

January 18, 2022

Village of Perth-Andover
1131 West Riverside Drive
Perth-Andover, NB, E7H 5G5
Attention: Dan Dionne

Subject: **Perth-Andover Crosswalk Review**
Englobe reference: 2112487.000

1 Introduction

As part of the Village of Perth-Andover’s goal to become a more walkable community, the Village engaged Englobe Corp. to conduct an engineering assessment of 7 existing crosswalks and 5 “areas of concern” within the Village, as shown in Figure 1. The scope of the assessment varied depending on the location, potentially including reviewing the need for a crosswalk, recommending crosswalk alignments, recommending crosswalk treatments, and identifying sidewalk/trail infrastructure that could support improved crosswalk connections.

Figure 1: Study Locations



This study was largely a desktop review of the locations identified by the Village. Each site was visited on December 1, 2021 to take photos and visually inspect each location; however, traffic counts, pedestrian counts, and sight distances were not collected. Traffic volumes on the Provincial designated routes (Routes 105, 109, and 130) were obtained from available DTI data as required.

2 Crosswalk Evaluation Guidelines

The best practices for evaluating the need for crosswalk infrastructure in Canada are summarized in the Pedestrian Crossing Control Guide published by the Transportation Association of Canada. These guidelines outline criteria for both identifying candidate locations for crosswalks and determining the level of infrastructure required. The criteria used to determine the need for a crosswalk are:

- Pedestrian traffic volume;
- Vehicle traffic volume;
- Pedestrian demographics;
- Proximity to other crosswalks; and
- Need for system connectivity.

Once a need has been identified, the criteria used to evaluate the level of crossing infrastructure required are:

- Vehicle traffic volume;
- Posted speed limit; and
- Number/configuration of lanes.

3 Existing Crosswalk Evaluation

3.1 Hospital

This midblock crosswalk on Woodland Hill Road connects St. Joseph’s Hospital to a parking lot for the hospital. The crosswalk is marked with ground mounted signs (RA-4) and twin parallel line crosswalk markings with hatched lines between them, as shown in Figure 14 in Appendix A.

Figure 2: Hospital Crosswalk

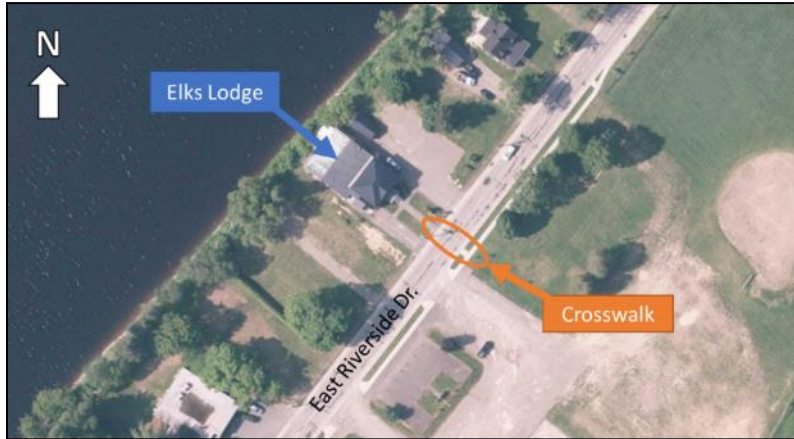


Based on the characteristics of the area, it does not appear that a marked crosswalk at the Hospital is merited. While the crosswalk sits on a clear pedestrian desire line (from the parking lot to the Hospital), conflicting vehicle volumes along Woodland Hill Road are expected to be less than 1,500 per day (the TAC threshold) and a crosswalk in this location does not provide a “system connectivity” benefit. **We recommend that the Hospital could crosswalk be removed.**

3.2 Elks Lodge

This midblock crosswalk on East Riverside Drive connects the Elks Lodge to a parking lot on the opposite side of the roadway. The crosswalk is marked with ground mounted signs (RA-4) and twin parallel line crosswalk markings with hatched lines between them, as shown in Figure 15 in Appendix A.

