Drawing R1 is a typical rural cross section for double surface treatment (LCB) roads. This detail shows the reconstruction efforts for the roadway, including pulverizing the existing surface, installing woven geotextile (if warranted), installing new lift of Granular 'A' base, then a double surface treatment. Note that this reconstruction option creates a grade raise on the road, so there should be consideration given to removing the existing base and/or subbase if there are grade raise constraints. This cross-section is for 2-lane 2-way roads, based on a design speed of 80km/hr. If the road is based on a design speed of 90 km/hr, the roadway width should be increased to a minimum of 8.4m, which includes a travelled lane of 7.4m (3.7m lane widths) and a 0.5m shoulder on either side. Humps or "berms" in the gravel shoulders should be graded so the shoulders have a continuous slope to promoted water to drain off the road to the ditches.

Drawing RG-2 is a typical rural cross section for 2-lane 2-way gravel roads (based on a design speed of 80 km/hr). This detail shows the reconstruction efforts for the gravel roadway, including installing woven geotextile (if warranted), installing new lift of Granular 'B' subbase, and installing new lift of Granular 'A' base/road surface. It should be noted that gravel roads typically do not require full reconstruction as normal maintenance activities maintain the existing condition of the road. Therefore, rehabilitation efforts for a gravel road would typically include the addition of new lift of Granular 'A' base/road surface. Similar to the typical cross-section for LCB roads, humps or "berms" in the gravel shoulders should be graded to promoted water to drain off the road to the ditches. The roadway width on special gravel roads is dependant on the design speed and the average daily truck traffic.

Drawing RG-1 is a typical rural cross section for 1-lane 2-way gravel roads. One-lane two-way roads can be used to provide access to isolated communities, recreational sites, or resource developments and are located off a higher classification of road. These roads are short, serve a single purpose and are not part of a continuous route. For reasons of safety, the one-lane two-way roads may only be considered if the average daily traffic (ADT) is less than 50 vehicles/day and the design speed is 50 km/h or less. If the road conditions encourage operating speeds in excess of 50 km/hr, a 1-lane 2-way should not be considered. On 1-lane 2-way roads, turnouts are required at a maximum of 300m spacing, to allow passing on this type of road. Turnouts should have clear sight lines between them. A typical detail for a turnout is included in Appendix F (refer to TO-1).

There are a number of dead-end roads within the Municipality of Calvin that would be a suitable candidate for 1-lane 2-way gravel roads.

8 Conclusion

This report has been compiled to provide Municipality of Calvin with a list of present and projected road improvements associated with the Municipality's road system. It should be used as a reference document to plan future road improvements to ensure that the maximum benefit is being achieved from the roads budget funding.

It is recommended that the Municipality of Calvin develop an annual budget for Capital Works. Based on this study, it is estimated that the annual expenditure is between \$480K and \$595K over the five (5) year plan to rehabilitate and maintain the roads. The recommended road sections requiring improvements are noted in Table 4. Road improvements should be recorded on an annual basis as they are completed.

In addition to the road needs, a number of additional considerations have been noted within the report. It is recommended that the Municipality prioritize the safety concerns related to intersection configurations and sight lines, road speed limit review (specifically at curves in the horizontal and vertical alignment) and flatten steep ditches or provide roadside barriers (such as guide rails).

9 Acknowledgements

This report was funded by the Canadian Government through the Canada Community Building Fund.

