OPERATIONS COMMITTEE
Tuesday, March 5, 2024 – 1:00 p.m.
County of Renfrew Administration Building
AGENDA

1. Call to order.

2. Land acknowledgement.

3. Roll call.

4. Disclosure of pecuniary interest and general nature thereof.

NOTE: a) **County Council: Wednesday, March 27, 2024.**
b) Submissions received from the public, either orally or in writing may become part of the public record.

OPERATIONS COMMITTEE

Tuesday, February 13, 2024

A meeting of the Operations Committee was held on Tuesday, February 13, 2024, at 1:00 p.m., at the County of Renfrew Administration Office, 9 International Drive, Pembroke, Ontario.

Present were: Chair Glenn Doncaster
Warden Peter Emon
Vice-Chair David Bennett
Councillor Daniel Lynch
Councillor Mark MacKenzie (virtual)
Councillor Keith Watt
Councillor Mark Willmer

Staff Present: Craig Kelley, Chief Administrative Officer/Clerk
Lee Perkins, Director of Public Works and Engineering
Jason Davis, Director of Development and Property
Daniel Burke, Manager of Finance/Acting Treasurer
Taylor Hanrath, Manager of Capital Works
Ashley Wilton, Manager of Provincial Offences Administration
Gwen Dombroski, Deputy Clerk
Tina Peplinskie, Media Relations and Social Media Coordinator
Evelyn VanStarkenburg, Administrative Assistant

Chair Doncaster called the meeting to order at 1:00 p.m. The land acknowledgement identifying that the meeting was being held on the traditional territory of the Algonquin People was recited. The roll was called, and no pecuniary interests were disclosed.

RESOLUTION NO. OP-C-24-02-11
Moved by Councillor Bennett
Seconded by Councillor Watt
THAT the minutes of the January 16, 2024, meeting be approved. CARRIED.

Councillor MacKenzie entered the meeting at 1:03 p.m.

Local Authority Services (LAS), Association of Municipalities of Ontario representative, Tanner Watt, Municipal Programs Specialist, overviewed an Automated Speed Enforcement presentation, which is attached as Appendix A.

In 2023, LAS, the City of Barrie, and Conduent Transportation partnered to pilot a project that will help Ontario municipalities enforce speed limits, slow down motorists and improve public safety through the use of speed enforcement cameras in designated safety zones through an Automated Speed Enforcement (ASE) program. The ASE program provides a complete solution, from advanced camera technology to ticket processing, in compliance with provincial law. It was noted that other municipalities will have the opportunity to join the ASE program following the pilot period. Municipalities will have flexibility to create a program tailored to their needs, with input on when and where the system is operated. As the program grows, LAS plans to help set up other processing centres across the province.

Currently ASE radars are only permitted in community safety and school zones. Tanner advised that an Association of Municipalities Ontario (AMO) policy team is working with several municipal councils and organizations to try and open up this legislation to provide more options to manage speeding within communities. Local municipalities are welcome to contact the AMO policy team and provide their concerns.

Public Works and Engineering

The Director of Public Works and Engineering overviewed the Public Works and Engineering Department Report, which is attached as Appendix B.

RESOLUTION NO. OP-C-24-02-12
Moved by Councillor Bennett
Seconded by Councillor Willmer
THAT the Operations Committee recommends that County Council adopt a By-law approving the alterations to County Roads and Structures. CARRIED.

RESOLUTION NO. OP-C-24-02-13
Moved by Councillor Lynch
Seconded by Councillor Watt
THAT the Operations Committee recommends that County Council adopt a By-law to approve Corporate Policy PW-22, Naming Bridges and Culverts, for all County of Renfrew owned Bridges and Culverts. CARRIED.

Capital Works Division

The Manager of Capital Works overviewed the Capital Works Division Report, which is part of the Public Works and Engineering Department Report.

RESOLUTION NO. OP-C-24-02-14
Moved by Councillor Willmer
Seconded by Councillor Watt
THAT the Operations Committee recommends to County Council that the land depicted on County Road 51 (Petawawa Boulevard) road allowance, located in Part Lot 9, Range B, Town of Petawawa, as indicated on the attached sketch, be declared surplus to the needs of the County of Renfrew. CARRIED.

RESOLUTION NO. OP-C-24-02-15
Moved by Councillor Lynch
Seconded by Councillor Willmer
THAT the Operations Committee recommends that County Council direct staff to commence the process required for closure and removal of County Structure B232 (Cochrane Creek Bridge), located on Cement Bridge Road, Township of North Algona Wilberforce. CARRIED.

RESOLUTION NO. OP-C-24-02-16
Moved by Councillor Willmer
Seconded by Councillor Watt
THAT the Operations Committee recommends to County Council that the 2024 Capital budget be amended as follows:

a) increase the budget for County Road 37 (Murphy Road) by $922,365 from $1,537,635 to $2,460,000;
b) decrease the budget for County Structure B103 (O'Grady Bridge) by $198,500 from $238,500 to $40,000;
c) decrease the budget for County Structure B156 (Burnt Bridge) by $427,000 from $477,000 to $50,000; and,
d) decrease the budget for County Structure B232 (Cochrane Creek Bridge) by $350,000 from $450,000 to $100,000. CARRIED.

RESOLUTION NO. OP-C-24-02-17
Moved by Councillor Bennett
Seconded by Councillor Willmer
THAT the Operations Committee recommends that County Council approve Contract PWC-2024-02 as submitted by KB Civil Constructors Inc., North York, Ontario, for the rehabilitation of County Structure B102 (Brennans Creek Bridge), Township of Killaloe, Hagarty and Richards, in the amount of $344,296.67, plus applicable taxes; AND FURTHER THAT County Council adopt a By-law to execute the Contract. CARRIED.

The Director of Public Works and Engineering noted that staff have reached out to the Mayor and staff of the Township of Killaloe, Hagarty and Richards to advise them on the proposed bridge work occurring on Queen Street. Staff will also be reaching out to the logging companies to request that they consider using an alternate route during construction.

RESOLUTION NO. OP-C-24-02-18
Moved by Councillor Bennett
Seconded by Councillor Lynch
THAT the Operations Committee recommends that County Council approve Contract PWC-2024-06, as submitted by Aqua Tech Solutions Inc., Schomberg, Ontario, for the relining of various culverts, in the amount of $207,725, plus applicable taxes; AND FURTHER THAT County Council adopt a By-law to execute the Contract. CARRIED.

RESOLUTION NO. OP-C-24-02-19
Moved by Councillor Willmer
Seconded by Warden Emon
THAT the Operations Committee recommends that County Council approve Contract PWC-2024-64 as submitted by Greenwood Paving (Pembroke) Ltd., Pembroke, Ontario, for the rehabilitation of County Road 64 (Opeongo Road) from Wieland Shore Road to Constant Lake Road, a distance of 8.20km, Township of Bonnechere Valley, in the amount of $1,718,606.60, plus applicable taxes; AND FURTHER THAT County Council adopt a By-law to execute the Contract. CARRIED.

Operations Division

The Manager of Capital Works overviewed the Operations Division Report, which is part of the Public Works and Engineering Department Report.

Committee advised that they would like the winter operations summaries to continue as part of the monthly reports.

RESOLUTION NO. OP-C-24-02-20
Moved by Councillor Bennett
Seconded by Councillor Watt
THAT the Public Works and Engineering Department Report, which is attached as Appendix B be approved. CARRIED.

Chair Doncaster advised Committee that he is unable to be present in person for the March meeting and that Vice-Chair Bennett will preside in his absence.

RESOLUTION NO. OP-C-24-02-21
Moved by Councillor Willmer
Seconded by Councillor Bennett
THAT this meeting adjourn and the next regular meeting be held on March 5, 2024. Time: 1:45 p.m. CARRIED.

COUNTY OF RENFREW

PUBLIC WORKS AND ENGINEERING DEPARTMENT REPORT

TO: Operations Committee

FROM: Lee Perkins, C.E.T., MBA, Director of Public Works and Engineering

DATE: March 5, 2024

SUBJECT: Department Report

INFORMATION

1. **2024 Operations Committee Meeting Locations**

In years past, the Operations Committee and the Development and Property Committee have convened meetings at local municipalities for up to two of their regular meetings each year. The objective has been to enable the staff and local municipal Council(s) to meet with the Operations Committee to discuss any matters of common interest or concern.

Staff is requesting that municipalities contact Lee Perkins, Director of Public Works and Engineering, if they wish to host a meeting and, pending confirmation, staff will make the necessary arrangements with the municipality. The municipalities must have the capability to host a livestream meeting, and the required Wi-Fi and broadband capacity.

2. **Municipal Fleet Survey**

The Operations Committee on January 16, 2024, passed Resolution No. OP-C-24-01-07 directing staff to have discussions with the Renfrew County Road Supervisors Association to explore the idea of having all upper-tier and lower-tier municipal public works vehicles coordinated to be the same colour (white) and specifications in the future, and to provide a report at a future meeting. Staff initiated a survey, conducted by the Renfrew County Supervisors Association, regarding the implementation of white vehicles for municipal use. A summary of the responses received is as follows:

Municipality	Response
Town of Arnprior	Has started to implement this with all new vehicles. Smaller fleet vehicles (cars, half tons and vans, etc.) are all white and plow trucks are white cabs with yellow boxes. Currently they are staying with the yellow sand/salt units as it is still a standard colour for them

Municipality	Response
	and stands out fairly well during winter operations.
Town of Renfrew	Currently purchase all new vehicles to this standard, light vehicles are all white, plow units are white cabs with brown dump box/salt unit. Most of their fleet is white.
Township of Admaston/Bromley	Currently purchase white smaller vehicles, half tons, ¾ tons, and 1 tons. See no issues with newer purchases of tandem trucks being white with plain coloured boxes.
Township of Bonnechere Valley	Not in favour of white; brighter is better especially for winter. For the equipment, choose to have one attachment supplier to have less parts on hand. Unsure if County truck tenders fit their township truck applications.
Township of Greater Madawaska	Is interested; currently has most of their 1 tons and half tons already in white.
Township of Horton	In favor of the initiative and already has this in place; all fleet and plow trucks are standard white with grey boxes on plow trucks.
Township of Whitewater	Has started to specify white for light vehicles but have purchased yellow cab tandem trucks in the past.
City of Pembroke	Interested in getting more information on the logistics of how this might work and be advantageous for the City.

To date, the Towns of Deep River and Laurentian Hills, and the Townships of Brudenell, Lyndoch and Raglan, Head, Clara and Maria, Killaloe, Hagarty and Richards, Madawaska Valley, McNab/Braeside and North Algona Wilberforce, have not responded to the survey.

Staff are seeking direction to begin the process of changing the County of Renfrew vehicles to white in colour upon replacement.

3. **County Road 3 (Usborne Street)**

Attached as Appendix I is a resolution received from the Township of McNab/Braeside requesting that the County of Renfrew reduce the posted speed limit from 80 km/h to 60 km/h from McLean Drive to County Road 1 (River Road), as shown on the map attached as Appendix II. Staff will review and provide a recommendation at a future meeting.

RESOLUTIONS

4. **User Fee By-law for 2024**

Recommendation: THAT the Operations Committee recommends that County Council implement a $750 fee for speed/traffic review requests generated outside of the Corporation of the County of Renfrew.

Background

To achieve a balance between the quantity of applications and the associated expenses for the requested studies, a fee of $750 covers the services of the Infrastructure Technician. This includes tasks such as installing and overseeing data collection, interpreting the gathered data, and drafting a report for County Council. Currently, most County Roads are designed for efficient material and goods transportation at a speed rating of 80 km/hr. Staff receive approximately three to four speed/traffic review requests per year. These requests for speed reductions are typically denied based on the road geometry—characterized by straightness, width, and well-defined shoulders and ditches—which does not yield the intended impact. Additionally, the prevailing industry norm acknowledges that, in the majority of studies conducted in recent years, up to 15% of drivers exceeding the posted speed limit are considered acceptable.

People engage in speeding for various reasons, and it is important to note that individual motivations may differ. Some common reasons why people may choose to exceed speed limits include:

- **Running Late:** One of the most common reasons is the desire to reach a destination quickly. Individuals who are running late for appointments, work, or other commitments may speed to save time.
- **Impatience:** Some people have a natural inclination towards impatience. They may feel frustrated by slow-moving traffic or long commutes, leading them to speed as a way to cope with their impatience.
- **Lack of Awareness:** Some drivers may not be fully aware of the speed limits in a given area or may not recognize the potential dangers associated with excessive speed.
- **Perceived Safety:** Some individuals may believe they have the skills to handle high speeds or may feel that their vehicles are equipped to handle it safely.
- **Social Influence:** The behavior of other drivers on the road can influence an individual's decision to speed. If a person perceives that speeding is common and socially acceptable, they may be more likely to engage in it themselves.
- **Emotional State:** Emotional factors such as stress, frustration, or anger can contribute to speeding. In some cases, individuals may use driving at high speeds as a way to cope with or release emotional tension.
- **Risk-Taking Behaviour:** Some people are naturally more inclined to take risks. Speeding may be a manifestation of a broader pattern of risk-taking behavior.

It is essential to address the issue of speeding through a combination of education, awareness campaigns, law enforcement, and infrastructure improvements.

Understanding the reasons behind speeding behavior can help inform strategies to promote safer driving habits and reduce the associated risks on the roads.

5. **County Road 62 and Highway 60 Realignment**

Recommendation: THAT the Operations Committee recommends that County Council support the Township of Madawaska Valley request for the realignment of County Road 62 and Highway 60 to a maximum upset limit of $175,000, pending approval of Madawaska Valley's application to the Connecting Links program.

Background

Attached as Appendix III is a request for assistance in the realignment of an intersection in Barry's Barry. The junction of County Road 62 (Bay Street) and Highway 60 is experiencing challenges related to traffic turning movements and flow. The Township of Madawaska Valley is pursuing Connecting Links funding from the provincial government and is urging County Council to commit $175,000 for the successful execution of this project. After careful evaluation, it has been identified that savings from various projects in the 2025 season can be allocated to accommodate this request.

6. **Municipal Operators Course – Fanshawe College**

Recommendation: THAT the Operations Committee recommends to County Council that a resolution to support the development of a Municipal Operator Course at Fanshawe College, and initiated by the Association of Ontario Road Supervisors (AORS) be adopted as follows:

WHEREAS municipal public works departments from across the Province of Ontario provide invaluable services to our communities ensuring the health and safety of all residents; and,
WHEREAS if it was not for our municipal public works employees from across the Province of Ontario maintaining our public roads systems, our communities would not be able to function as emergency personnel could not respond to calls, school buses could not get our children to school, residents would not be able to get to work, school or appointments and many more basic functions would not be able to happen; and,
WHEREAS municipal public works departments are already feeling the impacts of a labour shortage, which will only be exasperated over the next three to five years, which will cause levels of service municipalities are able to provide to ensure the health and safety of our residents to decrease; and,
WHEREAS there is currently no provincial-wide course that properly trains potential municipal public works employees, specifically relating to municipal heavy equipment.
THEREFORE IT BE RESOLVED that the County of Renfrew supports the work of the Association of Ontario Road Supervisors to develop a Municipal Equipment Operator Course to address this issue;
AND FURTHER THAT the County of Renfrew calls on the Province of Ontario's Ministry of Labour, Training, Immigration and Skilled Trades to fully fund the Municipal Equipment Operator Course in 2024 through the Skills Development Fund;
AND FURTHER THAT a copy of this resolution be sent to the Honourable David Piccini, Minister of Labour, Immigration, Training and Skills Development, MPP John Yakabuski, Renfrew-

Nipissing-Pembroke, the Association of Municipalities of Ontario, and the Association of Ontario Road Supervisors.

Background

Attached as Appendix IV is a request from the Association of Ontario Road Supervisors (AORS) to support the development of a Municipal Operator Course at Fanshawe College. This course would provide potential municipal equipment operators the basic knowledge required to begin maintaining core infrastructure.

7. **Province of Ontario Road Assumption/Funding**

Recommendation: THAT the Operations Committee recommends that County Council support the resolution from the County of Lambton requesting the Province of Ontario to upload from local municipalities the responsibility of and costs associated with the continued construct, operation and maintenance of major municipally-owned highways throughout the Province of Ontario to the Ontario Ministry of Transportation, or increase the Ontario Community Infrastructure Fund to municipalities; AND FURTHER THAT that the Warden send a letter of support to the Ontario Minister of Transportation, the Premier of Ontario, MPP John Yakabuski, Renfrew-Nipissing-Pembroke, the Association of Municipalities of Ontario, and the Eastern Ontario Wardens' Caucus.

Background

Attached as Appendix V is a resolution received from the County of Lambton requesting that the Province of Ontario upload from local municipalities the responsibility of and costs associated with the continued construct, operation and maintenance of major municipally-owned highways throughout the Province of Ontario to the Ontario Ministry of Transportation, or increase the Ontario Community Infrastructure Fund to municipalities.

BY-LAWS

8. **County Road 16 – Victoria Street – Pedestrian Crossover Request – Town of Petawawa**

Recommendation: THAT the Operations Committee recommends that County Council adopt a By-law designating County Road 16 (Victoria Street) at Wolfe Avenue as a Pedestrian Crossover.

Background

Attached as Appendix VI, is a resolution received from the Town of Petawawa, requesting that the County of Renfrew permit the installation of a pedestrian crossover at the intersection of Victoria Street (County Road 16) and Wolfe Avenue.

In accordance with Corporate Policy PW-14, Pedestrian Crossings on County Roads, Public Works and Engineering staff have conducted a review of the proposed location, including a traffic count, to determine if the location meets the warrants for a dedicated pedestrian crossover. The results, which have been included as Appendix VII, indicate that the location does not meet the warrants for a pedestrian crossover based upon the total traffic and pedestrian volumes. Regardless of the findings, staff

would be in favour of permitting the installation since the Town Council has shown their support for it and tendered the installation as part of an upcoming Town construction project. It is noted that the location does provide a link between a Town trail and Municipal sidewalks, although it does not appear that the majority of pedestrians use this location to cross Victoria Street.

In order to permit the installation, the County must first designate the subject location as a Pedestrian Crossover with the passing of a By-law. As a condition of the County's Policy, the Town of Petawawa is required, and agrees, to accept responsibility for all costs associated with the initial construction of the crossing, including pavement markings and signage. The Town will also be responsible for the future replacement of the Pedestrian Crossing equipment. The County will be responsible for the annual maintenance of the crossing and signage.

9. **Capital Works Division**

Attached as Appendix VIII is the Capital Works Division Report, prepared by Taylor Hanrath, Manager of Capital Works, providing an update on activities.

10. **Operations Division**

Attached as Appendix IX is the Operations Division Report, prepared by Richard Bolduc, Manager of Operations, providing an update on activities.

TOWNSHIP OF
McNab/Braeside

Regular Council Meeting Resolution Form

Date:	February 6, 2024	No:	RESOLUTION - 41-2024
Moved by Councillor Robert Campbell		Disposition:	CARRIED
Seconded by Deputy Mayor Lori Hoddinott		Item No:	8.13

Description: Public Safety Committee - Speed Limit on Usborne Street

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RESOLUTION:

THAT Council accept the Public Safety Committee - Speed Limit on Usborne Street Report as information as submitted and circulated; **AND FURTHER THAT** Council deem it necessary to request that the County of Renfrew reduce the speed on Usborne Street from McLean Drive to River Road to 60 km/hr; **AND FURTHER THAT** Council direct staff to send this request to the County of Renfrew's Operations Committee

MAYOR

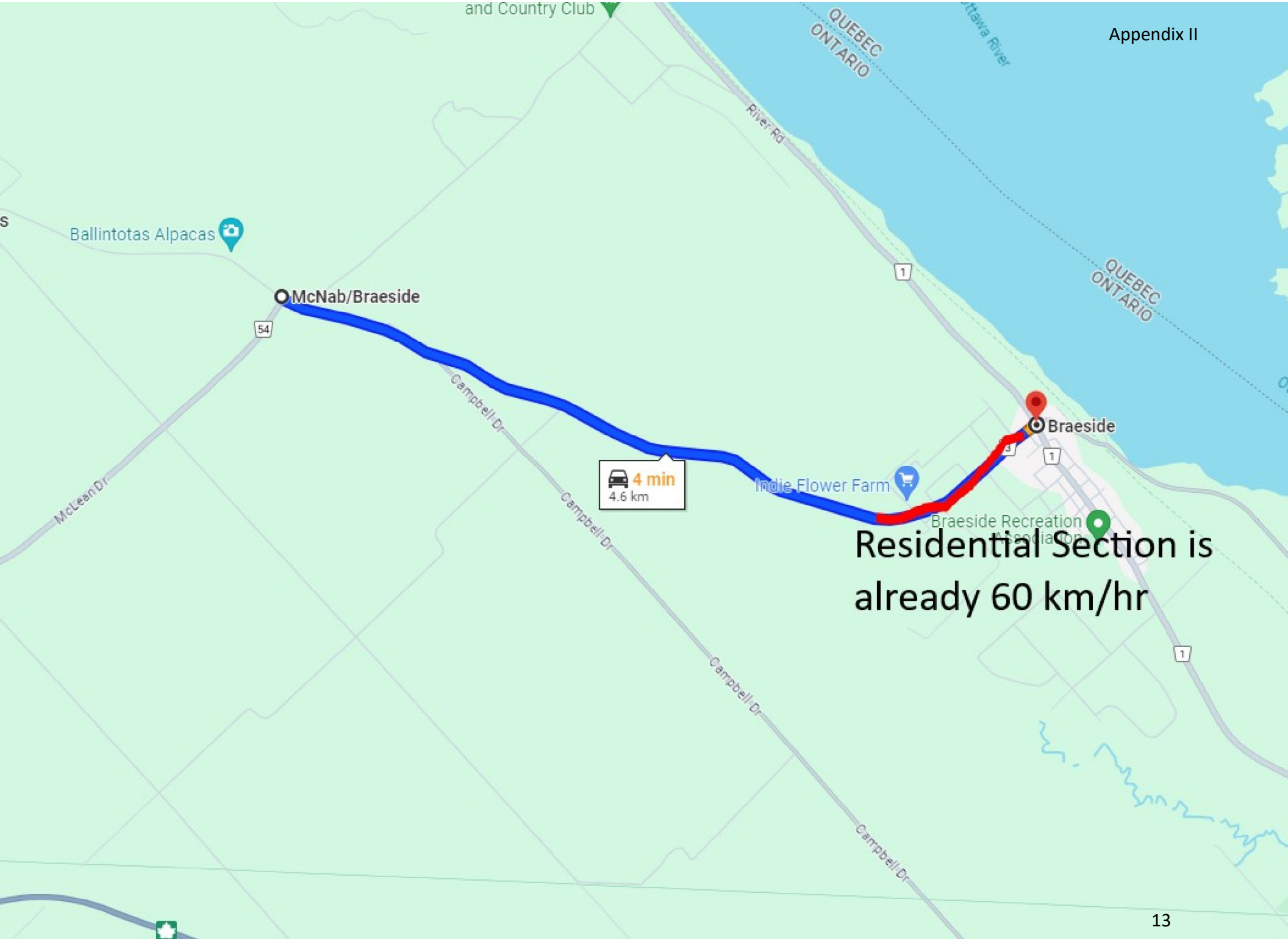
Recorded Vote Requested by:

	Yea	Nay
M. MacKenzie	____	____
L. Hoddinott	____	____
K. Rosien	____	____
S. Brum	____	____
R. Campbell	____	____

Declaration of Pecuniary Interest:

_____

Disclosed his/her/their interest(s), vacated he/her/their seat(s),
abstained from discussion and did not vote


and Country Club
QUEBEC
ONTARIO
River Rd
Ottawa River
Ballintotas Alpacas
McNab/Braeside
54
Campbell Dr
McLean Dr
4 min
4.6 km
Indie Flower Farm
Braeside
Braeside Recreation
Association
Residential Section is
already 60 km/hr

Municipal Report

Subject: Connecting Link Three Way Stop

Meeting: Council in Committee - 06 Feb 2024

Prepared For: Council

Staff Contact: Hilary Kutchkoskie, Operations Manager

RECOMMENDATION:

THAT Council direct the Operations Manager to forward a request to the County of Renfrew regarding the Three Way Stop Realignment Study 60/62 conducted by Perspective Engineering as it pertains to the realignment of Opeongo Line/Bay Street to address issues at the Three Way Stop intersection; and

THAT Council request a funding commitment from the County of Renfrew in the amount of $175,000 to enable the Township of Madawaska Valley to proceed to apply through the Connecting Link Funding in the 2024/25 or 2025/26 fiscal years for the Realignment Project.