Figure 3: Elks Lodge Crosswalk

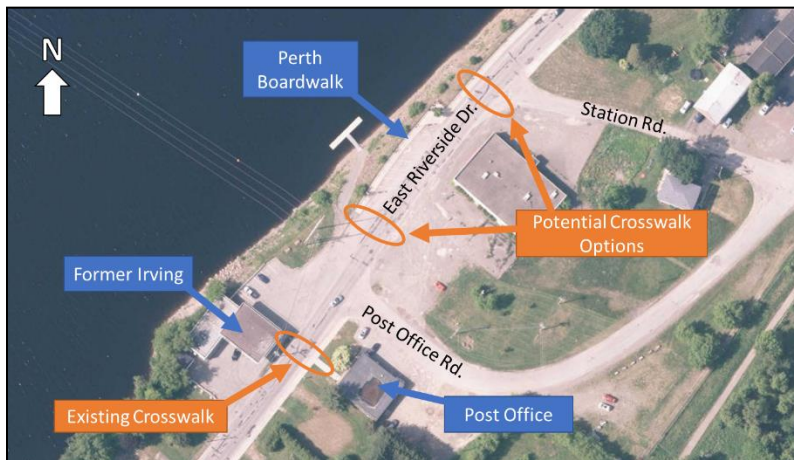


This location does not merit a marked crosswalk due to the low and infrequent volume of pedestrians who would cross the road at this location. **We recommend that the Elks Lodge crosswalk be removed.**

3.3 Former Irving

This midblock crosswalk on East Riverside Drive connects the former Irving gas station to the post office on the opposite side of the roadway. The crosswalk is marked with ground mounted signs (RA-4) and twin parallel line crosswalk markings with hatched lines between them, as shown in Figure 16 in Appendix A.

Figure 4: Former Irving Crosswalk



While the Irving location has closed, a crosswalk in this vicinity is still valuable to the community as it provides access to the south end of the Perth Boardwalk. To better facilitate this connectivity, **we recommend that the existing crosswalk be removed and a new crosswalk be installed at either the south**

end of the Perth Boardwalk (approximately 50m to the north) or at Station Road (approximately 100m to the north). The new crosswalk should have ground mounted signs (RA-4), zebra crosswalk markings, and curb drops on either end. Further, the Village should consider installing new sidewalk on the east side of the roadway between Station Road and Post Office Street to connect the existing sidewalks and to provide a more apparent endpoint for the new crosswalk.

3.4 Bridge - Perth

This intersection crosswalk crosses East Riverside Drive on the south leg of the intersection and connects the sidewalk along the east side of the roadway to the Perth Boardwalk (to the south of the Bridge) and to the sidewalk that continues along the bridge into Andover. The crosswalk is marked with twin parallel line crosswalk markings with hatched lines between them and the intersection has stop signs on all three approaches, as shown in Figure 17 in Appendix A.

Figure 5: Bridge - Perth Crosswalk



The location of this crosswalk is integral to connecting Perth to Andover and is conveniently located at an all-way stop controlled intersection. Ideally there would also be a crosswalk connecting the Perth Boardwalk across the west leg of the intersection; however, the large crossing distance due to the intersection geometry makes this impractical, particularly considering that the Province is exploring the replacement of the existing bridge. As a result, **we recommend that the Bridge - Perth crosswalk be maintained in its existing location with zebra markings.**

3.5 Bridge - Andover

This intersection has three marked crosswalks: one across West Riverside Drive on the south leg, one across Route 109 on the west leg, and one across the right turn channel. These crosswalks connect the sidewalk along the Perth-Andover bridge to the sidewalks that continue along the west side of West Riverside Drive to the north of the intersection and along the north side of Route 109 to the west of the intersection. These crosswalks are marked with twin parallel line crosswalk markings with hatched lines between them and the intersection has stop signs on all four approaches, as shown in Figure 18 in Appendix A.

Figure 6: Bridge - Andover Crosswalk



Much like the crosswalks on the Perth side of the bridge, these crosswalks provide important system connectivity between the Perth and Andover sides of the Saint John River. As such, **we recommend that the Bridge - Andover crosswalks be maintained in their existing locations with zebra markings**. Additional improvements could be made to the intersection to improve pedestrian accessibility, including a paved pedestrian waiting area on the southwest corner of the intersection and converting the southbound right turn channel into a smart channel; however, with the potential replacement and realignment of the bridge these may not be sensible solutions for the long term.

3.6 Village Office

This midblock crosswalk on West Riverside Drive bridges the sidewalk along the roadway which switches sides near the Village Office. The crosswalk is marked with twin parallel line crosswalk markings with hatched lines between them, as shown in Figure 19 in Appendix A.