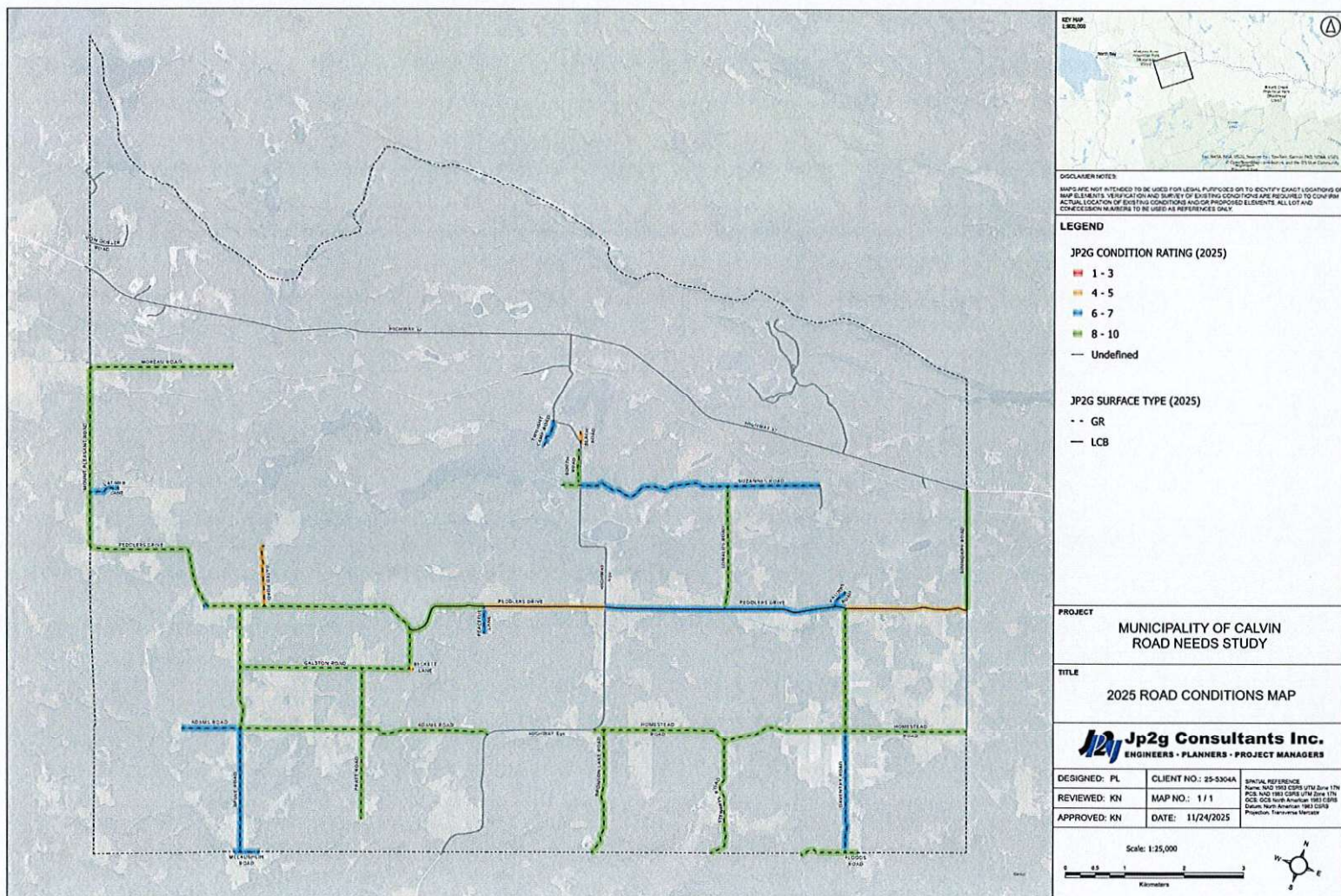


10 References

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- [2] Transportation Association of Canada, "Geometric Design Guide for Canadian Roads: Chapter 11 – Special Roads", Ottawa, ON, Mar. 2020. Publication code: PTM-GEODES11-E.
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Appendix A: 2025 Road Condition Rating Map

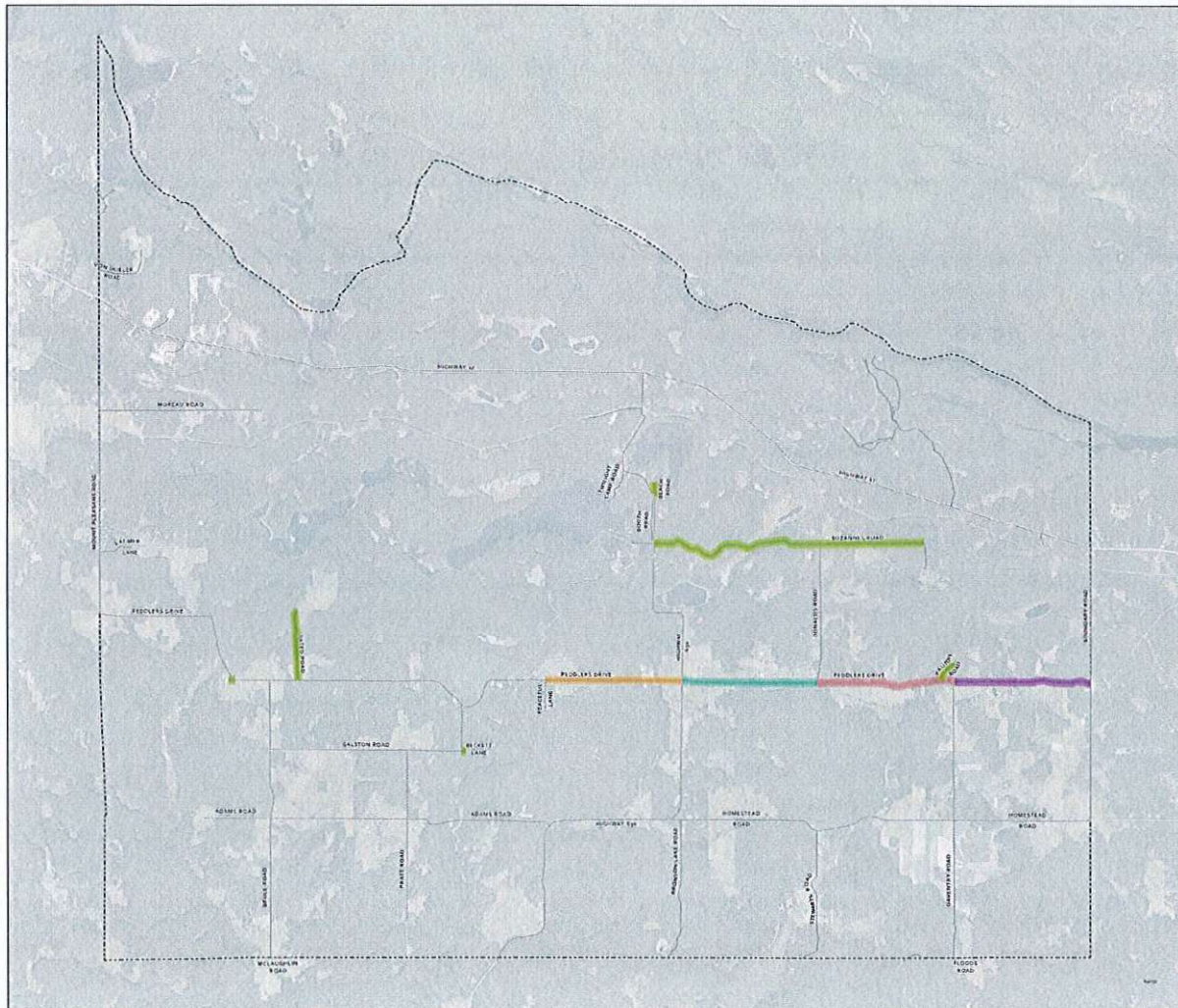




Appendix B: Specific Road Condition/Safety Observations Map



Appendix C: Recommended Improvements Map



KEY MAP
1:50,000

(A)

For DATA ONLY, based on the National Road Inventory (NRI) 2018, as of the 1st of January 2019. The NRI is a national database of roads in South Africa. It is not a legal document and should not be used as a reference for legal purposes.

DISCLAIMER NOTES

MAPS ARE NOT INTENDED TO BE USED FOR LEGAL PURPOSES OR TO IDENTIFY EXACT LOCATIONS OF MAP ELEMENTS. VERIFICATION AND SURVEY OF EXISTING CONDITIONS ARE REQUIRED TO CONFIRM ACTUAL LOCATION OF EXISTING CONDITIONS AND/OR PROPOSED ELEMENTS. ALL LEFT AND CONVECTION NUMBERS TO BE USED AS REFERENCES ONLY.