BACKGROUND INFORMATION:

In 2022, the Township applied to the Connecting Link program and was successful with the following request:

- Replace existing courtesy crosswalks that are currently epoxy and require replacement every year with colored concrete to delineate between the existing roadway and the crosswalk.
- Repaint lines and redo epoxy stop blocks.
- Adjust and pour concrete aprons around existing man holes that are within the travelled portion of the roadway to match new elevation and to reducing rocking and further cracking.

In discussion with staff, it was also identified that there is a need for a study to determine options for a right turn taper from Highway 62 onto Opeongo Line to ensure the safe and efficient movement of traffic. In 2023, this work was conducted along with the following evaluation of the three way stop.

Attached, please find the Connecting Link Alignment Memo, New Intersection Design and Traffic Study by Jason Ward at Perspective Engineering.

As the Connecting Link Funding model will not fund any Upper Tier entity the following preliminary costing is identified as the total project would amount to around $340,000, with $165,000 allocated for the Connecting Link and **$175,000** for Bay Street or County Property.

For this project to proceed or even to be applied for, Council would require a commitment for the funding amount (**$175,00.00**) from the County of Renfrew, indicating their willingness to commit their share of the funds for the project. The County of Renfrew Public Works Director would be consulted throughout the process. Municipal staff would proceed to apply through the Connecting Link Funding in the 2024/25 or 2025/26 fiscal years for the realignment project once the County of Renfrew confirms support.

POLICY IMPLICATIONS:

NOTE: the Connecting Link Funding will not fund any Upper Tier owned roads (Hwy 62). The Realignment Project at the intersection of Bay Street (Hwy 62) and Opeongo Line requires the County of Renfrew support to proceed.

ATTACHED:

Barry's Bay Intersection Re Alignment Memo
New Intersection Design
Traffic Study of Barrys Bay Intersection

TO:	Mr. Hilary Kutchkoskie, Operations Manager	DATE:	October 27, 2023
FROM:	Jason Ward P.Eng.	PROJECT NO.:	2023-0104
PROJECT:	Connecting Link Funding Application		
SUBJECT:	2024/25 Funding		

BACKGROUND

As part of the 2023/24 Connecting Link Funding allocation, a traffic study was conducted at the intersection of Opeongo Line and Bay Street. The objective was to assess the current design and layout's service level and explore potential enhancements within the existing right of way.

STUDY RESULTS

The study's findings indicated that the intersection presently operates at a Level B (reasonably free flow) of service. To improve traffic flow, the possibility of adding right turn lanes for northbound vehicles heading east and eastbound vehicles heading south was considered. However, it was observed that these additional turn lanes reduced the opportunities for westbound traffic, as the intersection already experienced congestion. The right turn lanes led to vehicles having to wait longer, shifting from every third vehicle to every fourth.

Furthermore, during the intersection analysis, it was noted that the southwest corner near Mad Outdoors had a limited turning radius. This constraint forced larger vehicles to cross the centerline when traveling south. The issue stemmed from Bay Street being offset to the west within the right of way, which restricted the turning radius. To address this, it was suggested that realigning the northbound leg closer to the middle of the right of way, closer to the MacEwen fuel station, could provide more space for a larger turning radius for eastbound vehicles heading south. However, it was determined that even with a 15-meter turning radius, it would still not be sufficient for transport trucks but would accommodate dump trucks and garbage trucks. A design was developed to explore the costs and benefits of this option.

Considering that this project extends from Opeongo Line and reaches approximately 80 meters onto Bay Street, the costs would need to be shared between the Connecting Link (with funding requests to the MTO) and Bay Street (a county road, necessitating funds from the County). Preliminary cost estimates indicate that the total project would amount to around $340,000, with $165,000 allocated for the Connecting Link and $175,000 for Bay Street or County Property.

For this project to proceed, the council would need approval from the County of Renfrew, indicating their willingness to commit their share of the funds for the project. Subsequently, applications for Connecting Link funding in the 2024/25 or 2025/26 fiscal years could be made.

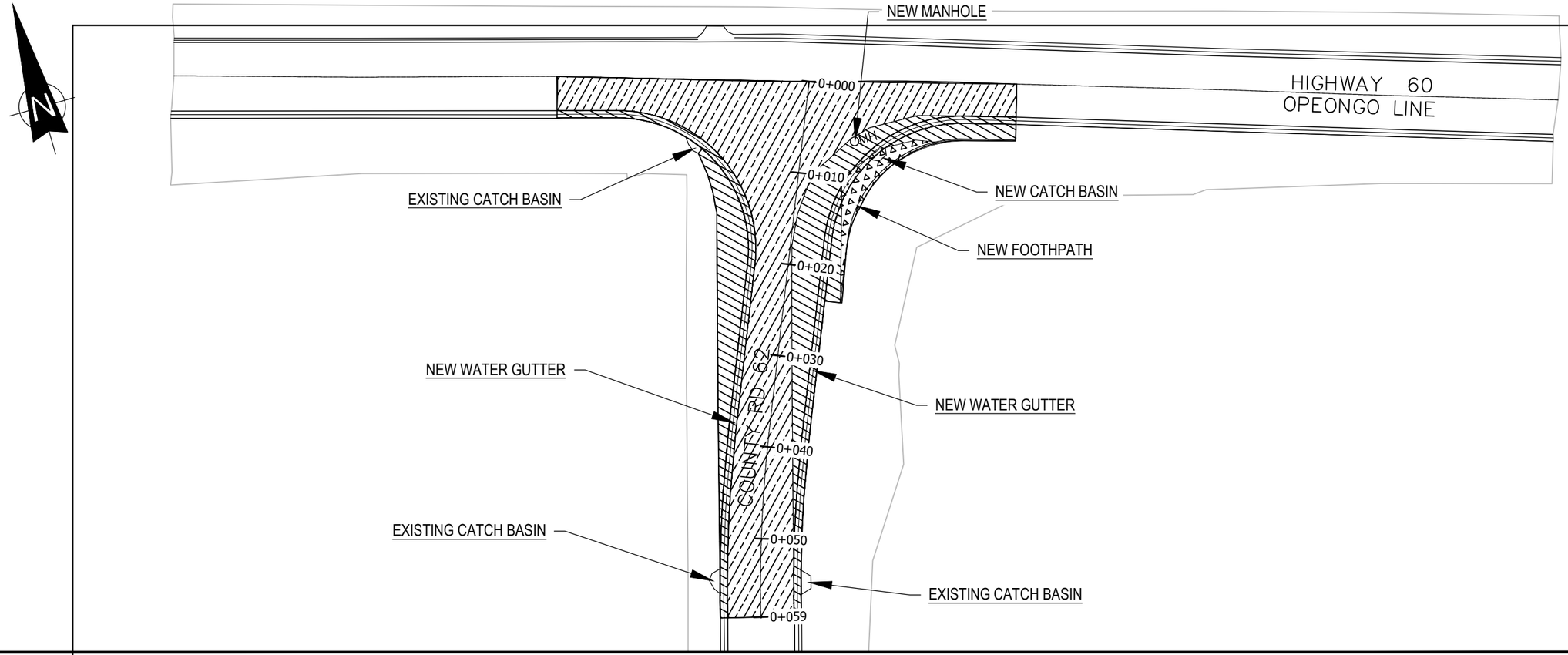
CONCLUSION

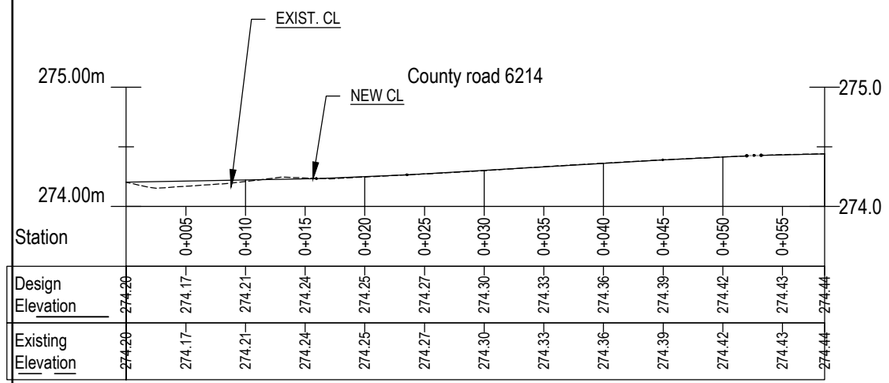
In summary, the traffic study of the Opeongo Line and Bay Street intersection showed it operates at Level B service. To address traffic flow issues, adding right turn lanes was considered, but it could worsen congestion. Additionally, a turning radius problem was identified due to roadway offset and would improve traffic flow.

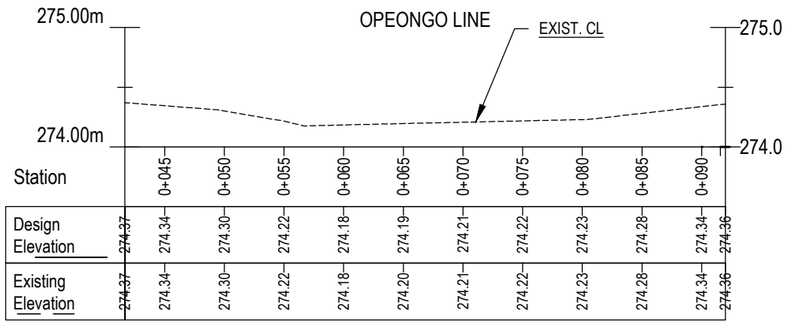
To proceed with the larger turning radius, council must obtain approval and funding commitment from the County of Renfrew for an amount of approximately $175,000. At this point council could direct staff to apply to the connecting link funding for the remaining $165,000 in the 2024/25 or 2025/26 fiscal years.

Sincerely,

Jason Ward, P. Eng.
Perspective Engineering Inc.







GENERAL NOTES :

- DO NOT SCALE DRAWINGS
- ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH RELEVANT CODES AND GUIDELINES.
- ALL DRAWINGS AND ADDENDA ARE TO BE READ AS, AND IN CONJUNCTION WITH, THE SPECIFICATIONS.
- ALL EQUIPMENT & MATERIALS SHALL BE INSTALLED AS SPECIFIED, OR AS APPROVED EQUIVALENT.
- CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS BEFORE PROCEEDING WITH THE WORK AND BE RESPONSIBLE FOR SAME.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES TO THE ENGINEER FOR RESOLUTION BEFORE COMMENCING THE WORK.
- ANY CHANGES MUST BE APPROVED BY THE ENGINEER.

GENERAL SYMBOLS :

A/B = A = DETAIL NUMBER; B = DRAWING NUMBER – WHERE DETAILED

C = C = REVISION NUMBER

NORTH

STAMP

REGISTERED PROFESSIONAL ENGINEER
J.T. WARD
21/9/23
PROVINCE OF ONTARIO

NOTES:
– DRAWINGS TO BE READ IN CONJUNCTION WITH OPSD 200 SERIES.

REMOVALS FEATURES LEGEND

- FULL DEPTH ASPHALT REMOVAL 50MM – 170 MM
- REMOVAL OF ITEM
- EARTH EXCAVATION STRIPPING

DWG NAME:
REMOVALS

PROJECT INFORMATION:

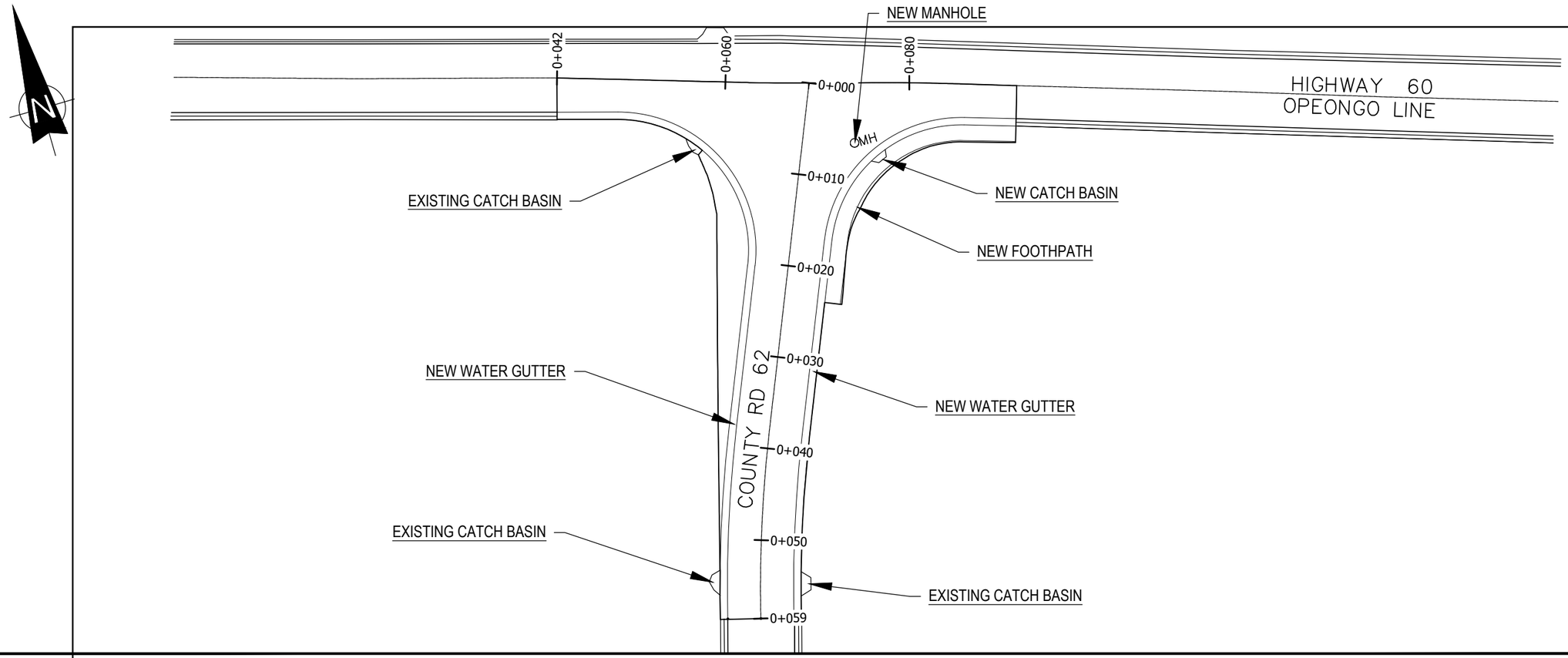
Perspective Engineering

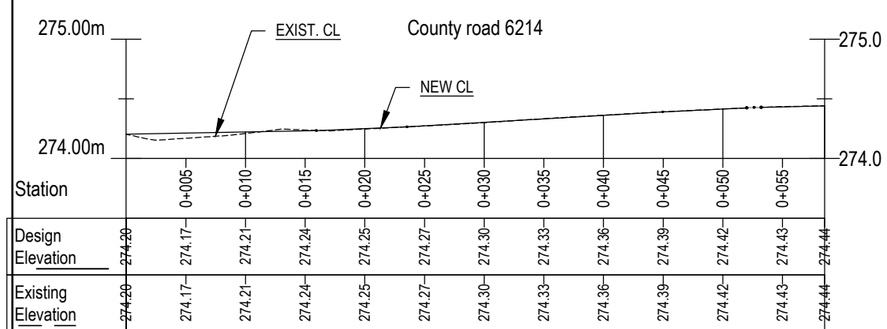
DATE Oct. 12, 23

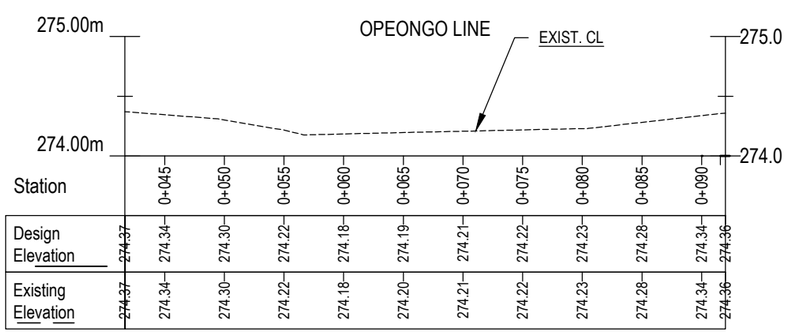
SCALE 1:500

18

DWG # 1







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J.T. WARD
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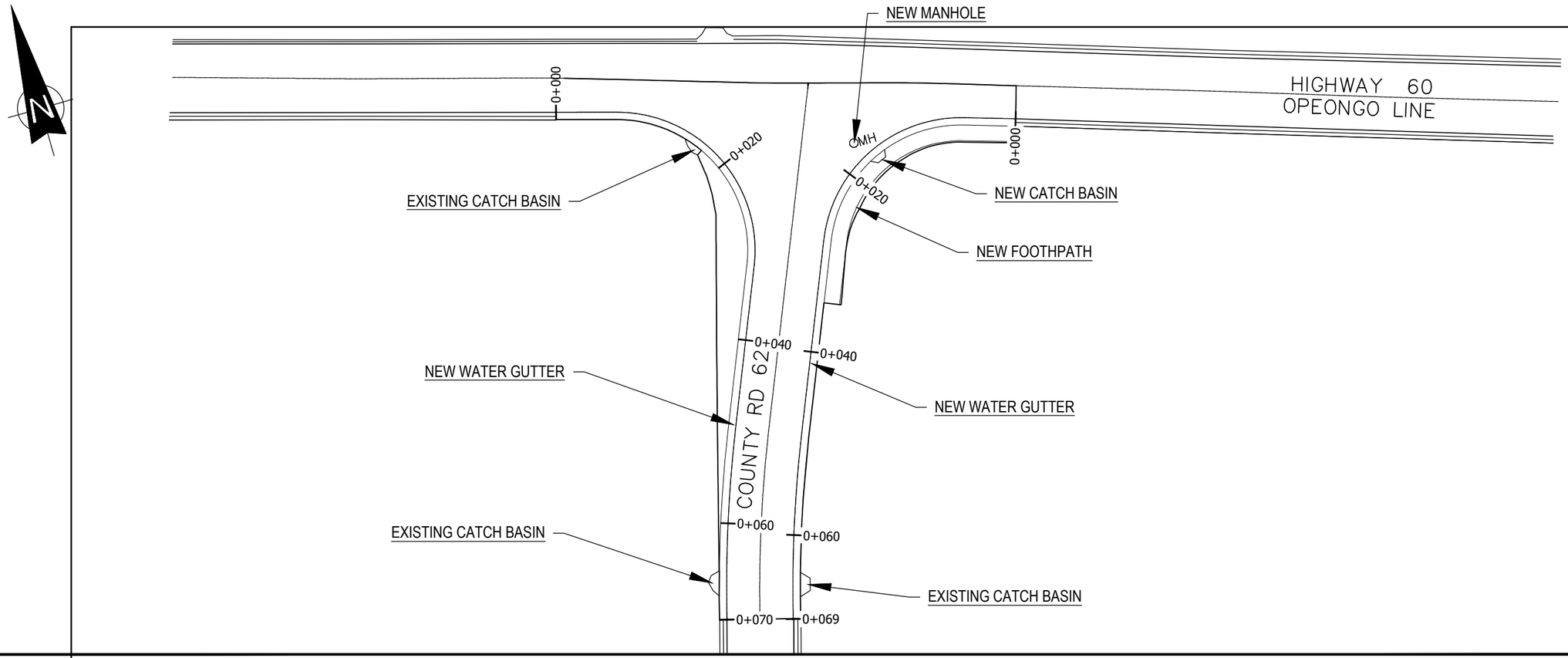