Figure 7: Village Office Crosswalk



The location of the Village Office crosswalk is important for connecting the existing sidewalk along West Riverside Drive. **We recommend that the Village Office crosswalk be maintained in its current location, with the addition of zebra markings and ground mounted signs (RA-4) to better delineate the crosswalk.**

3.7 School Street

The school street crosswalk is at the intersection where School Street makes a 90 degree turn and adjoins with the access to Southern Victoria High School and Andover Elementary School. The crosswalk runs across the west leg of the intersection and is marked with ground mounted signs (RA-4) and twin parallel line crosswalk markings with hatched lines between them. The southbound approach to the intersection has a stop sign while the other two approaches have the right-of-way. Lastly, the area is in a school zone marked with a square variant of the school zone sign (WC-1) and a posted speed limit of 20 km/h along the length of School Street (from West Riverside Drive to Fort Road) , as shown in Figure 20 in Appendix A.

Figure 8: School Street Crosswalk



While the location of the crosswalk is important for providing safe access to/from the schools and community facilities in the area, **we recommend that the following improvements be made to the area to improve the safety of the crosswalk:**

- The school zone signage should be upgraded to follow TAC guidelines, including replacing the existing school zone signs (WC-1), using school crosswalk signs (RA-3) on both ends of the crosswalk, and using zebra markings instead of parallel crosswalk markings.
- The crossing distance should be made shorter by installing a curb extension on the northwest corner.
- A curb and raised buffer should be installed around the parking area for the pool to better delineate the intersection and reduce corner cutting by drivers.

4 Area of Concern Review

4.1 Perth Boardwalk

The Perth Boardwalk to the north of the bridge, along Perth Main Street, is a 310 m stretch of sidewalk lined with park benches, picnic tables, and scenic views of the Saint John River. Currently, there are no crosswalks that provide access to the boardwalk. We were asked to review the need for crosswalks to provide access to the boardwalk and to recommend where they should be located. A photo of the Perth Boardwalk area is shown in Figure 21 in Appendix A.

There are two main reasons why pedestrians would cross Perth Main Street in the vicinity of the Perth Boardwalk: to get to/from their parked car on the west side of the roadway and to access the boardwalk for recreational purposes. People crossing from their car to a store, or vice versa, are more likely to cross at their convenience than detour to a crosswalk, whereas recreational users are more likely to have a walking route that could incorporate crosswalks by design.

Following the above discussion, **we would recommend that crosswalks be added at the north end of the boardwalk and at the intersection with Station Road** as shown in Figure 9. A crosswalk at the intersection with the bridge is not recommended at this time as per the previous discussion of that intersection. It is recommended that both crosswalks have curb extensions installed to reduce crossing distances, zebra markings, and ground mounted signs (RA-4).

Figure 9: Perth Boardwalk Crosswalk Options



4.2 F. Tribe Road

F. Tribe Road, between Fort Road and Route 109, has seen significant commercial development on the east side over the last decade with more planned development to come. The roadway currently has a sidewalk on the east side with no crosswalk connections to reach the west side. We were asked to review how safety could be improved for pedestrians crossing the roadway. Site photos of the area are shown in Figure 22 through Figure 24 in Appendix A.

In terms of crossing opportunities, **we recommend installing crosswalks at both driveway accesses to the plaza on the west side** as shown in Figure 10. While pedestrian activity was not observed at the site during our site visit, crosswalks at these driveways should be on the natural desire lines for pedestrians, which is where they would naturally cross the roadway to access the development regardless of crosswalk location. The crosswalks at each driveway should have ground mounted signs (RA-4), pedestrian crosswalk ahead signs (WC-2), and zebra markings.

Figure 10: F. Tribe Road Crosswalk Options



Maintaining reasonable vehicle speeds is also a priority for ensuring pedestrian safety. This section of F. Tribe Road is a part of the Route 109 alignment that connects the Trans Canada Highway (Route 2) to the interior of the province. The posted speed limit is 50 km/h, which is reasonable for the type of development in the area but is lower than what many drivers would have been used to from travelling along Route 2 or the other Provincial or rural highways in the area.