LEGEND

RECOMMENDED YEARS FOR IMPROVEMENT

- 2026
- 2027
- 2028
- 2029
- 2030
- OTHER

PROJECT

**MUNICIPALITY OF CALVIN
ROAD NEEDS STUDY**

TITLE

**RECOMMENDED ROAD
IMPROVEMENTS BY YEAR**

Jp2g Consultants Inc.
ENGINEERS • PLANNERS • PROJECT MANAGERS

DESIGNED: PL	CLIENT NO.: 25-5304A	<small>SPATIAL REFERENCE</small> Name: S25 1553 CORPS UTM Zone 17N PCS: NAD 1983 CORPS UTM Zone 17N GCS: SCS North American 1983 CORPS Datum: North American 1983 CORPS Projection: Transverse Mercator
REVIEWED: KN	MAP NO.: 1 / 1	
APPROVED: KN	DATE: 12/11/2025	

Scale: 1:25,000

Map: 1:50,000, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 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3842, 3843, 3844, 3845, 3846, 3847, 3848, 3849, 3850, 3851, 3852, 3853, 3854, 3855, 3856, 3857, 3858, 3859, 3860, 3861, 3862, 3863, 3864, 3865, 3866, 3867, 3868, 3869, 3870, 3871, 3872, 3873, 3874, 3875, 3876, 3877, 3878, 3879, 3880, 3881, 3882, 3883, 3884, 3885, 3886, 3887, 3888, 3889, 3890, 3891, 3892, 3893, 3894, 3895, 3896, 3897, 3898, 3899, 3900, 3901, 3902, 3903, 3904, 3905, 3906, 3907, 3908, 3909, 3910, 3911, 3912, 3913, 3914, 3915, 3916, 3917, 3918, 3919, 3920, 3921, 3



Appendix D: Road Inventory and Needs Summary Table

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Calvin Township Roads Needs Study - Road Inventory and Needs Summaries																				
Section Number	Road Name	From	To	Section Length (ft)	Section Width (ft)	Shoulder Width (ft)	Platform Width (ft)	Travelled Way Lane Type	Surface Condition (ft)	Surface Type	2019 Annual A.M. Daily Traffic (AASHTO)	2019 A.M. Daily Traffic (AASHTO)	Load Degradation	2019 Condition Rating	2019 Condition Rating (by MP)	2019 Costing	Observations	Spot Requirements	Spot with Maintenance	Construction Works
R21_1017_1	Dewdney Rd	Plunk Rd	Watership	0.1	4	1	6	2-lane, 2-way	NA	Dark	CR	10	unknown	1	3	\$1,711.00	Totally only paved approximately the first 1/3 of the road. History of water at the end of the section. Breaking and disk down not required. Road suitable condition for 1-lane, 2-way traffic.	Breaking (severe 10%) Spot disk down (severe 10% of road) Contractor needed		
R21_1018	Dewdney Rd	Bowman Rd	Padden Dr	1.07	6.5	6.5	7.2	2-lane, 2-way	NA	Dark	CR	40	2022 - 1" gravel lift	4	3	\$12,770.00	Portage of disk is too steep. Our down disclike is severe. Road was disked in 2017.	Pathe disked (10-15% of road) where too steep. Blasting (but not down "there") is severe area.		
R21_1017	Plunk Rd	Dewdney Rd	Bathurst	0.11	1	NA	1	2-lane, 2-way	NA	Dark	CR	10	unknown	1	3	\$1,010.00	Breaking required. Breaking and disk down not required. Road suitable condition for 1-lane, 2-way traffic.	Breaking (severe 10%) Spot disk down (severe 10% of road)		
R21_1019	Odessa Rd	Padden Dr	Buckley Ln	0.01	6	1	8	2-lane, 2-way	NA	Dark	CR	10	unknown	4	3	\$1,000.00	Spot reduction recommended at sharp corner at Buckley Ln. Very poor sight line at intersection with Padden. Disk and disk down required in area. Overall appears to have been added to road for year 2022, unknown how long replaced since then.	Spot disk down (severe 10% of road)		
R21_1017	Odessa Rd	Front Rd	Buckley Ln	0.19	8	1	8	2-lane, 2-way	NA	Dark	CR	10	unknown	2024 - 1" gravel lift	3	\$6,740.00	Spot reduction recommended at sharp corner at Buckley Ln. Intersections very wide at Odessa Front - Right line across at intersection. Disk and disk down not required in area.	Spot disk down (severe 10% of road)		
R21_1017_1	Odessa Rd	Brick Rd	Front Rd	1.04	4	NA	6	2-lane, 2-way	NA	Dark	CR	10	unknown	1	3	\$40,770.00	Breaking and disk down not required. Disk and disk down required in area. Our down disclike. Overall appears to have been added recently.	Breaking (severe 10%) Spot disk down (severe 10% of road)	Blasting (but not down "there") to be established. The disclike on either side.	
R21_1018	Odessa Rd	Padden Dr	Kathurst	1.11	4	NA	6	2-lane, 2-way	NA	Dark	CR	1	unknown	1	3	\$19,100.00	Spot paved in 2018.5. Breaking and disk down then disclike. Overall has been added in low area of road, other area is critical due to gravel has been added for some time. If road is to be upgraded, widening may be required. Road disk down required. Overall area is very narrow. This area is very narrow. Road disk in condition for 1-lane, 2-way traffic.	Contractor needed (1). Wide area road.	Overall Kersching, but disclike.	
R21_1018	Elmwood Rd	RTY 411	Bowman Lake Rd	0.17	6	1	8	2-lane, 2-way	NA	Dark	CR	40	2022 - 1" gravel lift	7	3	\$1,010.00	Short section, road in good condition. Disk down required. Our down disclike.	Breaking (severe 10%)	Blasting (but not down "there")	
R21_1018_1	Elmwood Rd	Bowman Lake Rd	Bowman Rd	1.08	6	1	8	2-lane, 2-way	NA	Dark	CR	10	2022 - 1" gravel lift	4	3	\$41,410.00	Right line across at intersection with Bowman Rd. Disk down and breaking required. Our down disclike.	Breaking (severe 10%) Spot disk down (severe 10% of road)	Blasting (but not down "there")	
R21_1018_1	Elmwood Rd	Dewdney Rd	Bowman Rd	1.04	6	1	8	2-lane, 2-way	NA	Dark	CR	10	10	4	3	\$40,100.00	Widening along road edge in area. Breaking and disk down not required. Our down disclike.	Breaking (severe 10%) Spot disk down (severe 10% of road)	Blasting (but not down "there")	
R21_1018_1	Elmwood Rd	Bowman Rd	Dewdney Rd	1.09	4	8.2	7	2-lane, 2-way	NA	Dark	CR	10	2022 - 1" gravel lift	4	3	\$41,000.00	Mass reduction in disclike, water not getting to disk. Road disk or gutter now bridge. Our down disclike.	Spot disk down (100%)	Blasting (but not down "there")	
R21_1014	Lafayette Ln	MT Pioneer Rd	Bathurst	0.11	1	1	7	2-lane, 2-way	NA	Dark	CR	1	unknown	1	3	\$19,010.00	Reverse any sign location - may need to be closer to intersection. Overall added as full. This area requires improvement. Road suitable condition for 1-lane, 2-way traffic.	Establish recommended at end	Overall Kersching, but disclike.	
R21_1013	McLaughlin Rd	Brick Rd	Watership	0.11	1.1	NA	1.2	2-lane, 2-way	NA	Dark	CR	10	unknown	1	3	\$11,110.00	This area of turning is severe, requires gravel, full is spring. Road disk is high on the fourth side of road. Road suitable condition for 1-lane, 2-way traffic.	Establish recommended at end	Overall Kersching, but disclike.	
R21_1013_1	McLaughlin Rd	Brick Rd	Bathurst	0.14	1.1	NA	1.2	2-lane, 2-way	NA	Dark	CR	10	unknown	1	3	\$11,110.00	Widening along edge at 1/2. Disk down required. Breaking required in area. Our down disclike. Road suitable condition for 1-lane, 2-way traffic.	Breaking (severe 10%) Spot disk down (severe 10% of road)	Overall Kersching, but disclike.	