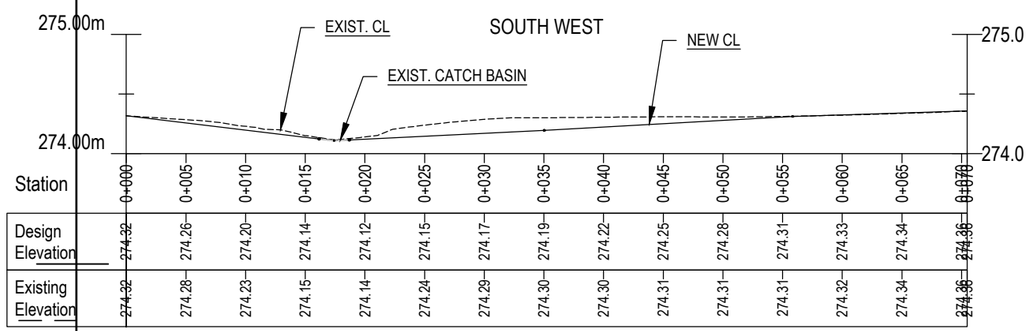

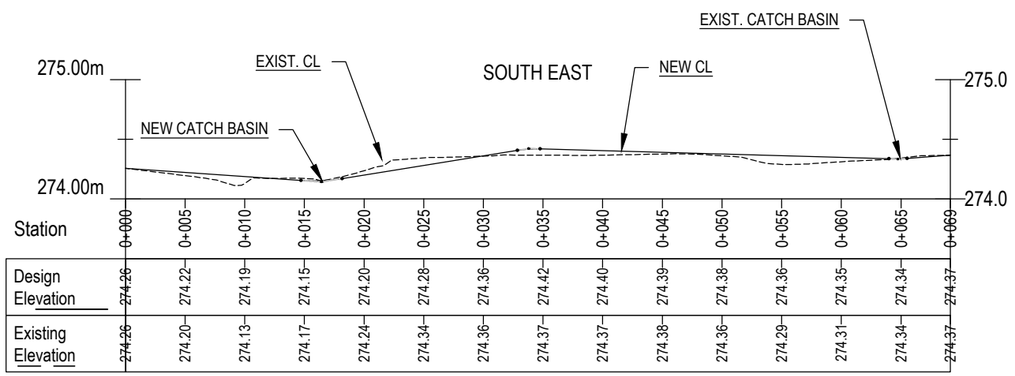

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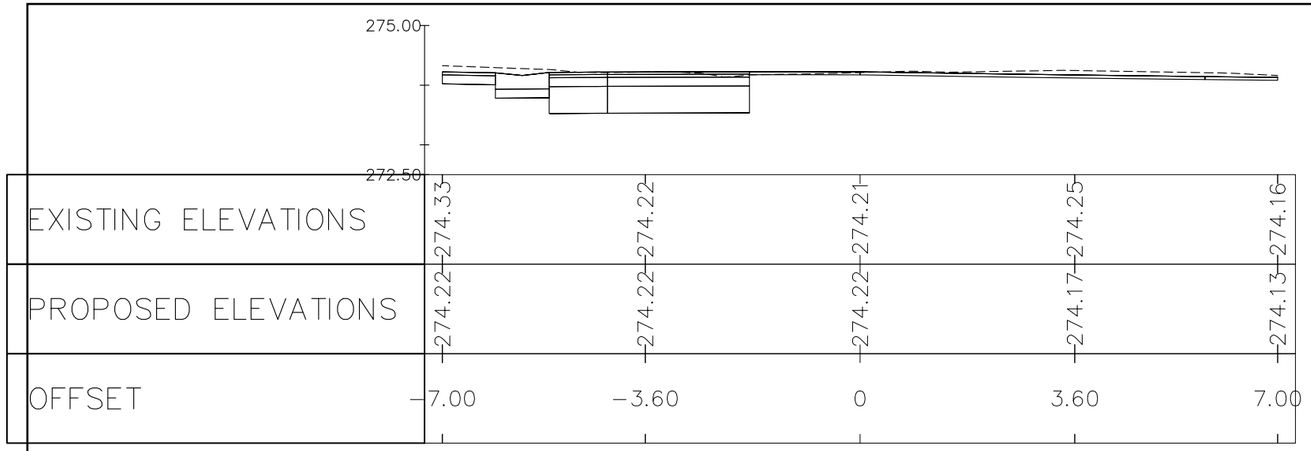

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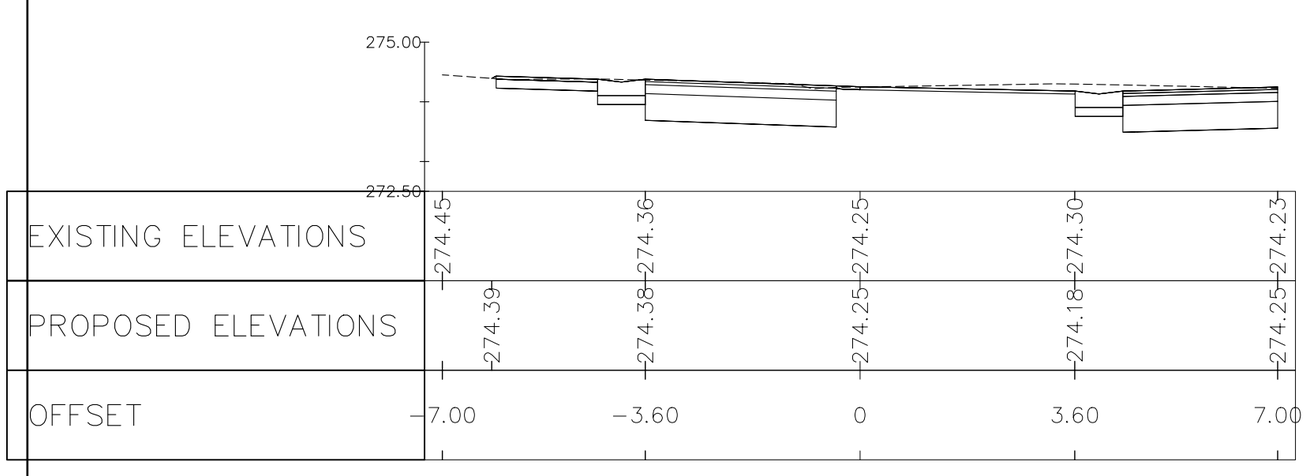

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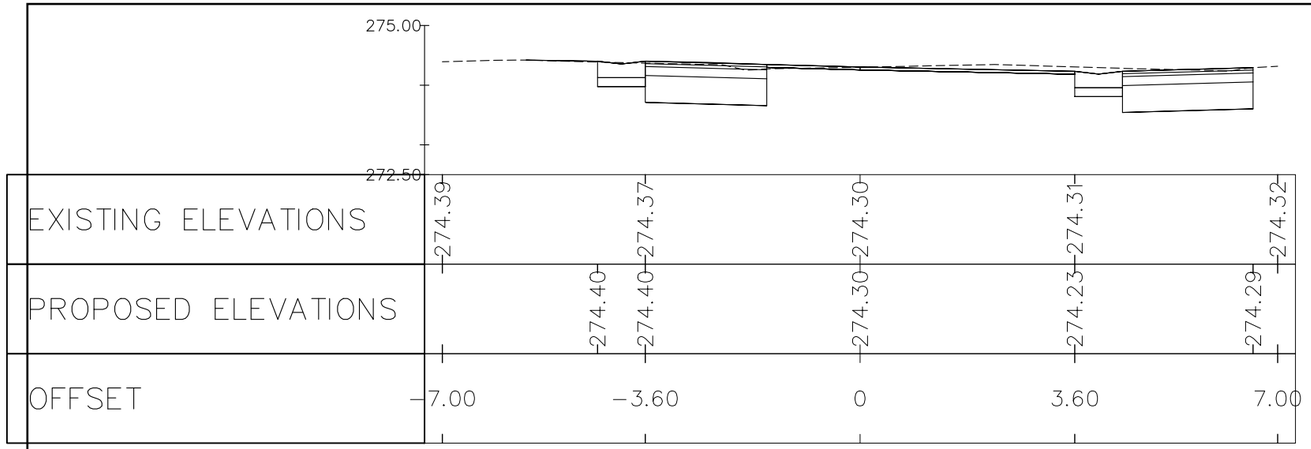

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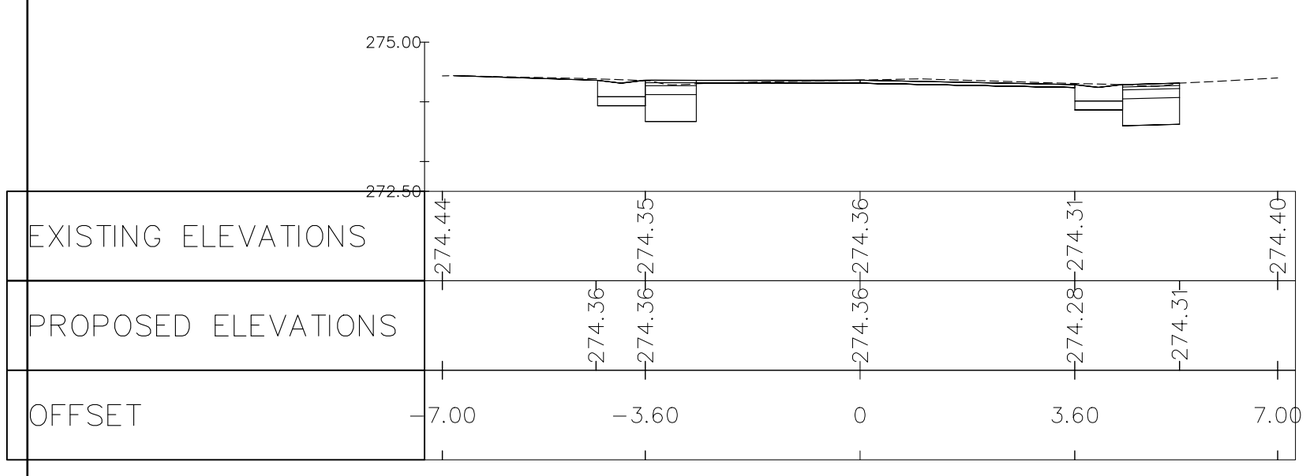

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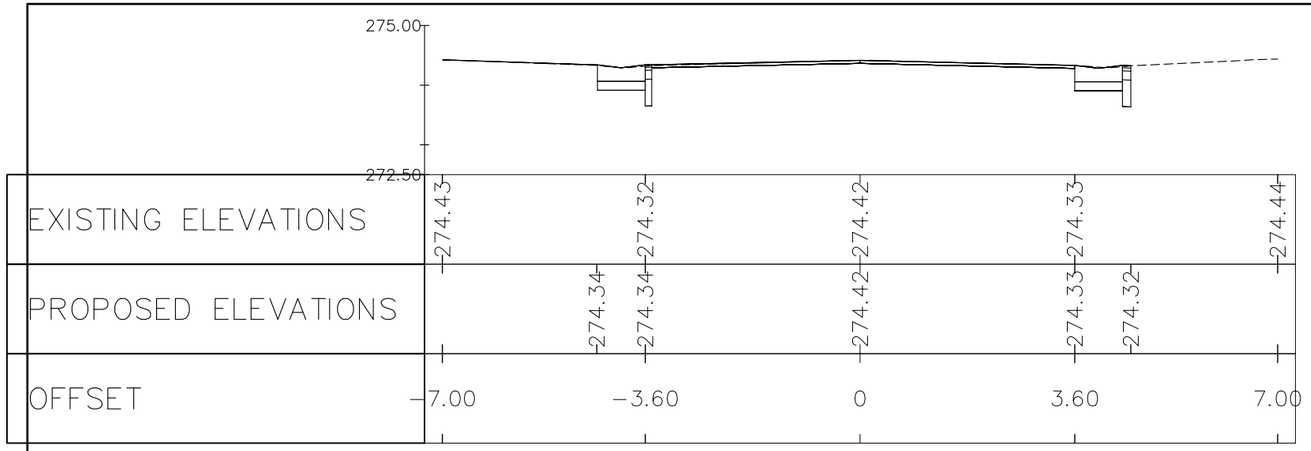

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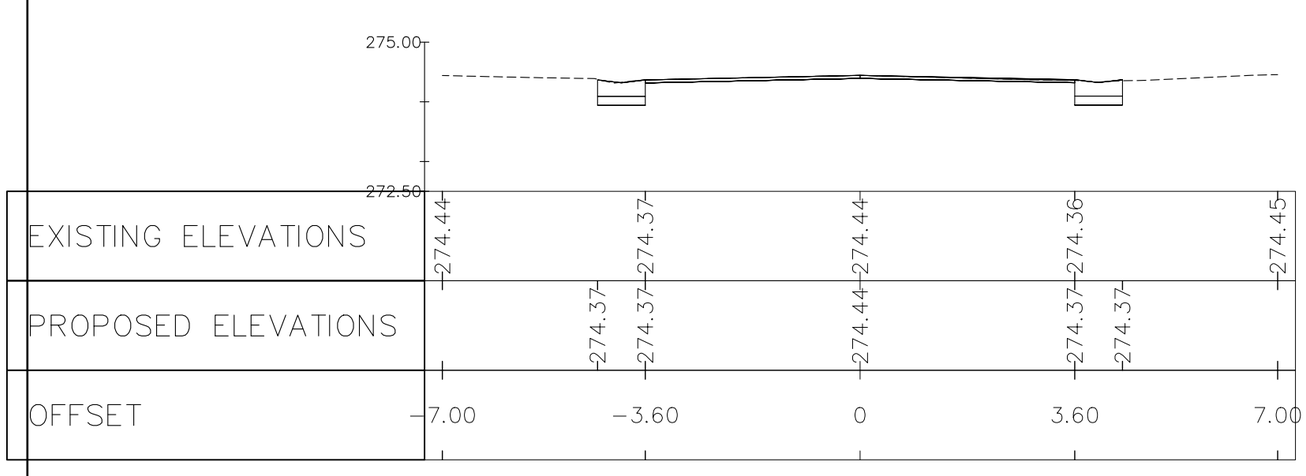

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CROSS SECTIONS

PROJECT INFORMATION:

Perspective Engineering

DATE Oct. 11, 23
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DWG # 6

Traffic Study of the Intersection of Opeongo Line and Bay Street

Prepared for:

Township of Madawaska Valley

Prepared By:

Perspective Engineering

October 2023

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EXECUTIVE SUMMARY

This study was conducted to determine the feasibility of enhancing the geometric layout of Barry's Bay Intersection at Opeongo Line (Highway 60) and Bay Street (Highway 62) and assess its traffic flow performance. The intersection plays a vital role in the community and the region, serving various purposes, including commercial and residential needs. The study's scope encompassed turning movement traffic counts, traffic data analysis, capacity assessment of existing conditions, scenario-based performance evaluations, feasibility studies for layout changes, and detailed geometric design considerations.

Methodological Framework: The study followed a systematic approach, starting with a turning movement count survey to collect traffic data. The data underwent thorough analysis to understand existing traffic patterns and conditions. Capacity and level of service analyses were conducted to evaluate the intersection's current state. Proposed scenarios were developed and assessed for traffic performance. The study also delved into the development of geometric layout options.

Key Findings:

- Existing Layout: The existing intersection design was found to perform reasonably well in terms of traffic flow.
- Test Scenario: A proposed layout with added right-turning lanes on the South Approach showed marginal improvements in traffic flow.

Geometric Layout Options: Two main layout options were considered for geometric enhancement:

1. Option 1: Addition of a Right-Turning Short Lane on the South Approach.
2. Option 2: Enhanced Turning Radius and Geometry.

Comparison Between Layout Options: A detailed comparison between the layout options revealed that Option 2, focusing on enhanced turning radius and geometry, offered substantial geometric improvements while maintaining symmetry and space for expansion. Despite the sacrifice of an additional right-turning lane, Option 2 was the preferred choice for its improved geometry for large vehicle movements.

Recommendations: The study recommends adopting Option 2, the enhanced geometric layout, as it aligns with design standards, maintains symmetry, and preserves space for future expansion. Option 2 is expected to provide a similar Level of Service (LOS) as the existing layout. Additionally, recommendations were provided for detailed geometric design aspects of the junction.

This study shows the comprehensive study for improving the Barry's Bay Intersection, ensuring it meets the needs of the community and enhances traffic flow while considering future growth and development.

1. INTRODUCTION

This formal report presents a comprehensive analysis and evaluation of the traffic conditions at the Barry's Bay Intersection located in Ontario, Canada. The intersection, situated at Latitude 45.488435 and Longitude -77.678368, marks the junction of Opeongo Line (Highway 60) and Bay Street (Highway 62). The report focuses on a detailed investigation of the intersection's traffic dynamics, geometric layout, and safety aspects, with the ultimate goal of enhancing traffic performance and overall safety. This study aims to provide valuable insights that can inform potential improvements to the intersection's design and operation.

1.1 BACKGROUND:

This section provides a contextual overview of Barry's Bay and its intersection, highlighting their individual significance within the broader regional landscape.

Barry's Bay, a serene rural community nestled in the heart of Madawaska Valley and a part of Renfrew County, stands as a testament to the harmonious blend of natural beauty, cultural heritage, and economic vitality. This charming town, situated at Latitude 45.488435 and Longitude -77.678368, boasts a population of 1,084 as of the 2021 Census. Encompassing an area of 2.252 km², the town exudes a population density of 481.3/km². Barry's Bay's significance is multifaceted and deeply rooted in its diverse attributes, each contributing to its identity and role within the Ottawa Valley. Its strategic location at the junction of Opeongo Line (Highway 60) and Bay Street (Highway 62), which plays a pivotal role in shaping its character and function within the broader regional context.

Figure 1-1 Aerial Image of Barry's Bay Intersection

1

1.1.1 BARRY'S BAY'S SIGNIFICANCE

1.1.1.1 Cultural Heritage and Natural Beauty

Barry's Bay is a testament to the richness of cultural heritage and natural beauty that defines the Ontario landscape. It stands as the gateway to Algonquin Provincial Park, a sanctuary of awe-inspiring landscapes and outdoor pursuits. The region's historical ties to indigenous communities, settlers, and Polish immigrants contribute layers of identity that are deeply ingrained in its cultural fabric. Nestled amid picturesque lakes, dense forests, and flowing rivers, the town's natural beauty offers an inviting escape for those seeking tranquility and respite from urban life.

Table 1-1: Manifold dimensions of Barry's Bay importance

Significance	Description
Gateway to Algonquin Provincial Park	Serving as a portal to Algonquin Provincial Park, renowned for its captivating natural vistas.
Tourism and Outdoor Recreation	Embracing outdoor enthusiasts with activities like hiking, fishing, and boating amid breathtaking landscapes.
Cultural Heritage	The town's historical connections to indigenous communities, settlers, and Polish immigrants enrich its identity.
Local Economy	Anchoring a robust economy through tourism-related ventures, including accommodations, dining, and retail.
Community Hub	Functioning as a central hub, offering services and spaces that foster community cohesion in the region.
Natural Beauty	Boasting lush lakes, verdant forests, and meandering rivers that provide solace and leisure for residents and visitors.
Recreational Events	Vibrant local events and festivals celebrating culture and heritage amplify communal bonds and draw tourists.
Proximity to Ottawa Valley	Aligning with the captivating allure of the Ottawa Valley, known for its rustic charm and creative energy.
Rural Lifestyle	Catering to those seeking a serene countryside lifestyle, distinct from the urban clamor of larger centers.
Regional Identity	Contributing to the regional identity of the Ottawa Valley—synonymous with nature's splendor and close-knit communities.

1.1.1.2 Economic Vitality and Community Hub

The town's economic vitality is interwoven with its vibrant tourism industry. Accommodations, dining establishments, rentals, and souvenir shops thrive as essential components of the local economy, nurturing both employment opportunities and commerce. Barry's Bay further serves as a community hub, extending its resources and services to smaller neighboring towns, underscoring its role as a central connection that fosters social cohesion and well-being.

1.1.1.3 Recreational Offerings and Regional Identity

Intrinsic to Barry's Bay's identity is its dedication to fostering recreational pursuits and celebrating its roots. The town hosts various local events and festivals that epitomize its cultural and historical heritage, while providing avenues for community engagement and visitor attraction. This collective identity contributes to the broader regional narrative, as Barry's Bay is integral to shaping the character of the Ottawa Valley—a region celebrated for its seamless blend of nature's beauty and the warmth of community.

Table 1-2: Key Attraction Proximate to Barry's Bay Intersection

Place	Key Points of Interest	Distance from Barry's Bay	Direction
Algonquin Provincial Park	Scenic landscapes, outdoor activities	Approx. 40 km	East
Whitney	Base for Algonquin Park exploration	Approx. 50 km	East
Combermere	Historic Opeongo Line, Madawaska River	Approx. 15 km	North
Madawaska River	Kayaking, canoeing, fishing	Varies	-
Wilno	Polish heritage, Wilno Heritage Park	Approx. 30 km	North
Killaloe	Fishing, boating, Foy Provincial Park	Approx. 30 km	West
Palmer Rapids	White-water kayaking, Madawaska River	Approx. 40 km	North
Eganville	Bonnechere Provincial Park, historical museum	Approx. 40 km	South
Bonnechere Caves	Guided cave tours, unique geological formations	Approx. 50 km	South

1.1.2 BARRY'S BAY INTERSECTION'S STRATEGIC ROLE

1.1.2.1 Enabling Domestic and Recreational Mobility

The Barry's Bay Intersection transcends mere geographic coordinates; it embodies a strategic confluence that facilitates domestic and recreational mobility. This intersection, serving as the juncture of Highway 60 and Highway 62, forms a pivotal access point for travelers seeking the charms of Barry's Bay and its neighboring attractions. Its connectivity to Algonquin Provincial Park, a veritable haven of natural wonders, resonates with tourists and nature enthusiasts, contributing substantially to the town's economic sustenance.

1.1.2.2 Essential Node for Goods Movement

The intersection's significance extends beyond leisurely exploration. Positioned at the crossroads of major highways, the Barry's Bay Intersection serves as a vital conduit for goods movement between diverse regions. This key link in the distribution chain facilitates the transfer of commodities, underpinning the functional efficiency of local businesses, markets, and services. This role in supporting the local economy underscores the criticality of the intersection.

1.2 PURPOSE OF STUDY

The central purpose of this comprehensive study is to conduct a thorough analysis and assessment of the Barry's Bay Intersection. The principal goal is to explore into the dynamics of traffic movement, geometric design, and safety at this critical juncture. By methodically examining these factors, the study endeavors to identify areas for improvement that can lead to enhanced traffic performance, increased safety measures, and a more efficient overall traffic flow.

1.3 SCOPE OF SERVICES

The scope of services for this study has been expansive, encompassing a multi-faceted approach aimed at addressing comprehensively the intricacies of the Barry's Bay Intersection. The following delineates the services undertaken, reported in the past tense:

1.3.1 TURNING MOVEMENT TRAFFIC COUNT SURVEY

Over the span of four consecutive days, specifically from Friday, July 14, 2023, to Monday, July 17, 2023, an exhaustive Turning Movement Traffic Count Survey was conducted. This survey meticulously recorded the traffic volume and movement patterns of six distinct traffic classifications, namely Motorbike, Car, Service Pickup, Bus, Trucks, and Trailers. These observations were systematically collected for all six directions at the intersection.

1.3.2 ANALYSIS OF TRAFFIC DATA

The collected traffic data underwent a thorough analysis to determine classified temporal traffic flow patterns. This analysis aimed to identify peak traffic hours, congestion patterns, and traffic volume trends, thereby achieving a comprehensive understanding of traffic dynamics.

1.3.3 TRAFFIC STUDY OF EXISTING CONDITIONS

A detailed examination of the existing traffic conditions at the study intersection was conducted. This included an evaluation of the intersection's then-current layout, signage, signalization, and control mechanisms.