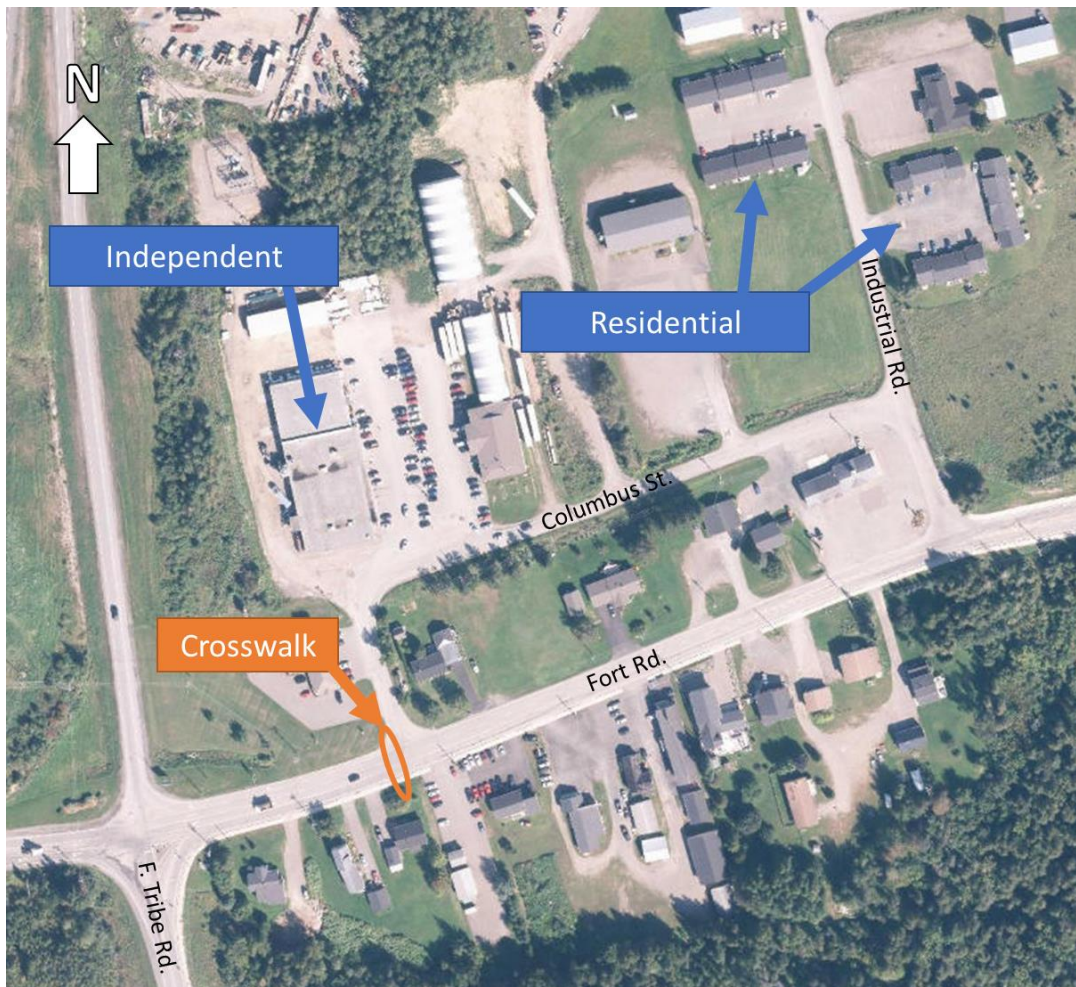
Lastly, we were asked to comment on the suitability of the F. Tribe Road and Route 109 intersection for all-way stop control, with the main justification being to help slow vehicles and control traffic along F. Tribe Road. All-way stop control is not an effective traffic calming measure, as detailed in the *Canadian Guide to Traffic Calming (Second Edition)*. Where not warranted by traffic patterns, installation of all-way stop intersections can lead to challenges with driver compliance, increased vehicle-vehicle and vehicle-pedestrian conflicts, and an increase in mid-block speeds. Mid-block speeds have a demonstrated tendency to increase as drivers attempt to make up the time lost at the intersection. Additionally, unwarranted all-way stop intersections can give pedestrians a false sense of security as drivers tend to roll through the intersection instead of coming to a full stop.

4.3 Fort Road @ Columbus Street

Columbus Street (near the Independent Grocer) is a popular pedestrian crossing location for people moving between the commercial areas by the Independent and along F. Tribe Road. One of the generators for this traffic is multi-family residential units along Industrial Drive that are home to temporary workers who help serve local industries. A photo of the area is shown in Figure 25 of Appendix A.