Calvin Township Roads Needs Study - Road Inventory and Needs Summaries																						
Section Number	Road Name	From	To	Section Length (ft)	Section Width (ft)	Shoulder Width (ft)	Platform Width (ft)	Standard Way Side Type	Surface Condition (%)	Available Right-of-Way	Surface Type	2007 Annual Ave. Daily Traffic (ADT)	2018 Ave. Daily Traffic (ADT)	Last Improvement	2009 Condition Rating	2018 Condition Rating (by ID)	2019 Costing	Observations	By Improvement	By Maintenance	Construction Works	
R2_1113	Marrow Rd	MT Pioneer Rd	Easterly	1.4	6	N/A	6	2-lane, 2-way	N/A	Dish	CR	49	17	2013 - 4" gravel lift	1	3	\$41,802.50	Good very little tree maintenance on road Drill down and leveling required More sign work to intersection On/Off at low end may be too small Low area before 111-444 has history of being with gravel added and surface replaced by year Front leaves in gravel area on the road. No evidence of culvert at the bottom, culvert at several places Gravel required a few more	Braking (severe 100%) Spot disk check (severe 10% of road)	Shouldering (but not down "there") to be established to the shoulders on either side		
R2_1113	MT Pioneer Rd	Marrow Rd	Latimer La	1.15	7	N/A	7	2-lane, 2-way	N/A	Dish	CR	100	183	2014 - 4" gravel lift	1	3	-	Deep vertical alignment over 111-479 South lane over 111-479 has over full issue. Without issue in some areas Work done on shoulders over culvert 111-479 gravel lift added recently, filling completed this year (2017)				
R2_1113_1	MT Pioneer Rd	Latimer La	Problems Dr	1.15	7	8.5	8	2-lane, 2-way	N/A	Dish	CR	100	183	2013 - 4" gravel lift	7	3	\$19,208.50	Section of road with inconsistent over full Shoulder high as to west side of roadway Gravel area required a few more Braking required in some Sign for corner at Problems Dr/111-479 Excessive and wrong gravel laid at intersection with Problems Gravel area on east down shoulder as east side of road Potential culvert replacement			Shouldering (but not down "there")	
R2_1113	Zachary Rd	Problems Dr	Westward	0.12	6	1	8	2-lane, 2-way	N/A	Dish	CR	3	unknown		3	5	\$23,210.50	Water trapped on N/E side at intersection Gravel required Crossing of drainage culvert Without on shoulder at intersection with Problems Shoulder required Road width is consistent for 2-lane, 2-way traffic	Braking (severe 100%) Spot disk check (severe 10% of road)	Gravel Resurfacing, but shoulders		
R2_1114	Problems Dr	Problems Dr	Eastward	4.41	6	1	8	2-lane, 2-way	N/A	Dish	CR	5	unknown		4	7	\$19,210.50	On the road surface Drill down not required Drill down required in some Shoulder high in some History of evidence on shoulders in large area Road width is consistent for 2-lane, 2-way traffic	Braking (severe 100%) Spot disk check (severe 10% of road)	Gravel Resurfacing, but shoulders		
R2_1113_1	Problems Dr	Outlook Rd	Good Rd	1.11	7	N/A	7	2-lane, 2-way	N/A	Dish	CR	100	43		1	3	\$76,402.50	Very poor right lane at intersection with Outlook Rd 1/2 mile shortly after 111-1111, 1/2 mile in smaller condition in previous 1/2 mile Brokenhull culvert in ditch Bridge requires repair (stone damage) Complete road bed repair - primarily on corners Drill down required Several flat areas located around by turning On/Off down shoulders Braking required Road gravel recently	Braking (severe 100%) Spot disk check (severe 10% of road)	Shouldering (but not down "there")		
R2_1113_1	Problems Dr	Dorothy Rd	Boundary Rd	1.11	7	1	8	2-lane, 2-way	new	Dish	L/CB	100	188		7	3	\$441,802.50	Complete speed reduction (restriction may be increased) Wheel track rutting Shoring and leveling Intersection over full Minor rutting throughout Rim later making out over intersection (the down shoulders) Paving has been completed on road Reconstruction using an L/CB spec in intersection (overlaid spec on gravel L/CB and surface)			Shouldering (but not down "there")	P&D-Culvert Processing
R2_1113_1	Problems Dr	Good Rd	Brick Rd	0.41	7	N/A	7	2-lane, 2-way	N/A	Dish	CR	100	43		4	3	\$13,600.50	On/Off down shoulders 2-lane down not required	Spot disk check (severe 10% of road)	Shouldering (but not down "there")		
R2_1113	Problems Dr	Brick Rd	MT Pioneer Rd	3.1	7	N/A	7	2-lane, 2-way	N/A	Dish	CR	100	137		7	3	\$87,200.50	Hydro plan to drill hole Base area of shoulders present Review gravel laid at corner over 111 - 1241 Drill down not required Pave down to top of 111 - 1241 On/Off down shoulders Hydro plan to drill hole after Bridge Area where drill down has been completed Potential culvert to be replaced	Spot disk check (severe 10% of road) Big base over culvert	Shouldering (but not down "there")		
R2_1113_1	Problems Dr	Frank Rd	Patrick Rd	1.17	6	1	8	2-lane, 2-way	new	Dish	L/CB	100	214	2014 - Single Surface Treatment (on 111-479)	7	6	\$423,720.50	Wheel track rutting Shoring and leveling Longitudinal cracking on edge of right Edge rutting in some Intersection over full - corners Review gravel laid at 111-479 corner and Patrick Rd On/Off down shoulders Longitudinal and transverse cracking over Bridge Surface treated in 2014 (cracking from 111 - 487 to 2-way) Surface is better in the section that was recently repaved but the gravel road has a very poor			Shouldering (but not down "there")	P&D-Culvert Processing (but not down "there")