1.3.4 SCENARIO-BASED TRAFFIC PERFORMANCE EVALUATION

Utilizing the collected data, the study explored various scenarios to evaluate traffic flow performance indicators. This evaluation involved quantifying traffic delays and assessing the efficiency of the intersection layout under different circumstances.

1.3.5 FEASIBILITY STUDY OF PROPOSED LAYOUT

Proposed modifications to the intersection's layout were evaluated from two perspectives: Traffic Performance and Geometric Considerations. The study assessed the advantages and disadvantages of these modifications in terms of traffic flow optimization and overall design feasibility.

1.3.6 GEOMETRIC DESIGN LAYOUT

A detailed Geometric Design Layout was developed for the proposed intersection improvements. This layout provided a visual representation of the suggested modifications, incorporating considerations for traffic lanes, signage, signals, turning radii, and pedestrian facilities.

With these services executed and analyzed, the study proceeds to present the findings, recommendations, and conclusions, which are elaborated upon in the subsequent sections of this report.

2. METHODOLOGICAL FRAMEWORK OF THE STUDY

The employed methodology for this study is a structured and comprehensive approach that encompasses multiple well-defined stages. These stages collectively contribute to a thorough analysis of the complexities intrinsic to the Barry's Bay Intersection. The methodology incorporates systematic data collection, meticulous analysis, and a comprehensive evaluation process. The following detailed explanation clarifies each stage of this methodological framework:

2.1 TRAFFIC COUNT SURVEY

The initial step encompassed an exhaustive Turning Movement Traffic Count Survey, spanning four consecutive days from Friday, July 14, 2023, to Monday, July 17, 2023. The survey's primary objective was to capture a holistic overview of vehicular activities at the Barry's Bay Intersection. This comprehensive assessment incorporated six distinct vehicle classifications, namely Motorbike, Car, Service Pickup, Bus, Trucks, and Trailers. To ensure a comprehensive understanding, data collection was executed for all six directions of traffic flow within the intersection.

2.2 ANALYSIS OF TRAFFIC COUNT

Subsequent to the data collection phase, an intricate analysis was conducted. This analysis transcended the realm of quantitative data interpretation, aiming to uncover meaningful insights. The focus of this phase encompassed the identification of peak traffic hours, the recognition of recurring congestion patterns, and the discernment of trends within traffic volume fluctuations. This in-depth analysis provided a nuanced comprehension of the intricate dynamics governing traffic movements.

2.3 CAPACITY AND LEVEL OF SERVICE ANALYSIS OF EXISTING TRAFFIC STATE

Leveraging the insights derived from the analysis of peak-hour traffic data, a comprehensive Capacity and Level of Service Analysis of the Existing Traffic State was undertaken. This critical stage involved the application of methodologies prescribed within the esteemed Highway Capacity Manual. The primary goal was to quantify the existing traffic capacity of the intersection and subsequently assign Level of Service ratings. These ratings provided experiential insights into the user interactions within the intersection. This analysis set the groundwork for assessing the potential impact of proposed enhancements.

2.4 PROPOSED SCENARIO DEVELOPMENT AND ANALYSIS

Building upon the established baseline, the study transitioned to the development of proposed scenarios. These scenarios were meticulously constructed to explore avenues for optimizing traffic performance at the Barry's Bay Intersection. Specific enhancements, such as the integration of additional Right Turning Short lanes on the West and South Approaches, were designed in this phase. Following the scenario development, a rigorous Capacity and Level of Service analysis was performed. This analytical exercise generated essential indicators of traffic performance, forming a basis for informed decision-making.

2.5 COMPARISON AND EVALUATION

The subsequent phase involved an exhaustive comparison between the Base and proposed intersection layouts. This comparative assessment extended beyond numerical comparisons, encompassing a comprehensive evaluation of various dimensions, including safety improvements, operational efficiency gains, and the overall user experience. This meticulous weighing of pros and cons aimed to provide a holistic understanding of the potential benefits and drawbacks of each layout, ultimately aiding in informed conclusions.

2.6 GEOMETRIC DESIGN LAYOUT DEVELOPMENT

The culminating stage of the methodology manifested in the meticulous development of a Geometric Design Layout. This layout was meticulously curated to adhere to the guidelines stipulated by the AASHTO Manual and the Geometric Design Guide for Canadian Roads. It provided an intricately detailed visual representation of the proposed intersection enhancements, encompassing meticulous specifications for traffic lanes, strategically placed signage, optimized signalization, precisely calculated turning radii, and thoughtful provisions for pedestrian facilities. This visual representation translated analytical insights into a tangible roadmap for potential implementation.

The employed methodological approach aimed to offer not just an in-depth analysis of traffic dynamics but also a well-informed foundation for proposed enhancements. The forthcoming sections of this report delve into the insights, recommendations, and conclusions derived from this meticulous methodology.

3. TURNING MOVEMENT COUNT SURVEY ANALYSIS

This section presents a comprehensive analysis of the Turning Movement Traffic Count Survey conducted at the pivotal junction of Opeongo Line (Highway 60) and Bay Street (Highway 62). Opeongo Line, being a vital transportation artery interlinking various regions within Renfrew County, plays a pivotal role in fostering regional connectivity, supporting recreational activities, and propelling economic growth. The purpose behind this meticulously executed survey was to assemble precise and comprehensive data pertaining to vehicular movements within this corridor. Such data serves as a crucial foundation for making informed decisions in the realms of traffic management and infrastructure development.

The amassed data obtained from this survey provides invaluable insights into traffic volumes, peak traffic hours, and congestion patterns. These insights are instrumental for transportation authorities and urban planners in recognizing and addressing areas of critical concern.

3.1. SURVEY LOCATION

The conducted traffic count surveys were centered on Opeongo Line (Highway 60) at the crossroads with Bay Street (Highway 62). Table 3-1 below provides an overview of the survey location including coordinates (latitude and longitude), the nature of the survey, its duration, and survey dates. Refer to Figure 3.1 for a geographical visualization of these survey locations.

Table 3-1: Location, Coordinates, Type and Duration of Traffic Survey Locations

S. No.	Location	Coordinates (Lat, Long)	Type	Traffic Direction	Duration (Hours)	Survey Start Date
1	Barry's Bay Intersection	45.488435, -77.678368	Turning Movement Count	6	24 Hr – 4 Days	Friday, 14th July 2023 to Monday, 17th July 2023

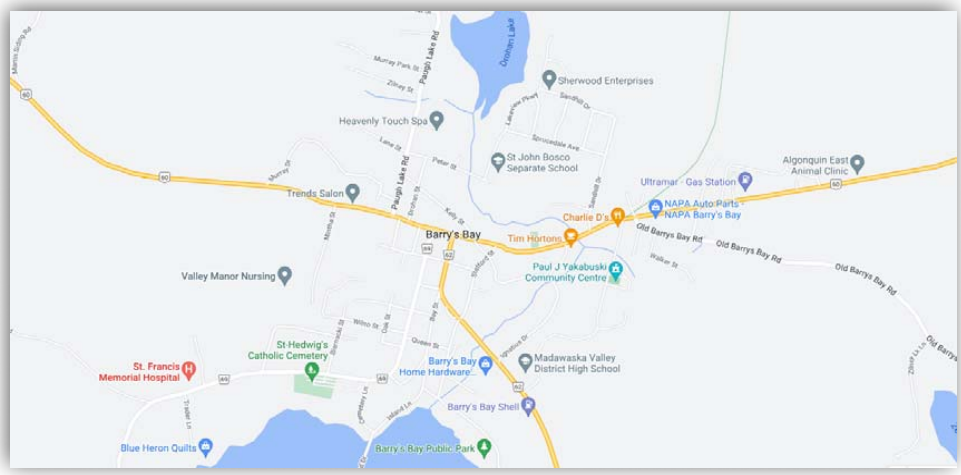


Figure 3.1 Map of survey locations

3.2. METHODOLOGY

The traffic volume study method employed is designed to ascertain the number, classifications, and movements of vehicles traversing a specific location. This data is instrumental in identifying crucial peak periods, understanding the impact of larger vehicles on overall traffic flow, and documenting the trend in traffic volume over time. The methodological approach includes the installation of cameras at strategically chosen positions to capture the traffic movement over a 24-hour period. From this video footage, raw data is extracted, specifically classified vehicle counts for six distinct vehicle types, namely Motorbike, Car, Service Pickup, Bus, Trucks, and Trailers.

Table 3-2 Vehicle Classification

	S. No.	Vehicle Type
Private Automobile Vehicles	1	Motor bike
	2	Car
	3	Service Pickup

	S. No.	Vehicle Type
Heavy Vehicles	4	Bus
	5	Truck
	6	Trailer

The collected data from these surveys are in raw format, necessitating a two-step process for analysis. The footage extraction is a meticulous endeavor facilitated by specially designed software capable of simultaneous error removal, date/time verification, and stabilization. Once extracted, the footage undergoes rendering to ensure visual clarity and stability, thereby rendering it suitable for evaluation. A supervisory team assesses the suitability of the extracted data. Once approved, the processing team compiles the data into the designated forms provided by the client. These forms undergo meticulous cross-checking, and a finalized agreement is submitted to the traffic engineer.

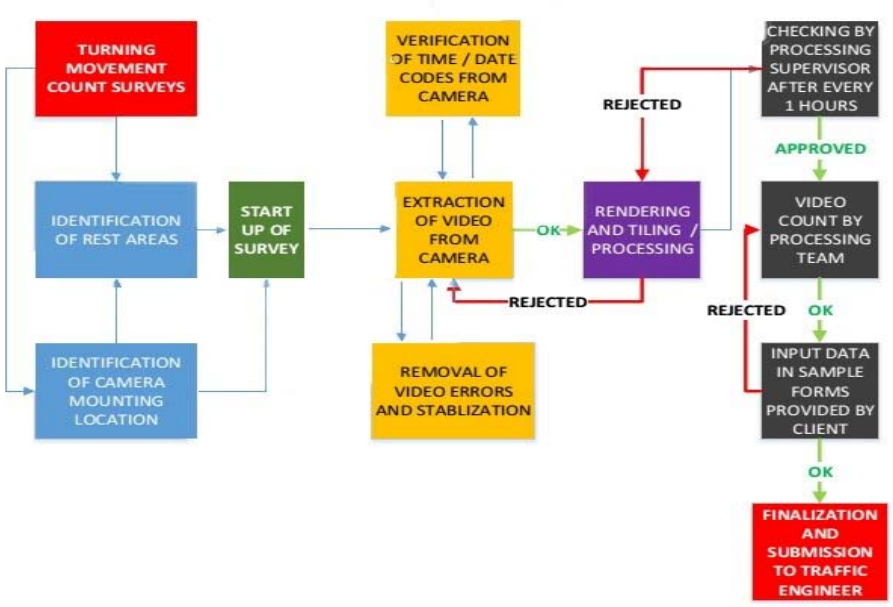


Figure 3.2 Vehicle Count Survey Methodology

3.3 SITE PICTURE AND DIRECTION MAP

Figure 3.3 Snap taken from Camera Mounting location at site (Barry's Bay Intersection)

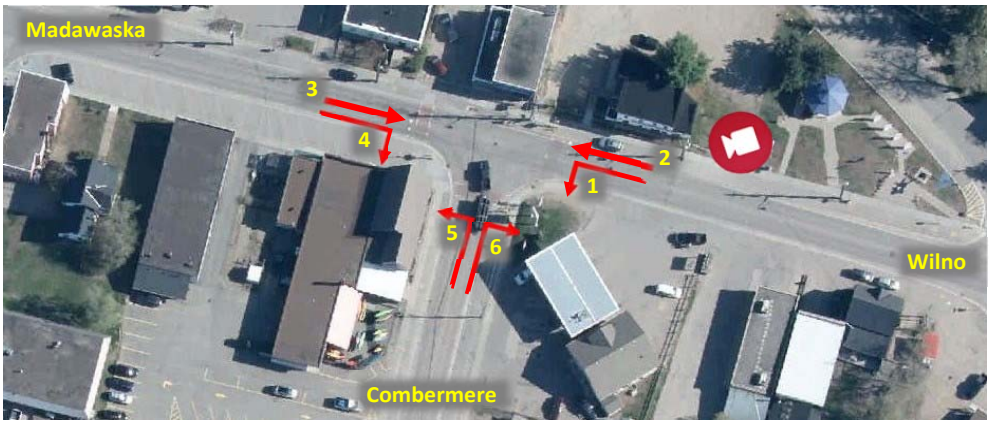


Figure 3.4 Counted traffic movements at Barry's Bay Intersection

3.4 VEHICLE COUNT SUMMARY (24 HOUR)

The subsequent Table 3-3 comprehensively presents the total and movement-wise count of vehicles observed over a 24-hour period for 4 days at Barry's Bay Intersection. Figure 3-5 displays the daily variations in traffic mode distribution, while Figure 3-6 illustrates the cumulative vehicle composition based on average daily traffic.

Table 3-3 Summary 24-hour count of Barry's Bay Intersection

Direction	Day	Date	Motorbike	Car	Pickup	Bus	Truck	Trailer	Total
Total	Day 1	Friday, July 14, 2023	86	7,978	62	2	68	23	8,219
	Day 2	Saturday, July 15, 2023	68	7,802	46	8	46	15	7,985
	Day 3	Sunday, July 16, 2023	158	8,022	109	8	194	318	8,809
	Day 4	Monday, July 17, 2023	107	7,998	106	10	187	257	8,665
	Total 4 Days Vehicle Count		419	31,800	323	28	495	613	33,678
	Average Daily Traffic (Veh/ Day)		105	7,950	81	7	124	153	8,420
	Percentage Composition (%)		1%	94%	1%	0%	1%	2%	100%
1. From Wilno To Combermere	Day 1	Friday, July 14, 2023	25	1,088	12	-	4	3	1,132
	Day 2	Saturday, July 15, 2023	3	884	5	-	10	3	905
	Day 3	Sunday, July 16, 2023	31	903	16	2	15	56	1,023
	Day 4	Monday, July 17, 2023	17	878	16	2	18	27	958
	Total 4 Days Vehicle Count		76	3,753	49	4	47	89	4,018
	Average Daily Traffic (Veh/ Day)		19	938	12	1	12	22	1,005
	Percentage Composition (%)		2%	93%	1%	0%	1%	2%	100%
2. From Wilno To Madawaska	Day 1	Friday, July 14, 2023	22	2,034	21	-	18	13	2,108
	Day 2	Saturday, July 15, 2023	23	1,962	14	2	18	6	2,025
	Day 3	Sunday, July 16, 2023	32	2,075	48	3	55	82	2,295
	Day 4	Monday, July 17, 2023	28	2,057	41	3	52	78	2,259
	Total 4 Days Vehicle Count		105	8,128	124	8	143	179	8,687
	Average Daily Traffic (Veh/ Day)		26	2,032	31	2	36	45	2,172
	Percentage Composition (%)		1%	94%	1%	0%	2%	2%	100%
3. From Madawaska To Wilno	Day 1	Friday, July 14, 2023	15	1,847	14	2	30	4	1,912
	Day 2	Saturday, July 15, 2023	11	2,224	10	1	9	6	2,261
	Day 3	Sunday, July 16, 2023	17	2,029	24	3	55	59	2,187
	Day 4	Monday, July 17, 2023	12	2,043	37	2	46	83	2,223
	Total 4 Days Vehicle Count		55	8,143	85	8	140	152	8,583
	Average Daily Traffic (Veh/ Day)		14	2,036	21	2	35	38	2,146
	Percentage Composition (%)		1%	95%	1%	0%	2%	2%	100%
4. From Madawaska To Combermere	Day 1	Friday, July 14, 2023	8	1,039	9	-	7	-	1,063
	Day 2	Saturday, July 15, 2023	11	972	13	2	1	-	999
	Day 3	Sunday, July 16, 2023	19	1,083	14	-	24	39	1,179
	Day 4	Monday, July 17, 2023	12	1,008	6	-	25	15	1,066
	Total 4 Days Vehicle Count		50	4,102	42	2	57	54	4,307
	Average Daily Traffic (Veh/ Day)		13	1,026	11	1	14	14	1,077
	Percentage Composition (%)		1%	95%	1%	0%	1%	1%	100%
5. From Combermere To Madawaska	Day 1	Friday, July 14, 2023	4	949	3	-	5	1	962
	Day 2	Saturday, July 15, 2023	10	887	3	2	1	-	903
	Day 3	Sunday, July 16, 2023	23	1,099	5	-	28	42	1,197
	Day 4	Monday, July 17, 2023	20	1,111	2	3	27	20	1,183
	Total 4 Days Vehicle Count		57	4,046	13	5	61	63	4,245
	Average Daily Traffic (Veh/ Day)		14	1,012	3	1	15	16	1,061
	Percentage Composition (%)		1%	95%	0%	0%	1%	1%	100%
6. From Combermere To Wilno	Day 1	Friday, July 14, 2023	12	1,021	3	-	4	2	1,042
	Day 2	Saturday, July 15, 2023	10	873	1	1	7	-	892
	Day 3	Sunday, July 16, 2023	36	833	2	-	17	40	928
	Day 4	Monday, July 17, 2023	18	901	4	-	19	34	976
	Total 4 Days Vehicle Count		76	3,628	10	1	47	76	3,838
	Average Daily Traffic (Veh/ Day)		19	907	3	0	12	19	960
	Percentage Composition (%)		2%	95%	0%	0%	1%	2%	100%

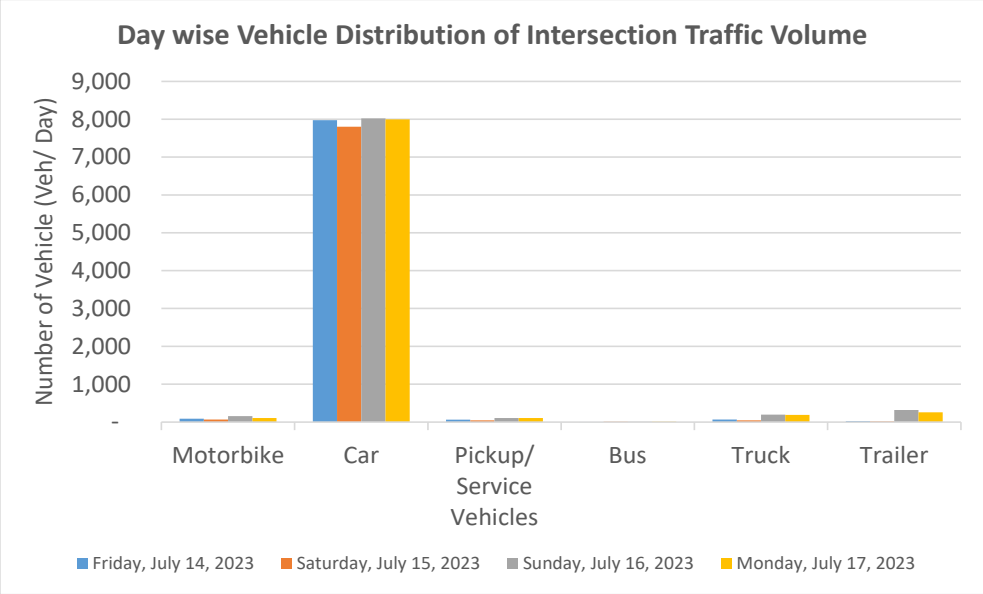


Figure 3.5 Total vehicle distribution (day wise) of traffic volume at Barry's Bay Intersection

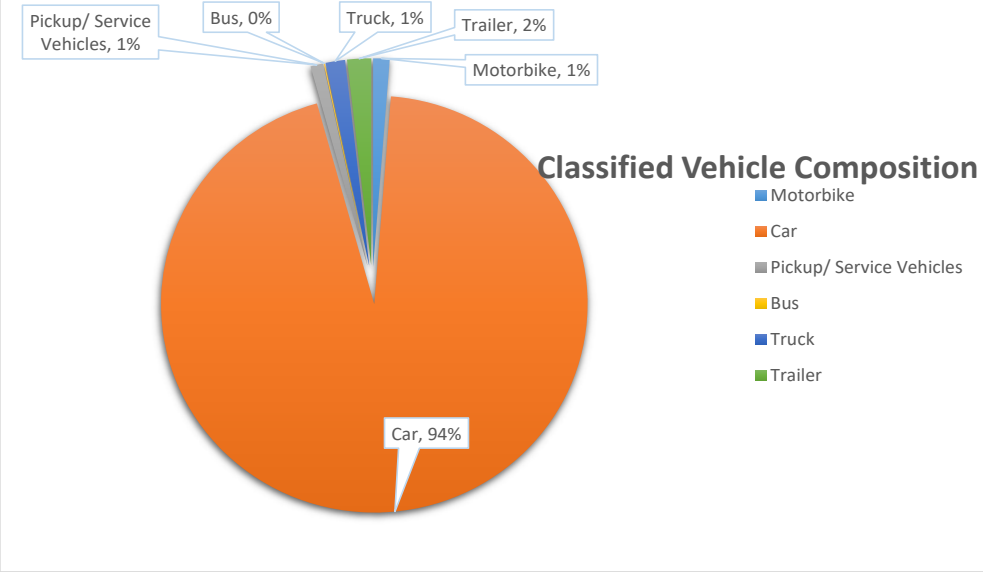


Figure 3.6 Classified Vehicle Composition (day wise) of traffic volume at Barry's Bay Intersection

Perspective Engineering

3.5 PEAK HOUR TRAFFIC VOLUME

Peak hours signify the time periods of maximal traffic flow during a given day. Table 3-4 provides a details of the peak hour counts for different vehicle categories at Barry's Bay Intersection. Figure 3-7 visually represents the distribution of vehicles during the peak hours over a span of four days.