To make drivers more aware of potential pedestrian crossings in the area, **we would recommend that a crosswalk be installed on the west leg of this intersection**, as shown in Figure 11. While sight distances were not explicitly evaluated during our site visit, the area is relatively flat with no major view obstructions and is about 100 m east of the intersection of Fort Road and F. Tribe Road. Installing a crossing at this location is preferred to connecting to one at the intersection of Fort Road and F. Tribe Road to align with the existing infrastructure and likely desire line of pedestrians. A crosswalk at this location should have ground mounted signs (RA-4), pedestrian crosswalk ahead signs (WC-2), and zebra markings.

Figure 11: Fort Road @ Columbus Drive Crosswalk Option



Sidewalk to connect the multi-family residential units on Industrial Park to this crosswalk (via Columbus Street) should be installed in accordance with the Village’s Sidewalk Policy.

4.4 Fort Road @ Nissen Street

Nissen Street is the access road to Perth-Andover Middle School and has sidewalk along one side to provide a safe space for students to walk to school. The school is separated from the main residential area of the Village by Fort Road, which does not have any pedestrian crosswalks to facilitate students walking to school. This situation was identified as a concern due to the risk to students crossing the road primarily when it is dark and/or when there is fog in the morning. Photos of the area are shown in Figure 26 and Figure 27 in Appendix A.

Sight distances were not explicitly evaluated during our site visit, but based on the photographs taken during the site visit and collecting measurements from Google Earth it appears that there is sufficient stopping sight distance and decision sight distance for a crosswalk across either the east leg or west leg of the intersection for a 50 km/h roadway¹.

Installing a crosswalk at the west leg of the intersection provides the best connectivity to the existing sidewalk on Nissen Street but has a long crossing distance of about 16 m. A crosswalk at the east leg has a shorter crossing distance of about 11 m but a second crosswalk would be required to connect to the existing sidewalk on Nissen Street, either at the intersection or further along Nissen Street. These alternatives are illustrated in the figure below; note that the additional crosswalk on Nissen Street is shown about 90 m from the intersection to provide adequate sight distances. **We would recommend that one of these two crosswalk alternatives be implemented to facilitate students walking to school.** At a minimum the crosswalks at Fort Road/Nissen Street should have ground mounted signs (RA-4), pedestrian crosswalk ahead signs (WC-2), and zebra markings, while any crosswalks along further along Nissen Street would require school crosswalk signs (RA-3) and zebra markings.

Figure 12: Fort Road @ Nissen Street Crosswalk Options



Since the primary concern was for students crossing in poor visibility conditions, a typical ground mounted crosswalk sign setup may not provide a sufficiently safe crossing environment for students. **The Village should consider installing a Rapid Rectangular Flashing Beacon (RRFB) crosswalk at this location** to provide additional visual guidance to drivers when the crosswalk is being used by pedestrians. A typical RRFB installation costs in the ballpark of \$20,000 to \$25,000 including all hardware, lights, batteries,

¹ Assuming a design speed of 60 km/h, the required stopping sight distance is 85 m and the required decision sight distance for a stop on a rural roadway is 95 m.

mounting poles, signs, etc. An example of an RRFB setup is shown in Figure 13. Note that an RRFB would not be required at the crosswalk on Nissen Street shown in Figure 12.

Figure 13: Example RRFB Setup



We trust that the enclosed is to your satisfaction. If, however, additional information should be required, please communicate with the undersigned.

Yours very truly,

Englobe Corp.

A handwritten signature in blue ink, appearing to read 'Andrew Northmore'.

Andrew Northmore, Ph.D., P.Eng., RSP1
Transportation Engineer

APPENDICES

Appendix A Site Photos

Appendix A Site Photos



Figure 14: Hospital Crosswalk - Eastbound View



Figure 15: Elks Lodge Crosswalk - Northbound View



Figure 16: Irving Crosswalk - Northbound View



Figure 17: Bride - Perth Crosswalk - Northwest View



Figure 18: Bridge - Andover Crosswalk - Southeast View



Figure 19: Village Office Crosswalk - Northbound View



Figure 20: School Street Crosswalk - Northwest View



Figure 21: Perth Boardwalk - Southbound View @ Station Road



Figure 22: F. Tribe Road North Driveway - Northbound View



Figure 23: F. Tribe Road North Driveway - Southbound View



Figure 24: F. Tribe Road South Driveway - Southbound View



Figure 25: Fort Road @ Columbus Street - Southeast View



Figure 26: Fort Road @ Nissen Street - Eastbound View



Figure 27: Fort Road @ Nissen Street - Westbound View