Calvin Township Roads Needs Study - Road Inventory and Needs Summaries																					
Section Number	Road Name	From	To	Section Length (ft)	Surface Width (ft)	Shoulder Width (ft)	Platform Width (ft)	Travel Way Lane Type	Surface Condition (%)	Right-of-Way (ft)	Surface Type	2009 Annual Ave. Daily Traffic (ADT)	2015 Ave. Daily Traffic (ADT)	Load Improvement	2009 Condition Rating	2015 Condition Rating (by US)	2015 Costing	Observations	By or Improvement	By with Maintenance	Construction Works
R2_1101_3	Fielders Dr	HWY 416	Dowdell Rd	2.02	7	8.5	8	2-lane, 2-way	poor	24.6	D-6	120	216		7	6	\$178,318.94	Wheel track rutting Alligator cracking in some areas longitudinal flow alignment Inconsistent cross fall Edge cracking Braking required Heavy use of cross culvert Cut down shoulders Without the shoulders or reduced cross culvert Ravine used for parking at a closed cross culvert Parking has been completed on road surface	Outside	Shouldering (cut out down "turns")	P&B-Drych Processing
R2_1101_4	Fielders Dr	Patrick Rd	Dorwin Rd	8.19	7	9	8	2-lane, 2-way	not assessed	24.6	D-6	120	216	2015 - Single Surface Treatment (Oil Sealing)	7	6	\$41,240.98	Remove speed limit and right line at center Flowing and rutting in some		Shouldering (cut out down "turns")	P&B-Drych Processing
R2_1101_5	Fielders Dr	HWY 416	Prosser Lane	2.04	7	9	8	2-lane, 2-way	4.5-6	24.6	D-6	120	70		7	3	\$41,240.98	Wheel track rutting Paving in some Drinking water in some areas Cut down shoulders Pavement parking completed Load improvement at edge	Byrd disk clearance (between 17% of road)	Shouldering (cut out down "turns")	P&B-Drych Processing
R2_1101	Fielders Dr	Prosser Lane	Osborne Rd	3.49	7	9	8	2-lane, 2-way	3.5-4.5	24.6	D-6	120	47		7	3	\$15,217.98	Flowing Thickening rutting Intermittent longitudinal cracking Cut down bridge Wheel track rutting Edge of asphalt deteriorating Braking required in some Cut down shoulders Area at bottom of hill is worse than remainder of road Large rut at bottom of hill	Byrd disk clearance (between 17% of road) Byrd disk clearance (between 17% of road) rutting at bottom of hill	Shouldering (cut out down "turns")	
R2_1116	Fielders Dr	Fielders Dr	R11-0885	8.1	9	N/A	9	2-lane, 2-way	N/A	24.6	CR	unknown	unknown		N/A	6	\$9,808.98	Flow line around Ravine entrance to some residents Transverse rut in some residential road Load suitable condition for 1-lane, 2-way traffic	Establish transverse at end	Overall resurfacing	
R2_1120	Front Rd	Osborne Rd	Adams Rd	1.01	6	N/A	6	2-lane, 2-way	N/A	24.6	CR	39	39		7	3	\$14,251.98	Yield sign appears too far back at intersection with Osborne Intersection very wide at Osborne Right line shows at intersection with Osborne Drain down not required Road built to condition for 1-lane, 2-way traffic	Byrd disk clearance (between 17% of road)	Shouldering (cut out down "turns") to be established 1.5 to 2.0 feet on either side	
R2_1121	Front Rd	Adams Rd	End	1.4	9	N/A	9	2-lane, 2-way	N/A	24.6	CR	49	unknown	2012 - 4" general lift	4	3	\$41,000.98	Only 1-1.11 inches in some sections No disk in some side Load suitable condition along edge of gravel Cut down shoulders	Byrd disk clearance (between 17% of road)	Shouldering (cut out down "turns") to be established 1.5 to 2.0 feet on either side	
R2_1124	Reynolds Rd	Hawthorn Rd	Transverse Lane	8.8	9	N/A	9	1-lane, 2-way	N/A	24.6	CR	3	14	2014 - 4" general lift	4	3	\$14,100.98	Speed limit posted at 15 mph This road is 11-12 ft Braking required Drain down not required Cut down shoulders Load suitable condition for 1-lane, 2-way traffic	Byrd disk clearance (between 17% of road) Byrd disk clearance (between 17% of road) Crested top side (2)	Shouldering (cut out down "turns")	
R2_1105_3	Reynolds Rd	HWY 416	Dowdell Rd	2.03	8.5-9.5	9.5	9.5	2-lane, 2-way	N/A	24.6	CR	49	11		3	3	\$178,318.94	Remove speed limit of road (15 mph) appears too high Inconsistent road width No road defined disk Right line shows throughout section Ravine used for parking at a closed cross culvert Braking required Cut down shoulders	Byrd disk clearance (between 17% of road)		Overall resurfacing and widening, but disclosure
R2_1102	Reynolds Rd	Dowdell Rd	Dowdell End	1.33	6	8.5	7	2-lane, 2-way	N/A	24.6	CR	49	8		3	6	\$14,100.98	Small culvert rough Large stone bridge at end of road Cut down shoulders Braking required, drain down not required Load suitable condition for 1-lane, 2-way traffic	Byrd disk clearance (between 17% of road)	Overall resurfacing, but disclosure	
R2_1103_3	Reynolds Rd	HWY 416	Whitney	8.3	6	8.5	7	2-lane, 2-way	N/A	24.6	CR	39	31	2012 - 4" general lift	3	3	\$8,210.98	Blue "turns" at end of road Time in center of turn around Cut down shoulders Braking required at intersection with HWY 416 Load suitable condition for 1-lane, 2-way traffic	Braking (at intersection - 17% of road)	Shouldering (cut out down "turns")	
R2_1113	Twilight Camp Rd	HWY 416	End	4.41	4	5	4	1-lane, 2-way	N/A	24.6	CR	49	49	2012 - 4" general lift	3	3	\$4,817.98	Ravine road Minor rutting but no evidence of parking on road Braking required Load suitable condition for 1-lane, 2-way traffic	Braking (between 17% of road) Byrd disk clearance (between 17% of road)		