Table 3-4 Peak hour count of Barry's Bay Intersection

Dir	Day	Date	Peak Hour	M. Bike	Car	Pickup	Bus	Truck	Trailer	Total
Total	Day 1	Friday, July 14, 2023	12:00	20	782	6	-	4	2	814
	Day 2	Saturday, July 15, 2023	12:00	15	869	10	-	5	-	899
	Day 3	Sunday, July 16, 2023	12:00	15	762	10	-	29	23	839
	Day 4	Monday, July 17, 2023	11:00	10	726	7	1	19	23	786
	Total 4 Days Peak Hour Vehicle Count			60	3,139	33	1	57	48	3,338
	Average Peak Hour Traffic (Veh/ Peak Hour)		12:00	15	785	8	0	14	12	835
	Percentage Composition (%)			2%	94%	1%	0%	2%	1%	100%
1. From Wilno To Combermere	Day 1	Friday, July 14, 2023	12:00	7	107	2	-	-	-	116
	Day 2	Saturday, July 15, 2023	12:00	-	110	3	-	1	-	114
	Day 3	Sunday, July 16, 2023	12:00	4	81	-	-	2	3	90
	Day 4	Monday, July 17, 2023	11:00	-	99	2	1	1	1	104
	Total 4 Days Peak Hour Vehicle Count			11	397	7	1	4	4	424
	Average Peak Hour Traffic (Veh/ Peak Hour)		12:00	3	99	2	0	1	1	106
	Percentage Composition (%)			3%	94%	2%	0%	1%	1%	100%
2. From Wilno To Madawaska	Day 1	Friday, July 14, 2023	12:00	7	249	-	-	1	2	259
	Day 2	Saturday, July 15, 2023	12:00	7	202	3	-	3	-	215
	Day 3	Sunday, July 16, 2023	12:00	4	184	7	-	10	5	210
	Day 4	Monday, July 17, 2023	11:00	4	168	3	-	2	8	185
	Total 4 Days Peak Hour Vehicle Count			22	803	13	-	16	15	869
	Average Peak Hour Traffic (Veh/ Peak Hour)		12:00	6	201	3	-	4	4	217
	Percentage Composition (%)			3%	92%	1%	0%	2%	2%	100%
3. From Madawaska To Wilno	Day 1	Friday, July 14, 2023	12:00	-	112	1	-	2	-	115
	Day 2	Saturday, July 15, 2023	12:00	1	234	2	-	1	-	238
	Day 3	Sunday, July 16, 2023	12:00	4	205	-	-	8	3	220
	Day 4	Monday, July 17, 2023	11:00	3	201	1	-	7	5	217
	Total 4 Days Peak Hour Vehicle Count			8	752	4	-	18	8	790
	Average Peak Hour Traffic (Veh/ Peak Hour)		12:00	2	188	1	-	5	2	198
	Percentage Composition (%)			1%	95%	1%	0%	2%	1%	100%
4. From Madawaska To Combermere	Day 1	Friday, July 14, 2023	12:00	3	98	-	-	-	-	101
	Day 2	Saturday, July 15, 2023	12:00	6	125	1	-	-	-	132
	Day 3	Sunday, July 16, 2023	12:00	1	113	2	-	5	3	124
	Day 4	Monday, July 17, 2023	11:00	1	86	1	-	2	1	91
	Total 4 Days Peak Hour Vehicle Count			11	422	4	-	7	4	448
	Average Peak Hour Traffic (Veh/ Peak Hour)		12:00	3	106	1	-	2	1	112
	Percentage Composition (%)			2%	94%	1%	0%	2%	1%	100%
5. From Combermere To Madawaska	Day 1	Friday, July 14, 2023	12:00	1	97	2	-	-	-	100
	Day 2	Saturday, July 15, 2023	12:00	-	111	1	-	-	-	112
	Day 3	Sunday, July 16, 2023	12:00	1	105	1	-	3	4	114
	Day 4	Monday, July 17, 2023	11:00	2	92	-	-	4	2	100
	Total 4 Days Peak Hour Vehicle Count			4	405	4	-	7	6	426
	Average Peak Hour Traffic (Veh/ Peak Hour)		12:00	1	101	1	-	2	2	107
	Percentage Composition (%)			1%	95%	1%	0%	2%	1%	100%
6. From Combermere To Wilno	Day 1	Friday, July 14, 2023	12:00	2	119	1	-	1	-	123
	Day 2	Saturday, July 15, 2023	12:00	1	87	-	-	-	-	88
	Day 3	Sunday, July 16, 2023	12:00	1	74	-	-	1	5	81
	Day 4	Monday, July 17, 2023	11:00	-	80	-	-	3	6	89

	Total 4 Days Peak Hour Vehicle Count	12:00	4	360	1	-	5	11	381
	Average Peak Hour Traffic (Veh/ Peak Hour)		1	90	0	-	1	3	95
	Percentage Composition (%)		1%	94%	0%	0%	1%	3%	100%

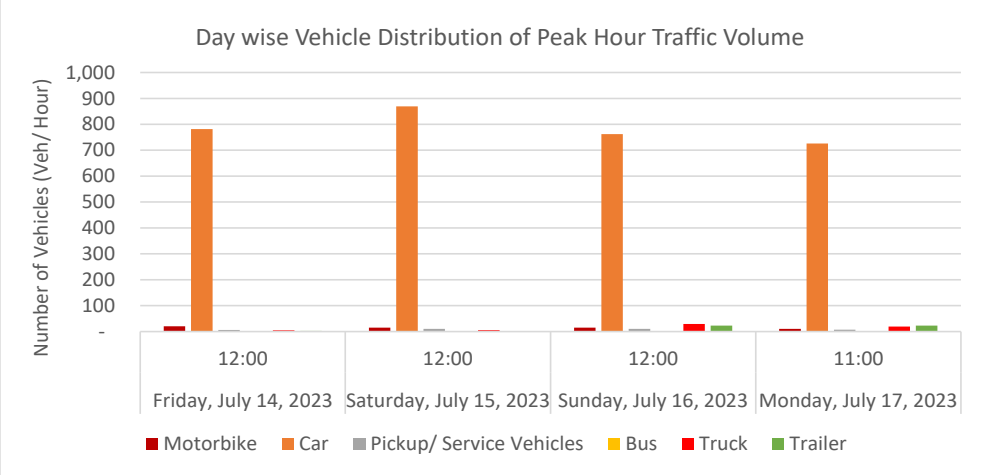
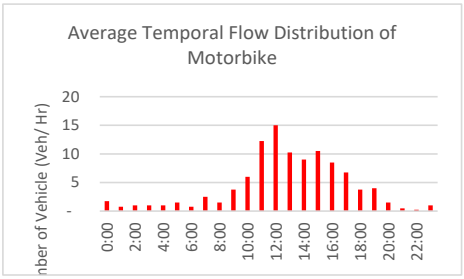
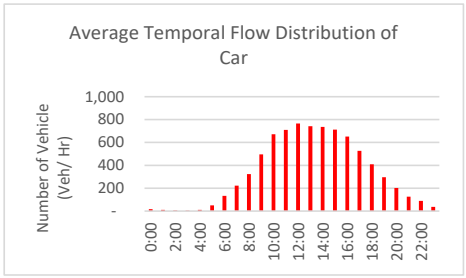


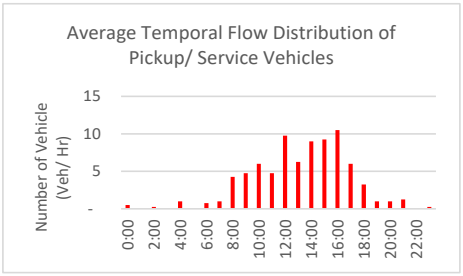
Figure 3.7 Peak Hour Vehicle distribution (day wise) at Barry's Bay Intersection

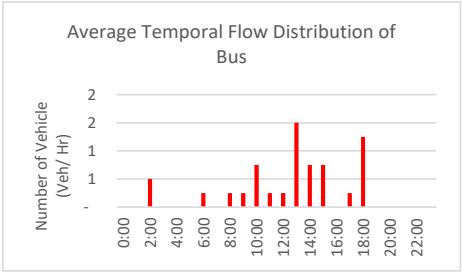
3.6 AVERAGE DAILY TRAFFIC TEMPORAL TRAFFIC FLOW DISTRIBUTION

The data collected over the course of four days, spanning 24 hours each day, is averaged to derive the average daily traffic. These averages are then plotted against the 24-hour timeline to visualize the temporal distribution of traffic flow for different vehicle categories. Figure 3-8 depicts the average flow pattern of various vehicle types over the four-day period.









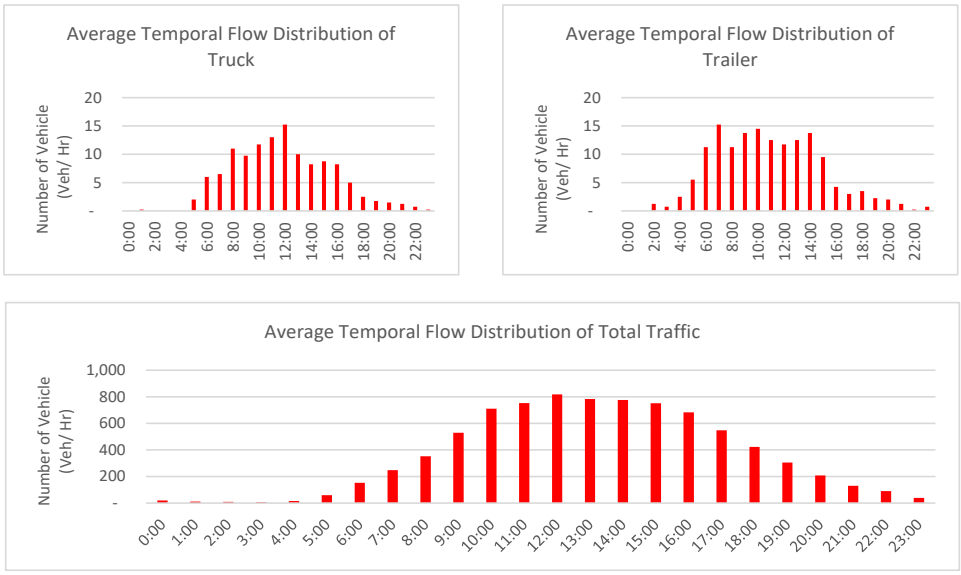


Figure 3.8 Average Daily Traffic Temporal Modal Flow Distribution at Barry's Bay Intersection

The culmination of this Turning Movement Traffic Count Survey Analysis provides an intricate understanding of the traffic dynamics at the Barry's Bay Intersection. This comprehensive data serves as the base for subsequent analyses and evaluations aimed at optimizing traffic flow and design enhancements.

4. TRAFFIC ANALYSIS – EXISTING DESIGN

An in-depth analysis of the existing design and traffic flow conditions at the Barry's Bay Intersection is a pivotal endeavor to unveil its operational efficiency and unearth potential areas for optimization. The prevailing intersection layout entails a two-lane, two-way configuration that lacks a median on any of the three approaches. Control over all three approaches is facilitated by All Way Stop signage, which designates a single shared lane for the two-directional traffic on each approach.

4.1 EXISTING LAYOUT

Figure 4.1 Existing Layout of Barry's Bay Intersection

4.2 PEAK HOUR TRAFFIC

During the four-day observation period, a consistent trend in peak hour traffic patterns emerges, with the peak traffic flow consistently occurring between 12:00 and 13:00. For the purposes of this comprehensive analysis, the afternoon peak hour (12:00 - 13:00) has been selected as the focus. The average peak hour traffic volume has been meticulously calculated for all six directions, considering the varying peak hour factors and the percentage of heavy vehicles for each movement:

Table 4-1 Direction wise Average Peak Hour Traffic Count of Barry's Bay Intersection

Movement	EB-T	EB-R	WB-L	WB-T	NB-L	NB-R
Traffic Volume (veh/h)	198	112	106	217	107	95
Peak Hour Factor	0.85	0.87	0.83	0.86	0.86	0.83
Percentage of Heavy Vehicles	3%	2%	2%	4%	3%	4%

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4.3 TRAFFIC ANALYSIS

Utilizing the authoritative methodology laid out in the Highway Capacity Manual (HCM) and based on the All Way Stop Control approach, a meticulous traffic analysis of the existing design has been conducted. The overarching goal is to gauge the performance of the traffic flow and unearth insights about delays and Level of Service (LOS) metrics within the existing design under real traffic conditions. The subsequent table encapsulates the multifaceted outcomes of this comprehensive analysis:

Table 4-2 Existing Delay and Level of Service of Intersection

Intersection Delay and LOS	
Intersection Delay, s/veh	13.2
Intersection LOS	B

Table 4-3 Movement wise Performance indicators of Existing Layout of Intersection

Movement	EB-T	EB-R	WB-L	WB-T	NB-L	NB-R
Traffic Vol, veh/h	198	112	106	217	107	95
Peak Hour Factor	0.85	0.87	0.83	0.86	0.86	0.83
Heavy Vehicles, %	3	2	2	4	3	4
Mvmt Flow	233	129	128	252	124	114
Number of Lanes	1	0	0	1	1	0
Approach	EB		WB		NB	
Opposing Approach	WB		EB			
Opposing Lanes	1		1		0	
Conflicting Approach Left			NB		EB	
Conflicting Lanes Left	0		1		1	
Conflicting Approach Right	NB				WB	
Conflicting Lanes Right	1		0		1	
HCM Control Delay	12.9		14.4		11.9	
HCM LOS	B		B		B	

4.4 LANE ANALYSIS

Investigating further into the details of lane-level analysis, considerations span the distribution of traffic volume and the impact of control measures. Subsequently, the following table summarizes a comprehensive range of parameters for the Northbound (NBLn1), Eastbound (EBLn1), and Westbound (WBLn1) lanes:

Table 4-4 Lane wise Performance indicators of Existing Layout of Intersection

Lane	NBLn1	EBLn1	WBLn1
Volume Left (% of total)	53%	0%	33%
Volume Through (% of total)	0%	64%	67%
Volume Right (% of total)	47%	36%	0%
Sign Control	Stop	Stop	Stop
Traffic Volume by Lane	202	310	323
Left Turn Volume	107	0	106

Lane	NBLn1	EBLn1	WBLn1
Through Volume	0	198	217
Right Turn Volume	95	112	0
Lane Flow Rate	239	362	380
Geometry Group	1	1	1
Degree of Utilization (X)	0.371	0.5	0.549
Departure Headway (Hd)	5.597	4.978	5.2
Convergence (Y/N)	Yes	Yes	Yes
Capacity	643	723	695
Service Time	3.634	3.008	3.228
HCM Lane Volume/Capacity Ratio	0.372	0.501	0.547
HCM Control Delay	11.9	12.9	14.4
HCM Lane Level of Service	B	B	B
HCM 95th-tile Queue Length	1.7	2.8	3.4

4.5 FINDINGS

Upon meticulous analysis of the obtained data, a series of insightful findings emerge:

- The intersection operates with a moderate delay and falls under Level of Service B, indicative of acceptable traffic flow.
- The recorded peak hour traffic volumes range from 95 to 252 vehicles per hour, reflecting varying demand across different movements.
- The percentage of heavy vehicles fluctuates between 2% and 4% for different movements, influencing the overall traffic composition.
- An examination of individual lanes reveals a prevalence of stop sign control mechanisms.
- The Westbound lane (WBLn1) showcases the highest lane flow rate at 380 vehicles per hour.
- All examined lanes demonstrate a consistent Level of Service B in line with HCM standards.

These findings collectively provide a comprehensive snapshot of the existing traffic conditions at the Barry's Bay Intersection. While the intersection operates satisfactorily, the in-depth analysis could potentially illuminate avenues for streamlining traffic patterns, alleviating delays, and enhancing the overall intersection layout. Consequently, the stage is set for formulating informed recommendations and devising strategies for potential enhancements, all guided by the insights gleaned from this comprehensive traffic analysis.

5. TRAFFIC ANALYSIS – TEST SCENARIO

The testing layout for Barry's Bay Intersection considers the space constraints and the topographic survey results. With limited expansion opportunities along the East and West Approaches due to surrounding development, the focus is on expanding the Northbound Approach by adding a dedicated Short Lane for right-turning traffic. This configuration aims to enhance traffic flow and reduce congestion, especially during peak hours.

5.1 TEST SCENARIO LAYOUT

Figure 5.1 Test Scenario Layout of Barry's Bay Intersection

5.2 PEAK HOUR TRAFFIC

Peak Hour Traffic for the testing layout is selected same as for existing layout for the purpose of comparison between existing and testing layout. Further, as per available AADT dataset from MTO Ontario web portal, it has been observed that Highway 60 has shown negative growth of 0.5% per year for period compounded between 1994 and 2019. Therefore, application of growth factor has been skipped for future scenario and existing traffic demand is used as study traffic demand.

5.3 TRAFFIC ANALYSIS

Similar to the existing layout, the traffic analysis for the testing layout follows the HCM-based All Way Stop Control Methodology to assess traffic performance indicators such as delay and Level of Service (LOS). The results are summarized below:

Table 5-1 Test Scenario Delay and Level of Service of Intersection

Intersection Delay and LOS	
Intersection Delay, s/veh	13.0
Intersection LOS	B

Table 5-2 Movement wise Performance indicators of Test Scenario Layout of Intersection

Movement	EB-T	EB-R	WB-L	WB-T	NB-L	NB-R
Traffic Vol, veh/h	198	112	106	217	107	95
Peak Hour Factor	0.85	0.87	0.83	0.86	0.86	0.83
Heavy Vehicles, %	3	2	2	4	3	4
Mvmt Flow	233	129	128	252	124	114
Number of Lanes	1	0	0	1	1	1
Approach	EB		WB		NB	
Opposing Approach	WB		EB			
Opposing Lanes	1		1		0	
Conflicting Approach Left			NB		EB	
Conflicting Lanes Left	0		2		1	
Conflicting Approach Right	NB				WB	
Conflicting Lanes Right	2		0		1	
HCM Control Delay	13		14.5		10.8	
HCM LOS	B		B		B	

5.4 LANE ANALYSIS

Investigating further into the details of lane-level analysis, considerations span the distribution of traffic volume and the impact of control measures. Subsequently, the following table summarizes a comprehensive range of parameters for the Northbound (NBLn1, NBLn2), Eastbound (EBLn1), and Westbound (WBLn1) lanes:

Table 5-3 Lane wise Performance indicators of Test Scenario Layout of Intersection

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Volume Left (% of total)	100%	0%	0%	33%
Volume Through (% of total)	0%	0%	64%	67%
Volume Right (% of total)	0%	100%	36%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Volume by Lane	107	95	310	323
Left Turn Volume	107	0	0	106
Through Volume	0	0	198	217

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Right Turn Volume	0	95	112	0
Lane Flow Rate	124	114	362	380
Geometry Group	7	7	2	2
Degree of Utilization (X)	0.239	0.181	0.503	0.552
Departure Headway (Hd)	6.902	5.7	5.008	5.227
Convergence (Y/N)	Yes	Yes	Yes	Yes
Capacity	520	630	723	692
Service Time	4.641	3.438	3.02	3.239
HCM Lane Volume/Capacity Ratio	0.238	0.181	0.501	0.549
HCM Control Delay	11.8	9.7	13	14.5
HCM Lane Level of Service	B	A	B	B
HCM 95th-tile Queue Length	0.9	0.7	2.9	3.4

5.5 FINDINGS

The analysis of the testing layout for Barry's Bay Intersection reveals marginal improvements in traffic flow compared to the existing layout. Key findings include:

- The testing layout demonstrates a slight reduction in intersection delay, from 13.2 seconds (existing layout) to 13.0 seconds.
- Northbound Traffic experience reduced control delays in the testing layout.
- The addition of a dedicated short lane for Northbound right-turning traffic enhances overall traffic separation and capacity utilization.
- Lane-level analysis confirms better traffic flow, with improved flow rates and departure headways in the testing layout.

The testing layout's improvements in control delays and lane-specific performance metrics underscore its effectiveness in enhancing traffic flow. The addition of a dedicated short lane stands out as an essential feature that optimizes intersection capacity, however, the improvement is only marginal not sufficient to conclusively endorse the case.

5.6 COMPARISON BETWEEN EXISTING AND TESTING LAYOUT:

A comprehensive comparison between the existing layout and the proposed testing layout highlights the slight benefits and performance improvements achieved by the latter. The following table provides a concise overview:

Table 5-4 Comparison between existing and test layout

Metric	Existing Layout	Testing Layout	Performance Impact
Intersection Delay (s/veh)	13.2	13.0	Slight Reduction
Intersection Level of Service (LOS)	B	B	Stable
Control Delay – EB (s)	12.9	13.0	Slightly Improved
Control Delay – WB (s)	14.4	14.5	Slightly Declined
Control Delay - NB (s)	11.9	10.8	Slightly Improved
Traffic Flow Efficiency	Mixed	Improved	Enhanced Traffic Separation

While the testing layout does exhibit some traffic flow improvement, it is not significant enough to warrant the change in layout, therefore, the focus should extend beyond marginal reductions in delay. A crucial consideration is the viability of geometric improvements that can provide a more spacious and efficient intersection layout.

Specifically, there's an opportunity to enhance the turning radius and turning maneuverability for heavy vehicles, such as trucks and buses. By optimizing the geometric design, we can potentially accommodate heavy vehicles more effectively and reduce the likelihood of congestion and delays, especially during peak hours.

Therefore, further evaluation is needed to be carried out, with a primary focus on geometric enhancements. The next chapter explores the potential for a more comprehensive redesign that not only improves traffic flow but also addresses the unique challenges posed by heavy vehicles. The geometric design analysis is to be carried out with aim to evaluate the potential to increase the turning radius of intersection approaches so as to provide a safer and more efficient transportation experience for all road users.

6. GEOMETRIC LAYOUT

Traffic Analysis of enhanced layout with addition of right turning short lane on South Approach shows marginal improvement compared to existing layout. This chapters aims at geometric analysis of Barry's Bay Intersection with perspective to enhance the geometry by utilizing the available Right-of-Way to improve the turning radius for heavy vehicle movements.

6.1 EXISTING GEOMETRY

The existing geometric layout of the Barry's Bay Intersection is characterized by a compact design. This layout comprises three main approaches - East, West, and South, each featuring a 1+1 lane configuration. This means that there is one lane designated for vehicles approaching the intersection and another for vehicles departing from it. The lane widths across all approaches are consistent, ranging between 3.7 to 3.8 meters. These lanes serve as shared lanes, accommodating traffic in both directions.

Of particular note is the restricted space available for expansion along the East and West Approaches. These limitations are due to nearby structures and properties. However, a significant opportunity for geometric enhancement exists along the South Approach. Approximately 7.74 meters of space is available on the right side of this approach, adjacent to a fuel station. This space represents the sole potential for improving the intersection's geometry.

A key observation from video footage and traffic studies is that the existing compact geometric layout performs satisfactorily in terms of traffic flow and related performance indicators. Notably, the East and West Approaches feature a turning radius of 15 meters, which aligns with the recommendations of the AASHTO Guide on "A Policy on Geometric Design of Highways and Streets." This turning radius is sufficient to support the turning maneuvers of a WB-19 vehicle, which is considered representative for two-lane open-highway conditions.

However, a point of concern is the West Approach, which currently has a turning radius of 10 meters. This low turning radius is primarily constrained by the presence of a Commercial Storefronts, on-street parking, and sidewalks, which limit the available space for improvements. Nonetheless, the space adjacent to the fuel station presents an opportunity to enhance the intersection's geometry and increase the turning radius on the West Approach without compromising access to the Commercial Storefronts or on-street parking. The following sections will delve into the selection of geometric design parameters and assess the potential for geometric improvements.