2006

1. Surface condition (%) was not assessed on the ground in these areas as they are not right, but the material depth and surface condition. Therefore, make assumptions of the condition in ground surface based on historical evidence that don't reflect the latest design or historical reality.
2. Due to safety concerns with limited line of sight, the surface condition on Fielders Drive between Patrick Rd and Dorwin Rd was not assessed.



Appendix E: Road Needs Costs Yearly Breakdown and Capital Planning Summary Tables

Calvin Township Roads Needs Study - Capital Planning Summary

Section Number	Road Name	From	To	Section Length (km)	Surface Type	1999 Annual Ave. Daily Traffic (AADT)	2025 Ave. Daily Traffic (ADT)	2025 Condition Rating (0-10)	2025 Costing	Proposed Activity	Recommended Year for Improvement	Proposed Capital Costs (by Year) ¹					Post-2030 Condition Rating ²
												2026	2027	2028	2029	2030	
RD_5301_5	Peddlers Dr	HWY 630	Donalds Rd	2.02	LCB	150	216	6	\$578,320.00	Full-Depth Processing; Shoulder; Curb/ditch	2026	\$595,700.00					8
RD_5301_1	Peddlers Dr	HWY 630	Peaceful Lane	2.04	LCB	150	72	5	\$452,880.00	Full-Depth Processing; Shoulder; Ditching	2027		\$480,500.00				8.5
RD_5301_4	Peddlers Dr	Davenney Rd	Boundary Rd	2.05	LCB	150	288	5	\$442,800.00	Full-Depth Processing; Shoulder	2028			\$483,900.00			9
RD_5301_3	Peddlers Dr	Donalds Rd	Paulois Rd	1.87	LCB	150	216	6	\$403,920.00	Full-Depth Processing (incl widen to 7m travelled way); Shoulder	2029				\$454,700.00		9.5
RD_5301_6	Peddlers Dr	Paulois Rd	Davenney Rd	0.19	LCB	150	216	6	\$41,040.00	Full-Depth Processing; Shoulder	2029				\$46,200.00		9.5
RD_5311	Beach Rd	HWY 630	End	0.2	GR	49	unknown	5	\$18,975.00	Gravel resurfacing and widen; Brushing (intersection); Construct turnaround	2030					\$22,000.00	10
RD_5319_1	Beckett Ln	Galston Rd	East Dead End	0.05	GR	49	unknown	5	\$13,175.00	Gravel Resurfacing; Shoulder; Ditching; Construct turnaround	2030					\$15,300.00	10
RD_5316	Gated Rd	Peddlers Dr	Northerly	1.05	GR	5	unknown	5	\$59,000.00	Gravel Resurfacing; Shoulder; Construct turn-out; Widen turnaround	2030					\$68,400.00	10
RD_5330	Peddlers Dr	Peddlers Dr	911-2682	0.1	GR	unknown	unknown	6	\$9,000.00	Gravel resurfacing; Construct turnaround	2030					\$10,500.00	10
RD_5305_1	Suzanne Rd	HWY 630	Donalds Rd	2.63	GR	49	11	6	\$172,265.00	Gravel resurfacing and widening; Shoulder; Brushing; Ditching	2030					\$199,800.00	10
RD_5305	Suzanne Rd	Donalds Rd	Dead End	1.55	GR	49	6	6	\$96,100.00	Gravel Resurfacing; Shoulder; Ditching	2030					\$111,500.00	10
RD_5303	Paulois Rd	Peddlers Dr	Northerly	0.32	GR	2	unknown	6	\$23,520.00	Gravel Resurfacing; Brushing; Shoulder	2030					\$27,300.00	10
RD_5321_2	Adams Rd	Brule Rd	Westernly	0.99	GR	50	unknown	7	\$63,480.00	Gravel Resurfacing; Shoulder; Brushing (intersection); Ditching	2031-2035						7
RD_5314	Latimer Ln	Mt Pleasant Rd	Easternly	0.51	GR	2	unknown	7	\$39,035.00	Gravel Resurfacing; Shoulder; Construct turnaround	2031-2035						7

Calvin Township Roads Needs Study - Capital Planning Summary

Section Number	Road Name	From	To	Section Length (km)	Surface Type	1999 Annual Ave. Daily Traffic (AADT)	2015 Ave. Daily Traffic (ADT)	2015 Condition Rating (Op20)	2015 Costing	Proposed Activity	Recommended Year for Improvement	Proposed Capital Costs (by Year) ¹					Post-2010 Condition Rating ²
												2016	2017	2018	2019	2020	
RD_5323	McLaughlin Rd	Brule Rd	Westernly	0.11	GR	30	unknown	7	\$15,315.00	Gravel Resurfacing; Shouldering; Construct turnaround	2011-2015						7
RD_5323_1	McLaughlin Rd	Brule Rd	Easternly	0.34	GR	30	unknown	7	\$18,190.00	Gravel Resurfacing; Shouldering; Brushing; Ditching	2011-2015						7
RD_5318	Peaceful Lane	Peddlers Dr	Southernly	0.46	GR	5	unknown	7	\$33,810.00	Gravel Resurfacing; Shouldering; Brushing; Ditching	2011-2015						7
RD_5306_1	Daventry Rd	Homestead Rd	Floods Rd	2.05	GR	50	64	7	\$60,475.00	Shouldering; Brushing; Ditching	2011-2015						7
RD_5322_2	Brule Rd	Adams Rd	McLaughlin Rd	2.08	GR	60	28	7	\$52,080.00	Shouldering; Brushing; Grade raise	2011-2015						7
RD_5317_1	Chalton Rd	Brule Rd	Pratt Rd	2.06	GR	50	unknown	8	\$60,770.00	Shouldering; Brushing; Ditching	2011-2015						8
RD_5309	Bronson Lake Rd	Homestead Rd	Township Limit	2.14	GR	49	unknown	8	\$42,840.00	Flatten ditches; Gravel Resurfacing (after steep hill)	2011-2015						8
RD_5693_2	Daventry Rd	Floods Rd	Westernly	0.5	GR	50	unknown	8	\$9,725.00	Brushing; Ditching; Construct turnout	2011-2015						8
RD_5327	Floods Rd	Daventry Rd	Easternly	0.22	GR	30	unknown	8	\$2,090.00	Brushing; Ditching	2011-2015						8
RD_5325	Pratt Rd	Adams Rd	End	1.6	GR	49	unknown	8	\$41,660.00	Shouldering; Ditching	2011-2015						8
RD_5302	Peddlers Dr	Brule Rd	Nt Pleasant Rd	3.2	GR	150	135	8	\$85,200.00	Shouldering; Ditching; Replace cross-culverts	2011-2015						8
RD_5322	Brule Rd	Peddlers Dr	Chalton Rd	1.01	GR	60	92	8	\$16,160.00	Shouldering; Ditching	2011-2015						8
RD_5306	Daventry Rd	Homestead Rd	Peddlers Dr	2.04	GR	50	72	8	\$17,340.00	Shouldering; Brushing	2011-2015						8
RD_5301_2	Peddlers Dr	Chalton Rd	Chalton Rd	2.59	GR	150	63	8	\$76,405.00	Shouldering; Brushing; Ditching	2011-2015						8
RD_5302_1	Peddlers Dr	Chalton Rd	Brule Rd	0.41	GR	150	63	8	\$10,660.00	Shouldering; Ditching	2011-2015						8
RD_5301	Peddlers Dr	Peaceful Ln	Chalton Rd	1.49	LCB	150	63	8	\$55,015.00	Shouldering; Brushing; Spot dig out	2011-2015						5.5
RD_5322_1	Brule Rd	Chalton Rd	Adams Rd	1.03	GR	60	50	8	\$7,250.00	Shouldering; Brushing (intersection)	2011-2015						8