Table 6-1 Geometric Features of Existing Layout of Barry's Bay Intersection

Geometric Feature	East Approach (From Wilno)	West Approach (From Madawaska)	South Approach (From Combermere)
Number of Lanes	1+1	1+1	1+1
Lane Width (m)	3.82	3.72	3.79
Lane Type	Shared (Through + Left)	Shared (Through + Right)	Shared (Left + Right)
Median	No	No	No
Turning Radius (m)	15	**10**	15
Space Availability for Improvement	Restricted	Restricted	7.74m Space available on Right Side adjacent to Fuel Station

Above table provides a summary of the existing geometric features of the Barry's Bay Intersection, outlining key parameters such as lane configuration, lane width, lane type, median presence, and turning radii for each approach. It serves as a reference point for understanding the current intersection layout.

Figure 6.1 Geometric Features of Existing Layout extracted from Topographic survey

6.2 DESIGN PARAMETERS

Establishing design parameters is a fundamental step in enhancing the intersection's geometry. These parameters define the scope within which vehicles should be able to navigate the intersection without the need for complex maneuvers. AASHTO's Design Guide, known as "A Policy on Geometric Design of Highways and Streets," provides comprehensive standards for setting these design parameters.

6.2.1.1 Design Vehicle

Key controls in geometric highway design are the physical characteristics and the proportions of vehicles of various sizes using the highway. Therefore, it is appropriate to examine all vehicle types, establish general class groupings, and select vehicles of representative sizes within each class for design use. These selected vehicles, with representative weight, dimensions, and operating characteristics, are used to establish highway design controls for accommodating designated vehicle classes and are known as design vehicles.

AASHTO Design guide suggest the design vehicle should usually be a truck because offtracking (the path followed by the rear wheels of a vehicle that is turning) is much greater for trucks than for passenger cars. The WB-19 design vehicle is considered representative for two-lane open-highway conditions as per AASHTO, therefore, it is selected as design vehicle for this study. WB-19 is an interstate semitrailer with 21.03 meters bumper to bumper length. Following figure shows the dimension and turning path of WB-19 vehicle.

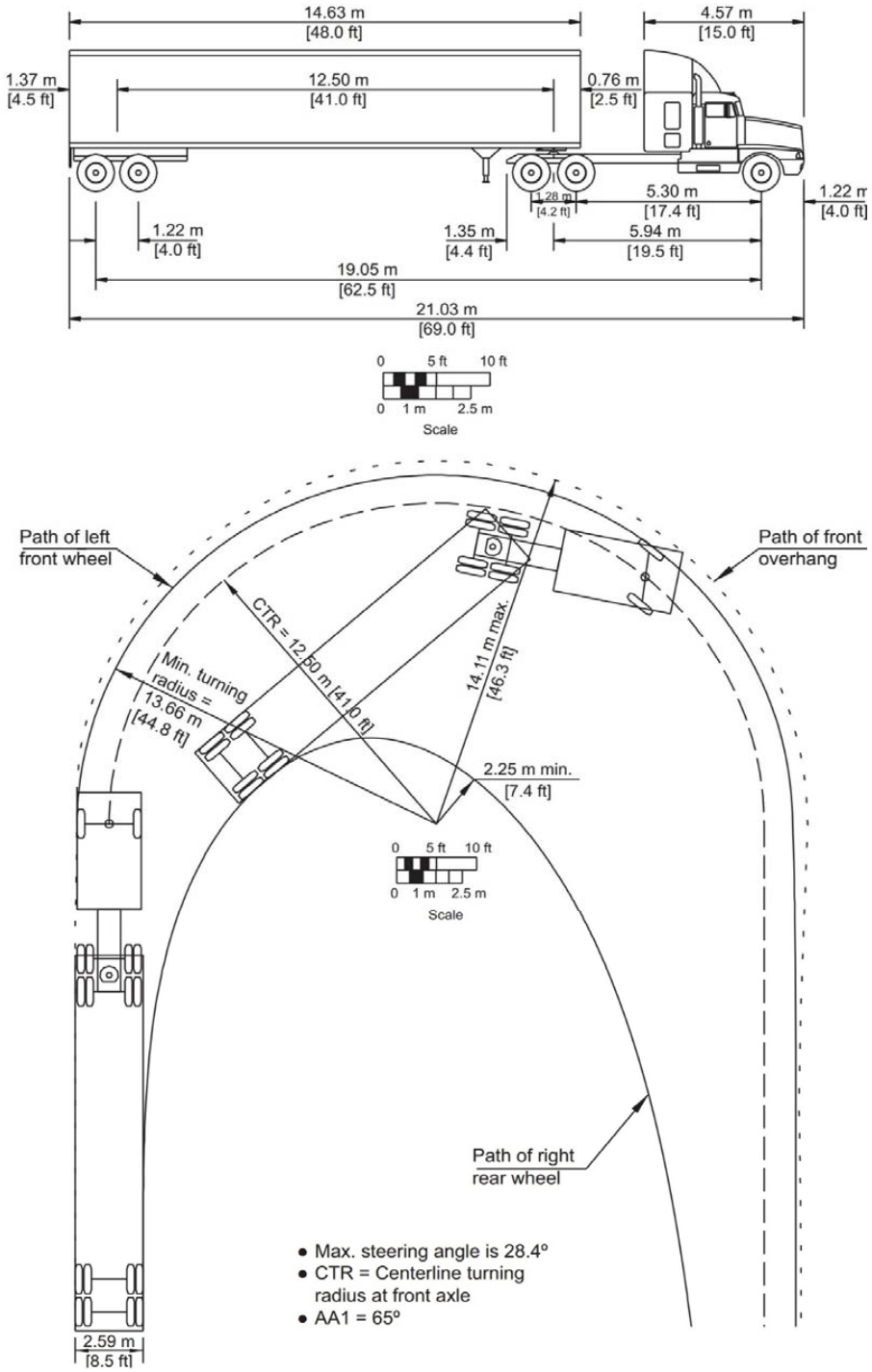


Figure 6.2 Minimum Turning Path for Interstate Semitrailer (WB-19) Design Vehicle

24

6.2.1.2 Minimum Turning Radius

The minimum turning radius is a critical parameter defined by the AASHTO guide for the selected design vehicle, in this case, the WB-19. AASHTO recommends a minimum turning radius of 13.66 meters for the WB-19 Design Vehicle, as shown in the figure.

To maintain geometric symmetry and consistency with the existing layout, the minimum turning radius for this study is set at 15 meters for all approaches. This ensures that the intersection can accommodate the turning needs of the chosen design vehicle without compromising safety or efficiency.

6.3 LAYOUT OPTIONS

Geometric analysis of Barry's Bay intersection reveals sharp turning with low turning radius for Eastbound Right turning traffic. Therefore, to enhance the geometry of intersection, space available adjacent to fuel station is utilized to following two layout options which are satisfying the prevailing requirements to enhance the geometric features of Barry's Bay Intersection.

6.3.1.1 Option 1: Addition of Right Turning Short Lane on South Approach

Layout Option 1 has been devised in view of testing scenario as evaluated in previous chapter. This layout primarily focuses on achieving marginal improvements in traffic flow performance. It makes effective use of the available space adjacent to the fuel station on the South Approach.

In Option 1, a right-turning short lane, measuring 3.5 meters in width and 30 meters in length, is introduced. Additionally, a simple curve with a turning radius of 15 meters is implemented on both the West and South Approaches to facilitate smoother turning movements.

Advantages

- Marginal improvement in Traffic Flow Performance: This option shows slight enhancements in the performance of traffic flow indicators.
- Dedicated lane for Northbound Right Turning Traffic: The addition of a dedicated right-turning lane caters to the specific needs of right-turning vehicles.
- 15 meters turning radius to support movement of WB-19 Vehicle: The provided turning radius aligns with the recommendations for accommodating the chosen design vehicle.
- No change in the angle of intersection: The South Approach retains a 90-degree angle with Opeongo Line, maintaining consistency with the existing layout.
- Largely following the existing geometry: Option 1 builds upon the existing layout, reducing the need for extensive changes.

The figure below illustrates Option 1, showcasing the added right-turning short lane on the South Approach and the associated curve with a 15-meter turning radius on the West and South Approaches

Figure 6.3 Layout Option 1: Addition of Right Turning Short Lane on South Approach

Disadvantages

- Available space for expansion has been completely utilized: This option maximizes the use of available space, potentially limiting future expansion possibilities.
- Heavy Vehicle turning right from West Approach towards South Approach needs to encroach the opposite lanes: Due to the absence of a dedicated right-turn lane for heavy vehicles, they may encroach into opposing lanes during their turning maneuver.
- Addition of dedicated Right Turning lane on South Approach may add to confusion among commuters: The intersection's stop-controlled nature, coupled with the introduction of a dedicated lane on low traffic South Approach, could lead to confusion, particularly for drivers on approaches with higher traffic.

6.3.1.2 Option 2: Enhanced Turning Radius and Geometry

Option 2 takes a different approach, aiming to enhance the overall geometry of the intersection while preserving symmetry. In this option, the short right-turning lane, as introduced in Option 1, is sacrificed in favor of improving the intersection's geometry.

To achieve this, Option 2 incorporates a 3-centered curve with radii of 45-15-45 meters for Right Turning traffic on both the West and South Approaches. This adjustment also entails a slight change in the angle of intersection to 85 degrees with Opeongo Line. However, this change is made in a way that does not encroach upon the existing sidewalk along the Commercial Storefronts. Furthermore, the design distributes available space along the fuel station symmetrically on both sides of the South Approach, creating opportunities for future expansion.

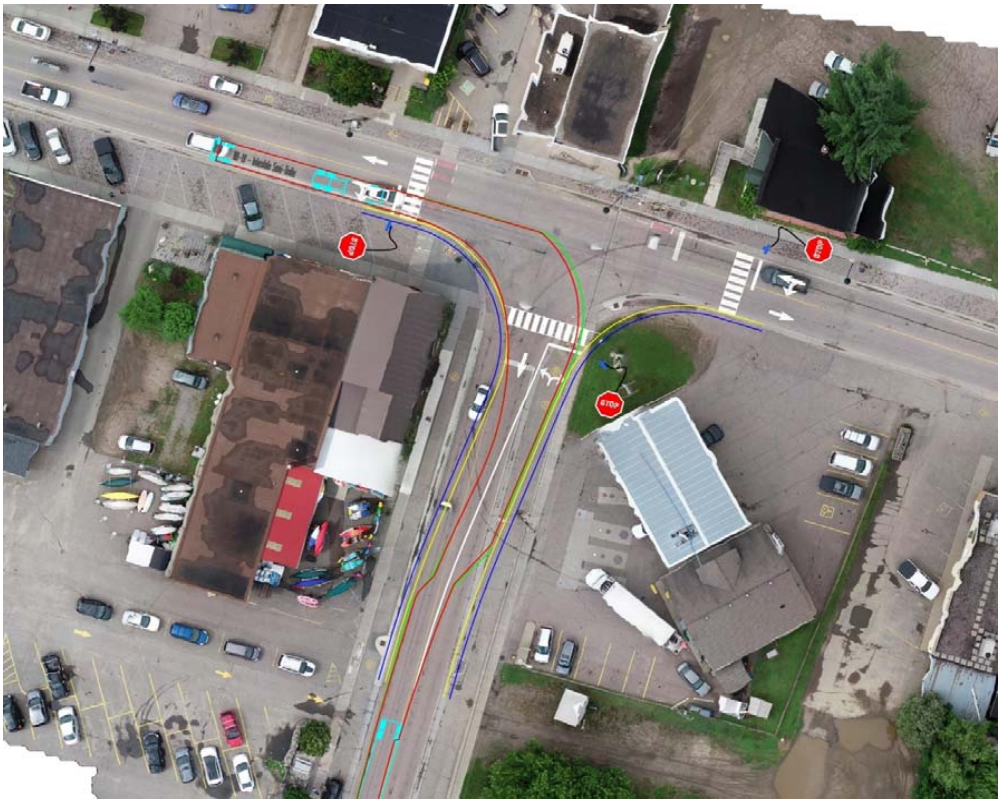


Figure 6.4 Layout Option 2: Enhanced Turning Radius and Geometry

The above figure provides a visual representation of Option 2, showcasing the 3-centered curves with radii of 45-15-45 meters on the West and South Approaches and the adjusted angle of intersection.

Advantages

- The introduction of a 3-centered curve with radii of 45-15-45 meters efficiently accommodates the swept path turning movement of the WB-19 vehicle.

- Option 2 maintains a symmetrical design, ensuring consistency and balanced lane configurations across all approaches.
- The allocation of space on both sides of the South Approach sets the stage for potential expansion while maintaining geometric balance.
- This option builds upon the existing layout with only marginal enhancements to improve the turning radius. This minimizes disruptions.

Disadvantages

- Unlike Option 1, Option 2 does not include a dedicated right-turning lane, potentially affecting right-turning vehicle efficiency.
- The angle of intersection shifts from 90 degrees to 85 degrees to accommodate the 3-centered radius. This change may require some adjustment for drivers.
- Heavy Vehicle turning right from West Approach towards South Approach needs to encroach the opposite lanes.

6.4 COMPARISON BETWEEN LAYOUT OPTIONS

In terms of geometry and lane configuration, the existing layout employs a 1+1 lane configuration across all approaches with a 10-meter turning radius on the West Approach. Option 1 introduces a dedicated short right-turn lane on the South Approach while maintaining 1+1 lanes on East and West Approaches with a 15-meter turning radius. Option 2, the enhanced geometry option, also maintains a 1+1 lane configuration but significantly improves turning radius by introducing a 3-centered curve with a 45-15-45 meter radius on both the West and South Approaches.

Regarding traffic flow performance, all three options result in a Level of Service (LOS) of B and an average delay of approximately 13 seconds per vehicle, indicating comparable traffic flow characteristics.

The prominent features of these options include the design vehicle, where Options 1 and 2 utilize the WB-19 Interstate Semitrailer, a substantial improvement over the existing SU-9 Single Unit Truck in terms of length. Additionally, Option 2 slightly adjusts the angle of intersection to 85 degrees while maintaining a symmetric design and space for future expansion. However, all options necessitate heavy vehicles to encroach on opposite lanes during right turns from the West Approach to the South Approach.

The comparison between the different layout options for Barry's Bay Intersection, as presented in Table below, highlights several key features that influence the decision-making process for geometric enhancements.

Table 6-2 Comparison between Layout Options

Description	Existing	Option 1 with Short Lane	Option 2 with Enhanced Geometry
Geometry			
Lane Configuration	1+1 on all approaches	1+1 on East and West Approaches 2+1 on South Approach with dedicated short Right Turn Lane	1+1 on all approaches
Supplied Turning Radius	10m	15m	15m
Curve Type	Simple	Simple	3 Centered (45-15-45 m)
Traffic Flow Performance			
Level of Service	B	B	B
Average Delay (s/ veh)	13.2	13	13.2
Prominent Features			
Design Vehicle	Single Unit Truck (SU-9) 9.14 meter length	Interstate Semitrailer (WB-19) 21.03 meter length	Interstate Semitrailer (WB-19) 21.03 meter length
Angle of Intersection	90 Degrees	90 Degrees	85 Degrees
Space for Expansion	Yes	No	Yes
Symmetric Design	Yes	No	Yes
Heavy Vehicle Encroachment in Opposite Lane	Yes	Yes	Yes

The comparison underscores that Option 2, with its emphasis on enhanced turning radius and geometry, presents significant geometric improvements while preserving the existing symmetric design and accommodating future expansion. Despite the trade-off of the additional right-turning lane, Option 2 aligns with design standards, maintains an acceptable Level of Service (LOS) of B, and offers the advantages of improved geometry and future expansion potential. Thus, Option 2 emerges as the preferred choice for geometric enhancement at Barry's Bay Intersection

6.5 PREFERRED LAYOUT: OPTION 2 WITH ENHANCED GEOMETRY

With the thorough analysis of the existing layout and two proposed geometric enhancements for Barry's Bay Intersection, Option 2, which focuses on enhanced turning radius and geometry, stands out as the preferred choice for geometric enhancement. This recommendation is based on several key advantages it offers in comparison to both the existing layout and Option 1, as well as the rationalization of its disadvantages.

Advantages of Option 2 over the Existing Layout:

1. **Improved Turning Radius:** Option 2 significantly enhances the turning radius on the West and South Approaches, accommodating the WB-19 Interstate Semitrailer with more efficiency. This improvement ensures safer and smoother turns for heavy vehicles.

2. **Symmetric Design:** Option 2 maintains a symmetric design, aligning with the existing layout's pleasing geometric configuration. This symmetry contributes to the overall aesthetic appeal of the intersection.
3. **Space for Expansion:** Option 2 preserves space for future expansion needs, allowing for potential adjustments and improvements without compromising existing structures or access to commercial establishments.
4. **Acceptable Level of Service:** Despite the trade-off of the additional right-turning lane, Option 2 still achieves a Level of Service (LOS) of B, indicating satisfactory traffic flow conditions.

Advantages of Option 2 over Option 1:

1. **Enhanced Geometry:** Option 2 offers substantial geometric improvements, particularly with the introduction of a 3-centered curve with a 45-15-45 meter radius on both the West and South Approaches. This improvement ensures efficient movements for heavy vehicles and minimizes the need for encroachment into opposite lanes.
2. **Preservation of Existing Geometry:** Option 2 maintains a slightly adjusted angle of intersection at 85 degrees with Opeongo Line while preserving the geometry in front of the Commercial Storefronts. This adjustment minimizes encroachments and maintains safer traffic flow.

Rationalization for Option 2:

1. **Sacrifice of Additional Lane:** While Option 2 sacrifices the additional right-turning lane proposed in Option 1, the enhanced geometry ensures that right-turning movements are accommodated efficiently. The sacrifice of this lane is justified by the geometric benefits gained.
2. **Encroachment in Opposite Lanes:** Similar to Option 1, Option 2 also necessitates heavy vehicles to encroach on opposite lanes during right turns from the West Approach to the South Approach. However, this is a common challenge in compact intersections and does not significantly impact the overall performance of Option 2.

In light of these advantages and the minimal significance of the disadvantages, Option 2 represents the most suitable choice for optimizing the geometric layout of Barry's Bay Intersection. This recommendation ensures improved safety, efficient traffic flow, and the potential for future expansion, making it the ideal solution for enhancing the intersection's performance and safety for all road users.

7. RECOMMENDATIONS

Based on the comprehensive analysis and evaluation of various geometric layout options for Barry's Bay Intersection, the following recommendations are put forth:

- **Adoption of Option 2 - Enhanced Turning Radius and Geometry:** It is strongly recommended that Option 2, which focuses on enhancing the turning radius and overall geometric design, be adopted as the preferred choice for geometric enhancement at Barry's Bay Intersection. This recommendation is made considering the following key factors:
  - **Improved Turning Radius:** Option 2 significantly enhances the turning radius on the West and South Approaches, ensuring safer and more efficient turns for heavy vehicles like the WB-19 Interstate Semitrailer.
  - **Maintained Symmetric Design:** Option 2 retains a symmetric design, complementing the existing layout's aesthetic appeal and preserving the intersection's overall balance.
  - **Space for Future Expansion:** Option 2 preserves valuable space for potential future expansion needs, providing flexibility for accommodating growth and adjustments.
  - **Acceptable Level of Service:** Despite the sacrifice of the additional right-turning lane proposed in Option 1, Option 2 still achieves a Level of Service (LOS) of B, signifying satisfactory traffic flow conditions.

- **Detailed Geometric Design:** The implementation of Option 2 should include a thorough and detailed geometric design plan, addressing the following specific features:
  - **Setting Out:** Precise setting out of all road elements, including lanes, curves, and intersections, must be meticulously planned and executed to ensure accuracy during construction.
  - **Spot Levels:** Comprehensive spot level surveys should be conducted to establish precise elevations and gradients for the entire intersection area, aiding in effective drainage and gradient control.
  - **Junction Grading Contours:** Develop a grading plan that incorporates contour lines to ensure proper surface drainage and minimize water pooling or runoff issues within the intersection.
  - **Pavement Standard Details:** Specify the type and thickness of pavement materials, considering factors such as traffic load, climate, and soil conditions, to ensure long-lasting road surfaces.
  - **Kerb and Gutter Details:** Design the kerb and gutter configurations to facilitate efficient water drainage and provide safe separation between road and pedestrian areas.
  - **Alignment/Profile of Junction:** Define the exact alignment and profile of the junction, including vertical and horizontal curvature, to ensure safe and smooth vehicle transitions.

- **Safety Considerations:** Continuous monitoring and evaluation of safety measures should be integrated into the design and operation of Barry's Bay Intersection. Special attention should be paid to signage, lane markings, and traffic control devices to ensure the safe and efficient movement of vehicles, especially during the transitional phase.
- **Public and Stakeholder Engagement:** Engaging with the local community and stakeholders, including nearby businesses and property owners, is essential. Their input and feedback should be

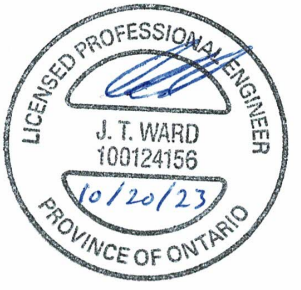
considered during the implementation phase to address any concerns and foster support for the project.

- **Periodic Performance Evaluation:** Once Option 2 is implemented, ongoing monitoring and evaluation of the intersection's performance should be conducted. This will allow for necessary adjustments and improvements to be made based on real-world usage and changing traffic patterns.

- **Consideration of Environmental Impact:** While enhancing the intersection's geometry, it's crucial to assess and mitigate any potential environmental impacts. Measures to reduce noise, air pollution, and disruption to the local ecosystem should be integrated into the project plan.

- **Budget and Resource Allocation:** Adequate funding and resources should be allocated for the successful implementation of Option 2. A well-structured project plan should be developed, outlining timelines, budgets, and responsible parties.

In conclusion, the adoption of Option 2 for the geometric enhancement of Barry's Bay Intersection is recommended due to its significant advantages in terms of improved geometry, maintained symmetry, and future expansion potential. With a detailed geometric design plan that includes all the specified features, careful planning, adherence to standards, and ongoing safety considerations, Option 2 has the potential to optimize traffic flow, enhance safety, and provide a better transportation experience for all road users at this critical intersection.



Jason Ward, P. Eng.

Perspective Engineering Inc.

GLOSSARY

AASHTO Manual: The American Association of State Highway and Transportation Officials (AASHTO) manual that provides guidelines and standards for the design and construction of highways and transportation facilities.

All Way Stop: A traffic control measure at an intersection where all approaches are required to stop before proceeding.

Approach: A roadway segment leading to an intersection from a specific direction.

Capacity: The maximum number of vehicles that a roadway or intersection can accommodate within a given period.

Capacity Utilization: The degree to which the capacity of a roadway or intersection is being utilized by traffic.

Congestion: Traffic congestion occurs when the volume of traffic exceeds the capacity of the road or intersection, resulting in slower speeds and longer travel times.