Calvin Township Roads Needs Study - Capital Planning Summary

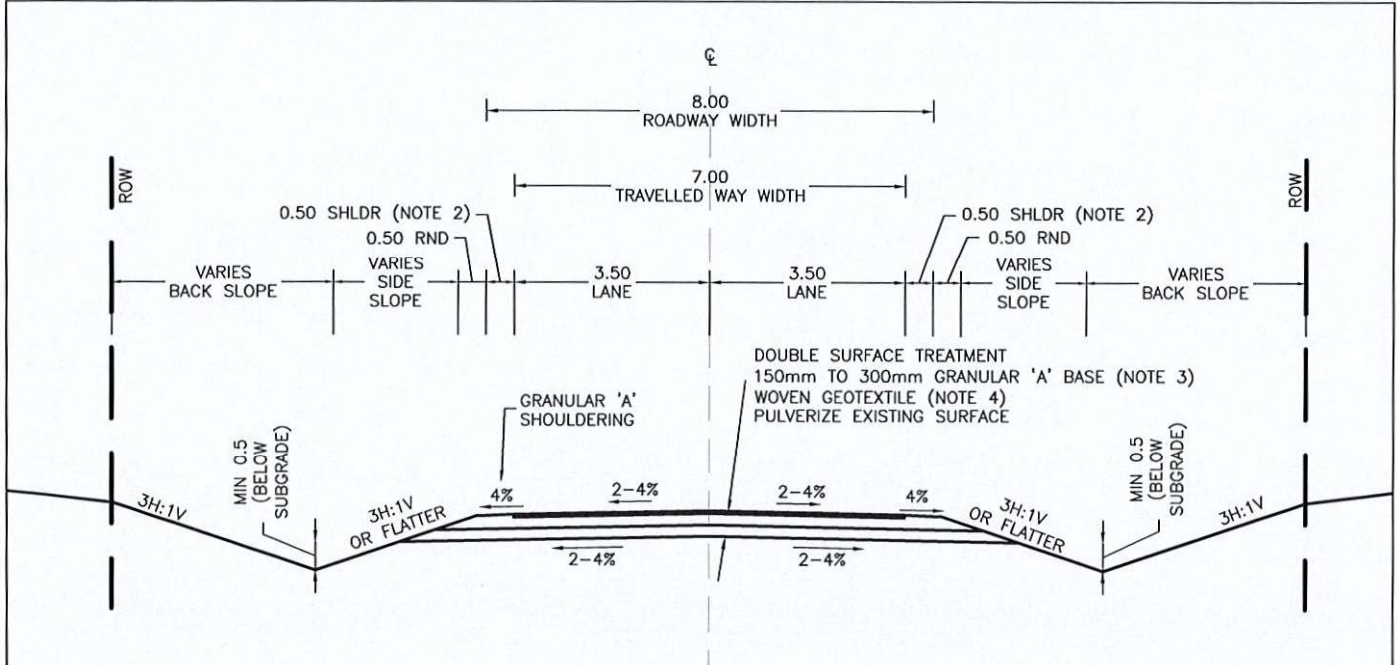
Section Number	Road Name	From	To	Section Length (km)	Surface Type	1999 Annual Ave. Daily Traffic (AADT)	2025 Ave. Daily Traffic (ADT)	2025 Condition Rating (Jplg)	2025 Costing	Proposed Activity	Recommended Year for Improvement	Proposed Capital Costs (by Year) ¹					Post-2030 Condition Rating ²
												2026	2027	2028	2029	2030	
RD_5312	Twilight Camp Rd	HWY 630	End	0.49	GR	49	49	8	\$4,655.00	Brushing; Ditching	2031-2035						8
RD_5320	Pratt Rd	Galston Rd	Adams Rd	1.02	GR	50	20	8	\$36,520.00	Shouldering; Ditching	2031-2035						8
RD_5324	Stewart Rd	Homestead Rd	Township Limit	0.9	GR	2	16	8	\$36,500.00	Shouldering; Brushing; Ditching; Construct turnouts	2031-2035						8
RD_5319	Galston Rd	Peddlers Dr	Beckett Ln	0.66	GR	10	unknown	9	\$3,960.00	Ditching	2031-2035						9
RD_5317	Galston Rd	Pratt Rd	Beckett Ln	0.79	GR	50	unknown	9	\$4,740.00	Ditching	2031-2035						9
RD_5313_1	Mt Pleasant Rd	Latimer Ln	Peddlers Dr	1.95	GR	300	163	9	\$39,000.00	Shouldering	2031-2035						9
RD_5308_3	Homestead Rd	Daventry Rd	Boundary Rd	2.04	GR	50	99	9	\$60,180.00	Shouldering; Brushing; Ditching	2031-2035						9
RD_5308	Homestead Rd	HWY 630	Bronson Lake Rd	0.17	GR	49	94	9	\$3,995.00	Shouldering; Brushing	2031-2035						9
RD_5308_1	Homestead Rd	Bronson Lake Rd	Stewart Rd	2.09	GR	50	94	9	\$61,655.00	Shouldering; Brushing; Ditching	2031-2035						9
RD_5308_2	Homestead Rd	Stewart Rd	Daventry Rd	2.09	GR	50	94	9	\$43,000.00	Shouldering; Ditching	2031-2035						9
RD_5321	Adams Rd	Pratt Rd	HWY 630	2.19	GR	50	93	9	\$56,940.00	Shouldering; Flatten ditches;	2031-2035						9
RD_5321_1	Adams Rd	Brule Rd	Pratt Rd	2.04	GR	50	58	9	\$42,900.00	Shouldering; Brushing (intersection)	2031-2035						9
RD_5315	Moreau Rd	Mt Pleasant Rd	Easterly	2.4	GR	49	57	9	\$46,800.00	Shouldering; Brushing; Ditching	2031-2035						9
RD_5310_1	Booth Rd	Booth Rd	Northerly	0.29	GR	49	46	9	\$5,060.00	Grade/compact turnaround	2031-2035						9
RD_5310_2	Booth Rd	Booth Rd	Southerly	0.26	GR	49	46	9	\$5,060.00	Grade/compact turnaround	2031-2035						9
RD_5305_2	Suzanne Rd	HWY 630	Westernly	0.3	GR	30	31	9	\$8,100.00	Shouldering; Brushing (intersection)	2031-2035						9
RD_5304	Donald Rd	Suzanne Rd	Peddlers Dr	2.07	GR	49	8	9	\$22,770.00	Shouldering; Flatten ditches;	2031-2035						9
RD_5313	Mt Pleasant Rd	Moreau Rd	Latimer Ln	1.95	GR	300	163	9	-	-							9
RD_5310	Booth Rd	HWY 630	Booth Rd	0.65	GR	49	46	9	-	-							9
RD_5300	Boundary Rd	Taggart Lake Rd	HWY 17	2.02	LCB	199	326	10	-	-							7.5
TOTAL:												\$595,700.00	\$480,500.00	\$483,900.00	\$500,900.00	\$454,800.00	

Notes:

- Capital costs include a 3% increase (year over year) on the cost of construction works to account for inflation. Costs are rounded to the next hundred.
- The "Post-2030 Condition Rating" indicates what the road condition rating would be after the construction works are implemented in 2030.
LCB roads would deteriorate at a rate of 0.5 points per year (from date of construction works), however it is assumed gravel roads will not change their rating due to continued loose top maintenance.



Appendix F: Typical Road Cross Sections



NOTES:

1. ALL UNITS IN METERS UNLESS OTHERWISE NOTED.
2. WHERE TRAFFIC BARRIERS ARE USED, INCREASE SHOULDER WIDTH BY 0.5m ON TRAFFIC BARRIER SIDE, PLUS WIDTH TO SUPPORT FOR THE BARRIER.
3. DEPTH OF GRANULAR 'A' BASE TO BE AS PER GEOTECHNICAL RECOMMENDATIONS
4. WOVEN GEOTEXTILE TYPICALLY ONLY INSTALLED WHERE SEPARATION IS NEEDED BETWEEN THE SUBGRADE AND GRANULAR MATERIALS.
5. CROSS SECTION ELEMENTS AND DIMENSIONS AS PER "TAC GEOMETRIC DESIGN GUIDE FOR CANADIAN ROADS CHAPTER 11: SPECIAL ROADS", BASED ON DESIGN SPEED OF 80km/hr



**TYPICAL RURAL SURFACED ROAD
CROSS SECTION**
LCB SURFACE - TWO-LANE, TWO-WAY ROADS

NOT TO
SCALE

R1

\\s01\proj\2023\23-2304 - Municipality of Crows - Road Service Study\GIS Drawings\Output\VERT - Output Area Layout\TO-1 - Typical Turnout.dwg 21-Nov-2023