Control Delay: The time delay experienced by vehicles at an intersection due to traffic control measures.

Critical Movement: A movement that requires careful consideration due to its impact on overall traffic flow and safety.

Degree of Utilization (X): A measure of how much the capacity of a roadway or intersection is being used by traffic.

Departure Headway (Hd): The time interval between the departure of successive vehicles from a stopped position.

Geometry Group: A set of related geometric features, such as lanes, turning radii, and median islands, that define the layout of an intersection.

HCM (Highway Capacity Manual): An authoritative manual that provides methodologies for analyzing the capacity and level of service of transportation facilities.

Heavy Vehicles (%): The percentage of heavy vehicles, such as trucks and buses, in the total traffic volume.

Intersection Delay, s/veh: The time delay experienced by a vehicle at an intersection.

Intersection Layout: The arrangement of lanes, markings, signs, and signalization at an intersection.

Intersection LOS: The Level of Service (LOS) of an intersection, indicating the quality of traffic flow and congestion.

Lane Flow Rate: The number of vehicles passing through a lane per unit of time.

Mvmt Flow: Movement flow, referring to the flow of vehicles in a specific direction at an intersection.

Number of Lanes: The count of lanes available for traffic on a roadway.

Opposing Approach: The direction of traffic flow that is opposite to a given approach at an intersection.

Opposing Lanes: Lanes on the opposing side of the roadway that carry traffic in the opposite direction.

Peak Hour Factor: A factor used to estimate traffic volume during the peak hour.

Queuing: The formation of a line or queue of vehicles, often caused by congestion or traffic signals.

Service Time: The time a vehicle spends within an intersection while passing through.

Short Lane: A designated lane for specific turning movements, often used to separate turning traffic from through traffic.

Sign Control: Traffic control achieved through the use of signs, rather than signals.

Test Scenario: A hypothetical layout or design used for evaluating traffic performance improvements.

Topographic Survey: A survey that measures the elevation and contours of the land to create a detailed map of its features.

Traffic Vol, veh/h: Traffic volume, indicating the number of vehicles passing through a location per unit of time.

Traffic Volume by Lane: The number of vehicles passing through a specific lane per unit of time.

Volume Left (% of total): The percentage of traffic volume making left turns at an intersection.

Volume Through (% of total): The percentage of traffic volume continuing straight through an intersection.

Volume Right (% of total): The percentage of traffic volume making right turns at an intersection.

Volume Left (% of total): The percentage of traffic volume making left turns at an intersection.

Volume Through (% of total): The percentage of traffic volume continuing straight through an intersection.

Volume Right (% of total): The percentage of traffic volume making right turns at an intersection.

X (Degree of Utilization): A measure of how much the capacity of a roadway or intersection is being used by traffic.

Y/N (Convergence): A binary indication of whether traffic converges or merges at a specific location.

AORS
PROMOTING **KNOWLEDGE**. PURSUING **EXCELLENCE**

January 8, 2024

Dear Head of Council, Deputy Head of Council and Councillors,

Your local Public Works department provides invaluable services within your community. Without the dedicated public works employees that you are fortunate to have, many basic functions in your community would not be able to happen. Without maintained roads, your emergency services (police, fire, and ambulance) would not be able to respond to calls, school buses could not run to get children to school, and your residents would not be able to leave to work, school, appointments, children's extra-curriculars and any other activity important to them. Additionally, as you work with the provincial government to tackle the housing crisis, your communities require more core infrastructure to handle the growth. For the health and safety of our communities it is important we keep our Public Works department staff complement full, and well trained.

Public Works departments across the province have already begun to feel the impacts of labour shortages, and as we will begin to see many retirements across the province, the shortage will become even more exasperated. From a recent survey that AORS completed with public works departments from across Ontario, we know that 91.5% of respondents will be hiring entry level positions in the next three to five years. However, we are already seeing the start of the labour shortage. From our survey, we found that 70% of respondents already reported getting less than five applications for entry level positions when posted, and the top three challenges municipalities are currently facing is a lack of applicants, applicants that do apply not meeting the required qualifications and municipalities having to compete with private sector positions.

Over the last year, AORS has been dedicating much of our advocacy to encouraging youth to consider careers in public works through career fairs, local government presentations to students, developing printed resources for guidance counsellors and much more. AORS has also been working closely with Fanshawe College Corporate Training Solutions to develop a Municipal Operator Course that would train potential municipal equipment operators to come to your municipality with the basic knowledge they need to begin maintaining your core infrastructure. This would be the first course of its kind that would attract potential students from across the Province of Ontario. To fund this endeavor, AORS has applied for a Skills Development Fund through the Province's Ministry of Labour, Training, Immigration and Skilled Trades. We are reaching out to you for your support in our application and your advocacy to the province on why having more – and qualified – applicants to our public works departments are so imperative.

We would ask that you consider passing the following motion:

WHEREAS, municipal public works departments from across the Province of Ontario provide invaluable services to our communities ensuring the health and safety of all residents;

AND WHEREAS, if it was not for our municipal public works employees from across the Province of Ontario maintaining our public roads systems, our communities would not be able to function as

emergency personnel could not respond to calls, school buses could not get our children to school, residents would not be able to get to work, school or appointments and many more basic functions would not be able to happen;

AND WHEREAS, municipal public works departments are already feeling the impacts of a labour shortage, which will only be exasperated over the next three to five years, which will cause levels of service municipalities are able to provide to ensure the health and safety of our residents to decrease;

AND WHEREAS, there is currently no provincial-wide course that properly trains potential municipal public works employees, specifically relating to municipal heavy equipment.

THEREFORE IT BE RESOLVED, that (INSERT MUNICIPALITY NAME) supports the work of the Association of Ontario Road Supervisors to develop a Municipal Equipment Operator Course to address this issue;

AND THAT, (INSERT MUNICIPALITY NAME) calls on the Province of Ontario's Ministry of Labour, Training, Immigration and Skilled Trades to fully fund the Municipal Equipment Operator Course in 2024 through the Skills Development Fund;

AND THAT, a copy of this resolution be sent to the Minister of Labour, Training, Immigration and Skilled Trades David Piccini, (INSERT MUNICIPALITY'S NAME)'s Member of Provincial Parliament (INSERT LOCAL MPP NAME) and the Association of Ontario Road Supervisors.

We appreciate your on-going support and should you have any questions or concerns, please do not hesitate to contact AORS for all things municipal public works!

Best regards,

John Maheu
AORS Executive Director

Dennis O'Neil
AORS Member Services Coordinator

Christie Little
AORS Training and Programming Coordinator

Kelly Elliott
AORS Marketing and Communications Specialist

Legal Services / Clerk's Department
789 Broadway Street, Box 3000
Wyoming, ON N0N 1T0

Telephone: 519-845-0801
Toll-free: 1-866-324-6912
Fax: 519-845-0818

February 23, 2024

The Honourable Doug Ford
Premier of Ontario
Legislative Building
Queen's Park
Toronto ON M7A 1A1

Dear Premier Ford:

Re: Lambton County Council Motion

Please be advised that at its regular meeting of February 07, 2024, Lambton County Council Passed the following resolution:

#25: Ferguson/Bradley:

WHEREAS the Province of Ontario has agreed to assume responsibility for the Gardiner Expressway and the Don Valley Parkway from the City of Toronto, which will be uploaded to the Province of Ontario;

WHEREAS like the City of Toronto, The Corporation of the County of Lambton and all municipalities in the Province of Ontario are experiencing significant financial and budgetary pressures including those related to infrastructure development, maintenance and repairs, and are seeking reasonable solutions to address the same while balancing their financial books;

WHEREAS the uploading of municipal highway infrastructure to the Province of Ontario or, alternatively, appropriately increasing the Ontario Community Infrastructure Fund to Ontario municipalities will assist municipalities in addressing such financial challenges;

THEREFORE, BE IT RESOLVED:

a) That the Province of Ontario: (i) upload from local municipalities the responsibility of and costs associated with the continued construction, operation, and maintenance of major municipally-owned highways throughout the Province of Ontario to the Ontario Ministry of Transportation; or (ii) alternatively, if uploading is not the preferred option of the Province and/or local municipality, to appropriately increase the

Ontario Community Infrastructure Fund to municipalities so as to fairly and equitably allocate resources to Ontario municipalities.

b) That a copy of this resolution be circulated to all municipalities in Ontario; the Association of Municipalities of Ontario; Sarnia-Lambton MPP, Bob Bailey; the Ontario Minister of Transportation, the Hon. Prabmeet Singh Sarkaria; and the Premier of Ontario, the Hon. Doug Ford.

Carried.

Kind Regards,

DocuSigned by:
5897867E2272445...

Olivia Leger
Clerk/County Solicitor

Encl #CC 04-10-24

cc: Association of Municipalities of Ontario
All Ontario Municipalities
Bob Bailey, M.P.P. Sarnia-Lambton Riding
Hon. Prabmeet Singh Sakaria, Ontario Minister of Transportation

COUNTY OF RENFREW

BY-LAW NUMBER

A BY-LAW TO DESIGNATE COUNTY ROAD 16 (VICTORIA STREET) AT WOLFE AVENUE AS A PEDESTRIAN CROSSOVER

WHEREAS the Highway Traffic Act, R.S.O. 1990, c.H.8, as amended, defines a pedestrian crossover as "any portion of a roadway distinctly indicated for pedestrian crossing by signs on the highway and lines or other markings on the surface of the roadway as prescribed by the regulations";

AND WHEREAS it is deemed expedient to designate certain portions of roadways as pedestrian crossovers;

AND WHEREAS the Town of Petawawa has requested the installation of a pedestrian crossover in accordance with the Highway Traffic Act and County of Renfrew Corporate Policy No. PW-14, Pedestrian Crossings on County Roads, as may be amended periodically;

NOW THEREFORE the Council of the Corporation of the County of Renfrew hereby enacts as follows:

1. THAT County Road 16 (Victoria Street) at Wolfe Avenue be designated as a pedestrian crossover.

2. THAT this By-law shall come into force and take effect upon the completion of the construction of the pedestrian crossover, including all required signage and line painting.

READ a first time this 27th day of March 2024.

READ a second time this 27th day of March 2024.

READ a third time and finally passed this 27th day of March 2024.

PETER EMON, WARDEN

GWEN DOMBROSKI, CLERK

TOWN OF PETAWAWA
1111 Victoria Street, Petawawa, Ontario K8H 2E6 • Telephone: 613-687-5536 / Fax: 613-687-5973
www.petawawa.ca

January 9, 2024

Lee Perkins, Director of Public Works & Engineering
County of Renfrew
9 International Drive
Pembroke, ON K8A 6W5

Dear Mr. Perkins:

RE: Proposed Pedestrian Crossover at the intersection of Victoria Street and Wolfe Avenue

Please be advised that the following resolution was passed at the meeting of Council held January 8, 2024:

Resolution #7
Moved by Theresa Sabourin
Seconded by Lisa Coutu
That Council of the Corporation of the Town of Petawawa requests permission from the County of Renfrew to install a new Pedestrian Crossover (PXO) (Level 2 Type B in accordance with Ontario Traffic Manual Book 15) at the intersection of Victoria Street (CR-16) and Wolfe Avenue; and

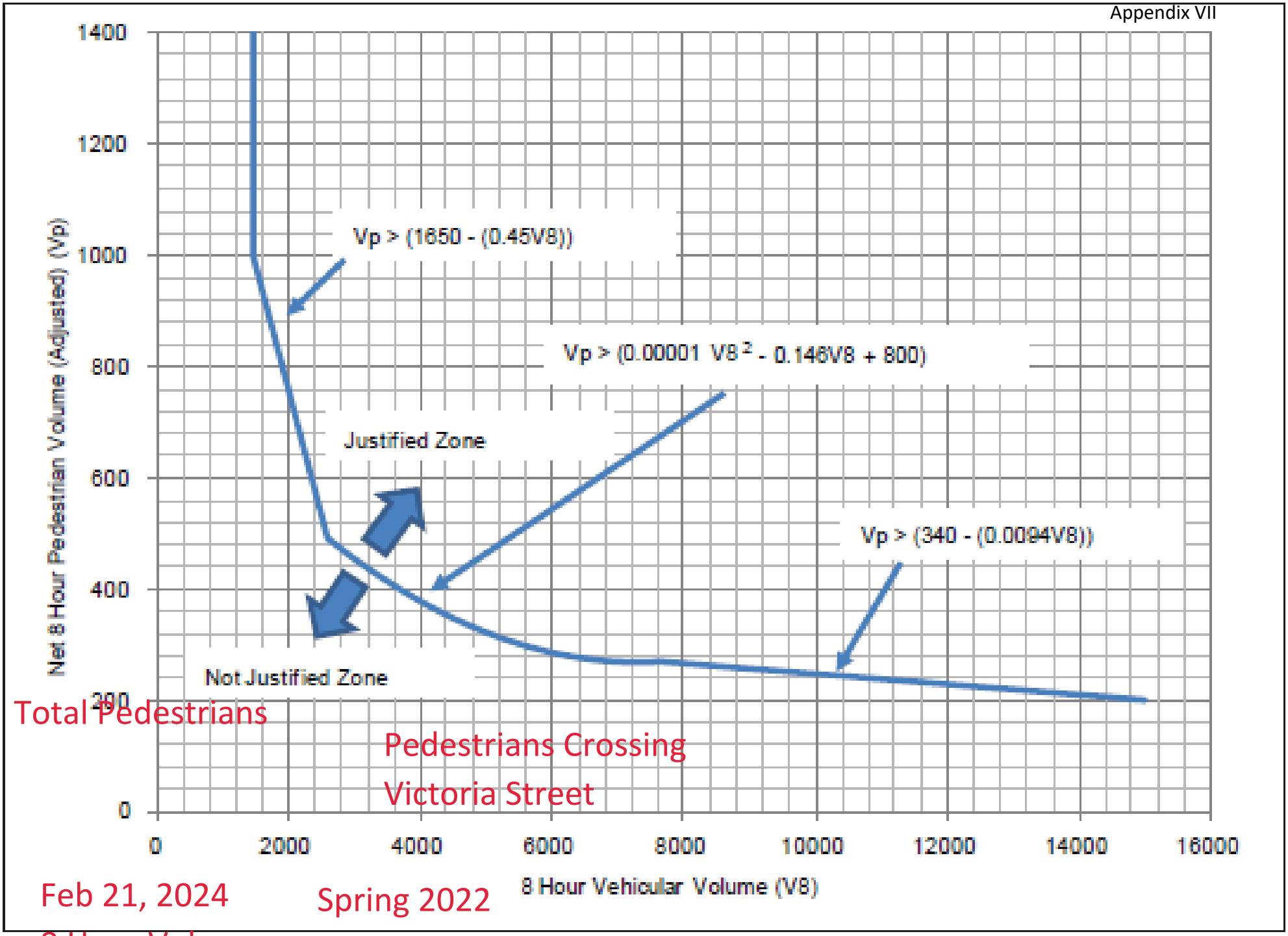
That Council of the Corporation of the Town of Petawawa shall be responsible for all costs associated with the initial installation of the Pedestrian Crossing, including signage and pavement markings associated with the crossing, as well as the replacement of the Pedestrian Crossing; and

That the County of Renfrew shall be responsible for the costs associated with the annual operation and maintenance of the Pedestrian Crossing and signage, with the Town of Petawawa being responsible for the annual pavement markings associated with the crossing.
CARRIED

I trust this is satisfactory. Please contact me should you have any questions or concerns arising from the foregoing.

Sincerely,

Colin Howard, Dipl.Bus.Admin, Dipl.M.M
Director of Legislative Services/Clerk



Total Pedestrians

Pedestrians Crossing Victoria Street

Feb 21, 2024

Spring 2022

8 Hour Volume

Figure 3: OTM Book 12 Justification 6 - Pedestrian Volume

CAPITAL WORKS DIVISION REPORT
Prepared By: Taylor Hanrath, Manager of Capital Works
Prepared for: Operations Committee
March 5, 2024

INFORMATION

1. **2024 Capital Works Map**

Attached as Appendix CW-I is a map illustrating the locations of the Capital Projects planned on County Roads and Structures in 2024.

2. **Transportation Master Plan Update**

The development of the County of Renfrew Transportation Master Plan (TMP) is progressing and most of the existing conditions are now established. The first of the two Public Information Centres (PIC) for the development of the TMP is tentatively scheduled for a virtual meeting at 6:00 p.m., March 26, 2024. Notices will be issued to all local municipalities, published in local newspapers, posted to the County website, and posted to social media at least two weeks prior to the PIC. The notice will advise when the meeting is scheduled, provide a link to join the meeting, and advise the public how they can provide further input towards the development of the County's TMP. This PIC will focus on the goals of the study, process followed, existing conditions/challenges identified thus far, high level results of public input received to date, and provide an opportunity for further public input.

The Town of Arnprior is also a participating municipality in this assignment to develop a TMP of their own. A PIC for the Town of Arnprior's TMP is scheduled for 6:00 p.m., March 27, 2024.

3. **Monthly Capital Project Updates**

During the 2024 construction season, staff intend to issue monthly updates on construction projects being undertaken by the Public Works and Engineering Department. The update will be provided through a link on the County of Renfrew website, which will connect to the Zencity engagement platform for the 2024 Transportation Infrastructure Projects and will be shared with County staff, County Council, local municipalities, OPP, and social media. The 2024 Transportation Infrastructure Projects page provides the option for individuals to subscribe and receive notifications when a monthly project update is posted.

Updates will commence the first week of April, with the first update generally describing all projects planned for 2024. Each following update that is anticipated to be posted the first week of each month will generally consist of the following sections:

a) **Upcoming Projects** – a brief description of each project planned to commence over the next month, including anticipated start and completion dates, and traffic impacts.
b) **Ongoing Projects** – a brief description of each project in progress and anticipated to stretch into or through the next month, including anticipated completion dates, and traffic impacts.
c) **Completed Projects** – a brief description of each project completed over the past month.

The construction update will also include contact information for the Public Works and Engineering Department to submit questions or concerns, as well as a link to Municipal511 for more detailed information on traffic impacts from active construction projects.

RESOLUTIONS

4. **PWC-2024-16 – Inspection of County Structures**

Recommendation: THAT the Operations Committee approves Request for Proposal PWC-2024-16 as submitted by HP Engineering Incorporated, Ottawa, Ontario, for the inspection of County of Renfrew and Town of Petawawa structures, in the amount of $101,900.58, plus applicable taxes; AND FURTHER THAT a Professional Services Agreement be executed and a Purchase Order be issued for the assignment.

Background
A Request for Proposal (RFP) was issued to prequalified firms for the inspections of County of Renfrew and Town of Petawawa structures. The results received are as follows:

1.	HP Engineering Incorporated, Ottawa, Ontario	$101,900.58
2.	WSP Canada Inc., Ottawa, Ontario	253,683.65

All amounts exclude applicable taxes.

A total of 126 County structures were included for the standard OSIM inspections, 12 County structures for enhanced OSIM, and 8 County structures for structural evaluation for the purposes of load posting evaluations. Two Town of Petawawa structures were included as part of the standard Ontario Structure Inspection Manual (OSIM) inspections. Staff will invoice the Town of Petawawa for their two structures once the inspections are completed.

The proposals submitted were evaluated on a range of criteria, including understanding of the assignment, capabilities of the project team, previous experience on similar assignments, performance on past assignments for the County, schedule, and cost. The proposal submitted by HP Engineering Incorporated, Ottawa, Ontario was the best combinations of all factors considered.

Financial Implications
The 2024 Infrastructure Management budget is $240,000 and approximately $120,000 of that budget was anticipated to be required to be allocated for this assignment. Staff confirm that there are sufficient funds allocated in the Infrastructure Management budget to complete the assignment as proposed.

BY-LAWS

5. **PWC-2024-09 – Rehabilitation of County Structures C001 (Berlanquet Creek Culvert), C012 (Farquharson's Culvert), and C134 (Campbell Drive Culvert)**

Recommendation: THAT the Operations Committee recommends that County Council approve Contract PWC-2024-09 as submitted by Clearwater Structures Inc., Ajax, Ontario, for the rehabilitation of County Structures C001 (Berlanquet Creek Culvert), located on County Road 5 (Stone Road), Township of Admaston/Bromley and C134 (Campbell Drive Culvert), located on Campbell Drive, Township of McNab/Braeside, in the amount of $833,656.50, plus applicable taxes; AND FURTHER THAT County Council adopt a By-law to execute the Contract.

Recommendation: THAT the Operations Committee recommends to County Council that the rehabilitation of County Structure C012 (Farquharson's Culvert) not proceed as tendered; AND FURTHER THAT staff continue to monitor the service life of the structure.

Background
Tenders were requested for the rehabilitation of County Structures C001 (Berlanquet Creek Culvert), located on County Road 5 (Stone Road), and C012 (Farquharson's Culvert), located on South McNaughton Road, both in the Township of Admaston/Bromley, and C134 (Campbell Drive Culvert), located on Campbell Drive, Township of McNab/Braeside.

The results received for the lowest cost options submitted are as follows:

1.	Clearwater Structures Inc., Ajax, Ontario	$1,147,438.50
2.	Goldie Mohr Ltd., Ottawa, Ontario	1,316,054.00
3.	Bonnechere Excavating Inc., Renfrew, Ontario	1,707,853.05
4.	Michels Canada Co., Nisku, Alberta	1,828,815.95
5.	Trilith Contracting Inc., Roslin, Ontario	2,139,799.85

All amounts exclude applicable taxes.

Two rehabilitation alternatives for each structure were permitted in the tender, Option A was a 'concrete invert liner', and Option B was a 'spray in structural liner' (geopolymer or thermoset flexible system). These methods of rehabilitation are beneficial when the culvert structure has not yet met the end of its service life in order to significantly extend its service life at a lesser cost than would be incurred for replacement. Given the unique nature of lining works included in this tender, only the lining works for the culverts themselves were included; this will be the first step in the rehabilitation of each

structure and additional works will be undertaken to repair slopes, install guiderail, and replace surface materials where required after this contract is completed.

The lowest cost submission, as submitted by Clearwater Structures Inc. is for Option A, rehabilitation with a concrete invert liner.

Financial Implications

The 2024 Capital budget allocation for the rehabilitation of C001 (Berlanquet Creek Culvert) is $750,000. A comparison of the 2024 proposed budget and projected costs is provided in the table below:

County Structure C001 (Berlanquet Creek Culvert)	**2024 Budget**	**Low Tender**	
		Projected	**Variance Over/(Under)**
Construction - Liner (PWC-2024-11)	480,000.00	375,993.00	(104,007.00)
Construction - Slopes, Surface, & Guiderail	150,000.00	110,000.00	(40,000.00)
Engineering - Design/Tendering	10,000.00	10,000.00	-
Engineering - Contract Administration & Supervision	30,000.00	30,000.00	-
Material Testing (Allowance)	15,000.00	15,000.00	-
Contingency	53,409.00	18,481.45	(34,927.55)
Applicable Taxes	11,591.00	7,086.58	(4,504.42)
Total	**750,000.00**	**566,561.03**	**(183,438.97)**

* Projected costs are based on Tender results, internal costs, and line painting

The 2024 Capital budget allocation for the rehabilitation of C134 (Campbell Drive Culvert) is $600,000. A comparison of the 2024 proposed budget and projected costs is provided in the table below:

County Structure C134 (Campbell Drive Culvert)	**2024 Budget**	**Low Tender**	
		Projected	**Variance Over/(Under)**
Construction - Liner (PWC-2024-11)	420,000.00	457,633.50	37,633.50
Construction - Slopes, Surface, & Guiderail	70,000.00	150,000.00	80,000.00
Engineering - Design/Tendering	5,000.00	5,000.00	-
Engineering - Contract Administration & Supervision	30,000.00	30,000.00	-
Material Testing (Allowance)	15,000.00	15,000.00	-
Contingency	50,917.50	22,881.68	(28,035.82)
Applicable Taxes	9,082.50	11,117.56	2,035.06
Total	**600,000.00**	**691,632.74**	**91,632.73**

* Projected costs are based on Tender results, internal costs, and line painting

The 2024 Capital budget allocation for the rehabilitation of C012 (Farquharson's Culvert) is $200,000. A comparison of the 2024 proposed budget and projected costs is provided in the table below:

County Structure C012 (Farquharson's Culvert)	2024 Budget	Low Tender Projected	Variance Over/(Under)
Construction - Liner (PWC-2024-11)	110,000.00	313,782.00	203,782.00
Construction - Slopes, Surface, & Guiderail	30,000.00	30,000.00	-
Engineering - Design/Tendering	5,000.00	5,000.00	-
Engineering - Contract Administration & Supervision	25,000.00	25,000.00	-
Material Testing (Allowance)	15,000.00	15,000.00	-
Contingency	12,059.00	16,008.80	3,949.80
Applicable Taxes	2,941.00	6,058.04	3,117.04
Total	**200,000.00**	**410,848.84**	**210,486.84**
* Projected costs are based on Tender results, internal costs, and line painting			

As shown in the above table, the cost for rehabilitation of C012 (Farquharson's Culvert) is substantially higher than was budgeted. Staff estimate the projected rehabilitation cost of $410,878.84 would only be slightly less than the cost to replace the structure in its entirety. As such, the financial benefit of performing this rehabilitation at this stage in the structure's life is not present. It is recommended that the rehabilitation of Farquharson's Culvert not proceed as tendered and that replacement of the structure be planned in 6-10 years when the structure nears the end of its service life. Minor costs will still be incurred for the structure in 2024, but they are anticipated to be less than $50,000.

Award of the rehabilitation of C001 (Berlanquet Creek Culvert) and C134 (Campbell Drive Culvert) would incur a total contract value of $833,656.50. The projected savings of $183,438.97 on the budget for C001, and projected overage of $91,632.73 on the budget for C134, would balance to an overall projected savings $91,806.24 to the 2024 Capital Program for the two projects.

Staff confirm that there are sufficient funds allocated to C001 (Berlanquet Creek Culvert) and C134 (Campbell Drive Culvert) in the 2024 Capital budget for the completion of these projects as tendered with the removal of C012 (Farquharson's Culvert).

6. **PWC-2024-10 – Rehabilitation of County Structure C204 (Bellowes Creek Culvert)**

Recommendation: THAT the Operations Committee recommends that County Council approve Contract PWC-2024-10 as submitted by Premier North Limited, Huntsville, Ontario, for the rehabilitation of County of Renfrew Structure C204 (Bellowes Creek Culvert), located on County Road 12 (Westmeath Road), approximately 4.5 km east of County Road 21 (Beachburg Road), Township of Whitewater Region, in the amount of $963,752.00, plus applicable taxes; AND FURTHER THAT County Council adopt a By-law to execute the Contract.

Background

Tenders were requested for the rehabilitation of County of Renfrew Structure C204 (Bellowes Creek Culvert), located on County Road 12 (Westmeath Road), approximately 4.5 km east of County Road 21 (Beachburg Road), Township of Whitewater Region, and the results received are as follows:

1. Premier North Ltd., Huntsville, Ontario $963,752.00
2. 2274084 Ontario Ltd o/a GMP Contracting, Markham, Ontario 1,155,907.64
3. Clearwater Structures Inc., Ajax, Ontario 1,326,370.00
4. Bonnechere Excavating Inc., Renfrew, Ontario 1,546,023.00

All amounts exclude applicable taxes

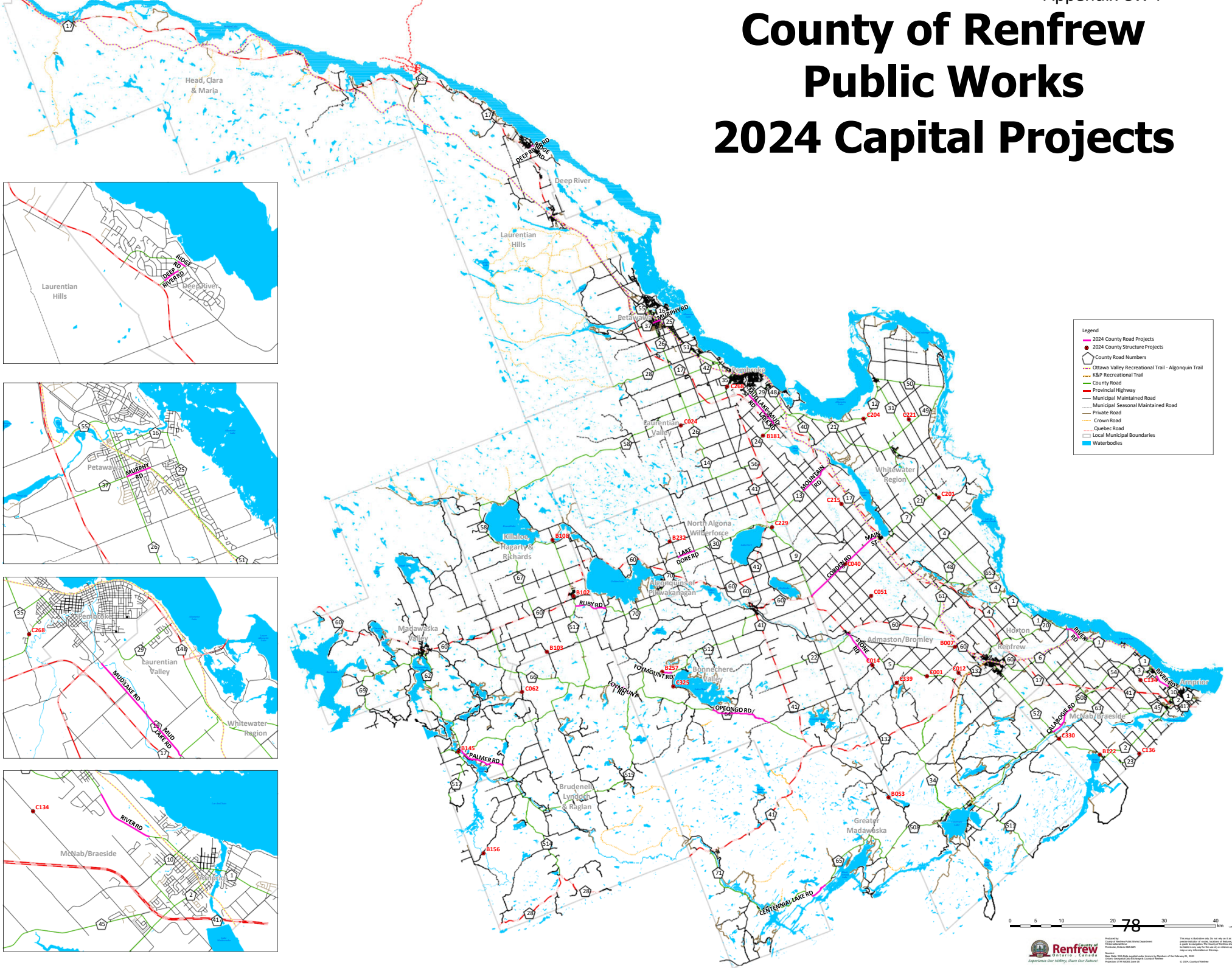
Financial Implications

The 2024 Capital budget allocation for the rehabilitation of Bellowes Creek Culvert is $1,200,000. A comparison of the 2024 proposed budget and projected costs is provided in the table below:

County Structure C204 (Bellowes Creek Culvert) Rehabilitation	**2024 Budget**	**Low Tender**	
		Projected	**Variance Over/(Under)**
Construction	1,010,000.00	963,752.00	(46,248.00)
Engineering - Design/Tendering	10,000.00	10,000.00	-
Engineering - Contract Administration & Supervision	45,500.00	70,000.00	24,500.00
Material Testing (Allowance)	15,000.00	15,000.00	-
Contingency	100,747.20	48,187.60	(52,559.60)
Applicable Taxes	18,752.80	18,370.04	(382.76)
Total	1,200,000.00	1,125,309.64	(74,690.36)
*** Projected costs are based on Tender results**			

Staff confirm that there are sufficient funds allocated to this in the 2024 Capital budget for the completion of this project as tendered.

County of Renfrew
Public Works
2024 Capital Projects



COUNTY OF RENFREW

BY-LAW NUMBER

**A BY-LAW FOR THE EXECUTION OF CONTRACT PWC-2024-09
REHABILITATION OF COUNTY STRUCTURES C001 (BERLANQUET CREEK CULVERT)
AND C134 (CAMPBELL DRIVE CULVERT)**

WHEREAS under Section 11 of the Municipal Act, 2001, S.O. 2001, c.25, as amended, the Municipal Corporation of the County of Renfrew has the authority to pass by-laws to enter into contracts to construct and maintain County Roads and Bridges;

AND WHEREAS public tenders were requested for the rehabilitation of C001 (Berlanquet Creek Culvert), located on County Road 5 (Stone Road), Township of Admaston/Bromley, and C134 (Campbell Drive Culvert), located on Campbell Drive, Township of McNab/Braeside, under Contract PWC-2024-09 in accordance with County of Renfrew Corporate Policy GA-01 Procurement of Goods and Services;

AND WHEREAS the tender submitted by Clearwater Structures Inc., Ajax, Ontario, was reviewed and accepted by the Operations Committee.

NOW THEREFORE the Council of the Corporation of the County of Renfrew hereby enacts:

1. THAT the Council of the County of Renfrew approve of the awarding of Contract PWC-2024-09 for the rehabilitation of C001 (Berlanquet Creek Cuvlert), located on County Road 5 (Stone Road), Township of Admaston/Bromley, and C134 (Campbell Drive Culvert), located on Campbell Drive, Township of McNab/Braeside, as submitted by Clearwater Structures Inc., Ajax, Ontario, in the amount of $833,656.50, plus applicable taxes.

2. THAT the Warden and Clerk be empowered to do and execute all things, papers and documents necessary to the execution of the said contract.

3. THAT this By-law shall come into force and take effect upon the passing thereof.

READ a first time this 27th day of March 2024.

READ a second time this 27th day of March 2024.

READ a third time and finally passed this 27th day of March 2024.

PETER EMON, WARDEN

GWEN DOMBROSKI, CLERK

COUNTY OF RENFREW

BY-LAW NUMBER

A BY-LAW FOR THE EXECUTION OF CONTRACT PWC-2024-10
REHABILITATION OF COUNTY STRUCTURE C204 (BELLOWES CREEK CULVERT)

WHEREAS under Section 11 of the Municipal Act, 2001, S.O. 2001, c.25, as amended, the Municipal Corporation of the County of Renfrew has the authority to pass by-laws to enter into contracts to construct and maintain County Roads and Bridges;

AND WHEREAS public tenders were requested for the rehabilitation of C204 (Bellowes Creek Culvert), located on County Road 12 (Westmeath Road), approximately 4.5km east of County Road 21 (Beachburg Road), Township of Whitewater Region, under Contract PWC-2024-10 in accordance with County of Renfrew Corporate Policy GA-01 Procurement of Goods and Services;

AND WHEREAS the tender submitted by Premier North Ltd., Huntsville, Ontario, was reviewed and accepted by the Operations Committee.

NOW THEREFORE the Council of the Corporation of the County of Renfrew hereby enacts:

1. THAT the Council of the County of Renfrew approve of the awarding of C204 (Bellowes Creek Culvert), located on County Road 12 (Westmeath Road), approximately 4.5km east of County Road 21 (Beachburg Road), Township of Whitewater Region as submitted by Premier North Ltd., Huntsville, Ontario, in the amount of $963,752, plus applicable taxes.

2. THAT the Warden and Clerk be empowered to do and execute all things, papers and documents necessary to the execution of the said contract.

3. THAT this By-law shall come into force and take effect upon the passing thereof.

READ a first time this 27th day of March 2024.

READ a second time this 27th day of March 2024.

READ a third time and finally passed this 27th day of March 2024.

PETER EMON, WARDEN

GWEN DOMBROSKI, CLERK

OPERATIONS DIVISION REPORT

Prepared by: Richard Bolduc, A.Sc.T., Manager of Operations
Prepared for: Operations Committee
March 5, 2024

INFORMATION

1. **Winter Operations**

Table 1 provides a summary of winter events, material usage and precipitation amounts for the months of November through February. Attached as Appendix OP-I, is a five year summary of the winter events and precipitation amounts since the 2018/2019 winter season.

Table 1

Month	No. of Event Days		Type of Event (days)			Material Used (tonnes)		Precipitation	
	Weekday	Weekend	Snow	Blowing Snow	Freezing Rain	Salt	Sand	Weather Station	Amount (mm)
Nov	10	2	10	0	2	1,685.4	109.4	Petawawa Bancroft	41.2 53.1
Dec	15	7	16	0	6	3,439.6	435.4	Petawawa Bancroft	57.2 75.7
Jan	18	8	19	4	4	4,937.2	1,814.7	Petawawa Bancroft	58.0 85.4
Feb	10	3	11	0	2	1,840.4	500.2	Petawawa Bancroft	19.0 18.5
Totals	**53**	**20**	**56**	**4**	**14**	**11,902.6**	**2,859.7**	Petawawa Bancroft	175.4 232.7

Table 2 outlines the Significant Weather Events declared to date for the 2023/2024 winter season. Staff continues to be ready to respond to winter events as they occur.

Table 2

Declaration Start			Declaration End			Reason
Dec	3	8:30AM	Dec	4	9:30AM	Snow
Jan	9	9:00AM	Jan	10	9:50AM	Snow
Jan	12	9:00AM	Jan	13	5:00PM	Snow
Jan	24	11:00AM	Jan	26	2:30PM	Ice
Feb	15	11:50AM	Feb	16	1:00PM	Snow

2. **Municipal Supply Tender**

In response to a questionnaire circulated to the local municipalities advising of planned tenders and inviting them to participate, the Operations Division received responses from 10 municipalities. The following lists the tenders they wish to participate in:

North Algona Wilberforce	Roadway Signage Steel Sign Posts Pavement Markings
Whitewater Region	Roadway Signage Toxic & Hazardous Weed Spraying
Horton	Manhole and Catch Basin Cleaning
McNab/Braeside	Roadway Signage Pavement Markings Toxic & Hazardous Weed Spraying
Bonnechere Valley	Roadway Signage Steel Sign Posts Pavement Markings
Greater Madawaska	Roadway Signage Steel Sign Posts Pavement Markings
Madawaska Valley	Roadway Signage Steel Sign Posts Pavement Markings
Admaston/Bromley	Manhole & Catch Basin Cleaning Street Sweeping Pavement Markings
Laurentian Hills	Roadway Signage Steel Sign Posts
Arnprior	Roadway Signage Steel Sign Posts

There was additional interest from municipalities in the supply of cold patch, hot mix asphalt, steel guiderails and beams, and winter salt, which the Operations Division will follow-up and assist in the procurement of these items.

3. **Spring Load Restrictions**

County of Renfrew By-law 11-12 is a By-law to Designate a Reduced Load Period on County Roads and pertains to spring load restrictions which may be imposed commencing March 1 and extend to May 31. The County placed advertisements in the local newspapers and provided notifications to the local municipalities to advise the public and commercial haulers that spring load restrictions commenced on March 4, 2024. Staff will be monitoring the progress of the spring breakup to determine whether or not it will be possible to lift road restrictions prior to May 31. The signs indicating the restrictions will be adjusted to reflect any changes to the period of the restrictions.

BY-LAWS

4. Contract PWO-2023-03 – Pavement Marking Contract Extension

Recommendation: THAT the Operations Committee recommends that County Council approve Contract PWO-2023-03 for pavement marking as submitted by Trillium Pavement Marking (TPM), Carleton Place, Ontario, dated March 21, 2023, for an additional year (2024) in the amount of $690,471.23, plus applicable taxes; AND FURTHER THAT County Council adopt a By-law to execute the contract extension.

Background

County Council adopted By-law 57-23, being a By-law for the execution of Contract PWO-2023-03 for Pavement Marking awarding the contract to Trillium Pavement Marking (TPM), Carleton Place, Ontario on April 26, 2023, in the amount of $650,117.40, plus applicable taxes.

Clause TC-19.1 of the Contract contains provisions to permit an extension of the contract for up to four additional one-year periods, subject to satisfactory service, price, terms and conditions. Further, extensions are to be mutually acceptable and subject to a continued requirement for Council and budget approval.

TPM has proposed that the unit prices increase are in alignment with the Consumer Price Index of 2.9%. As a result, there will be an increase in the cost of the work in the amount of $19,459.34, making the estimated value of the County's share of the contract $690,471.23, plus applicable taxes. This figure reflects the actual amount spent in 2023, which is $671,011.89, plus applicable taxes. Staff confirm that there are sufficient funds are included in the 2024 Departmental Safety Devices budget of $798,000 to cover the proposed amount.

To ensure timely submission of paperwork, the contractor has agreed to add a clause regarding Liquidated Damages to the contract of $1,000 per week.

In accordance with the provisions of Policy GA-01, Procurement of Goods and Services, extensions to contracts that have a value greater than $150,000 require the approval of County Council.

The work performed by TPM has been acceptable and staff recommends that the contract be extended for the 2024 season.

Winter Operations Monthly Summary 5-Year Comparison for Committee

Year	Month	No. of Event Days		Type of Event (days)			Material Used (tonnes)		Precipitation (mm)	
		Weekday	Weekend	Snow	Blowing Snow	Freezing Rain	Salt	Sand	Petawawa Station	Bancroft Station
2023	Nov	10	2	10	0	2	1,685.4	109.4	41.2	53.1
2022	Nov	8	2	9	0	5	1,127.5	215.9	31.8	62.1
2021	Nov	7	2	7	0	7	65.6	588.7	41.0	62.2
2020	Nov	8	3	9	0	3	1,749.0	312.0	39.0	86.8
2019	Nov	13	0	9	0	4	1,770.0	49.0	23.5	48.8
2023	Dec	15	7	16	0	6	3,439.6	435.4	57.2	75.7
2022	Dec	16	7	20	4	2	4,792.0	998.9	29.6	35.2
2021	Dec	18	8	19	1	8	5,565.4	1,679.9	55.0	78.9
2020	Dec	18	11	19	0	6	5,227.0	1,359.0	56.0	94.9
2019	Dec	18	8	20	3	7	5,101.0	1,616.0	43.5	68.5
2024	Jan	18	8	19	4	4	4,937.2	1,814.7	58	85.4
2023	Jan	21	6	24	5	7	6,455.5	3,972.2	15.8	26.2
2022	Jan	16	3	17	2	2	4,354.2	2,186.4	33.2	52.2
2021	Jan	15	6	17	2	5	3,322.3	2,121.6	5.0	34.8
2020	Jan	16	6	19	8	7	5,089.0	2,146.0	57.5	127.1
2024	Feb	10	3	11	0	2	1,840.4	500.2	19	18.5
2023	Feb	16	4	20	7	3	5,358.3	1,677.5	11.4	13.6
2022	Feb	16	7	14	12	4	5,803.3	1,724.4	57.4	100.8
2021	Feb	14	6	19	8	3	4,279.3	1,464.2	38.0	58.0
2020	Feb	13	5	15	9	1	3,754.0	1,165.0	52.0	53.8
2023	Mar	10	6	12	8	3	2,309	591.4	63.4	74.2
2022	Mar	11	5	12	5	6	3,022.4	1,205.1	15.4	10.6
2021	Mar	8	1	9	3	3	554.8	703.0	35.0	54.9
2020	Mar	7	0	7	3	0	987.3	325.0	23.4	23.5
2019	Mar	8	7	15	7	3	2,185.0	336.0	46.0	66.0
2023	Apr	2	1	3	0	2	1,109.3	165.5	156.6	139.8
2022	Apr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2021	Apr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2020	Apr	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2019	Apr	3	4	4	0	1	556.0	33.0	130.0	143.0

COUNTY OF RENFREW

BY-LAW NUMBER

A BY-LAW FOR THE EXECUTION OF AN EXTENSION TO CONTRACT PWO-2023-03 FOR PAVEMENT MARKING

WHEREAS under Section 11 of the Municipal Act, 2001, S.O. 2001, c.25, as amended, the Municipal Corporation of the County of Renfrew has the authority to pass by-laws to enter into contracts to construct and maintain County Roads and Bridges;

AND WHEREAS public tenders were requested for pavement marking under Contract PWO-2023-03 in accordance with County of Renfrew Corporate Policy GA-01 Procurement of Goods and Services;

AND WHEREAS By-law 57-23 was adopted April 26, 2023 awarding the tender to Trillium Pavement Marking, Carleton Place, Ontario;

AND WHEREAS Clause-19.1 of Contract PWO-2023-03, contains provisions to permit an extension of the contract for up to four additional one-year periods subject to satisfactory service, price, terms and conditions.

NOW THEREFORE the Council for the Corporation of the County of Renfrew hereby enacts:

1. THAT the Council of the County of Renfrew approve the extension of Contract PWO-2023-03 for pavement marking for an additional year (2024), as submitted by Trillium Pavement Marking, Carleton Place, Ontario in the amount of $690,471.23, plus applicable taxes.

2. THAT the Warden and Clerk be empowered to do and execute all things, papers and documents necessary for the execution of the said Contract.

3. THAT this By-law shall come into force and take effect upon the passing thereof.

READ a first time this 27th day of March 2024.

READ a second time this 27th day of March 2024.

READ a third time this 27th day of March 2024.

PETER EMON, WARDEN

GWEN DOMBROSKI, CLERK