



The Corporation of the Town of Tecumseh

Public Works & Environmental Services

To: Mayor and Members of Council

From: Phil Bartnik, Director Public Works & Environmental Services

Date to Council: November 12, 2019

Report Number: PWES-2019-48

Subject: Brighton Road Traffic Study

Recommendations

It is recommended:

That Report No. PWES-2019-48 Brighton Road Traffic Study **be received;**

And that the recommendations outlined in the report prepared by Dillon Consulting Limited titled “Brighton Road Corridor Review – Review of Intersection Traffic Control Operations, October 2019” **be incorporated** within future Roads operational budgets to address traffic operations within the Brighton Road corridor.

Background

A Municipal Class Environmental Assessment (Class EA) was completed in July 2006 for improvements to Brighton Road, Aloha Drive and Derby Road. The Class EA report, prepared by Dillon Consulting Limited (Dillon), identified a preferred solution to address traffic volumes and speeds, as well as to improve storm drainage along Brighton Road.

As part of the preferred solution, a roundabout at Brighton Road and Tecumseh Road and traffic circles on Brighton Road at Southwind Crescent and Aloha Drive were constructed to serve as both traffic calming and traffic control measures.

Following the introduction of the roundabout and traffic circles along Brighton Road in 2008 and 2009, residents expressed concerns that the roundabout and traffic circles appeared to be having limited influence on driver behaviour, and that there appeared to be a lack of understanding by many motorists of the proper use and function of these roadway features.

Ourston Roundabout Engineering (Ourston), a North American leader in roundabout engineering, provided a third party review of the roundabout and traffic circles along Brighton Road in 2011.

Following Ourston's review, the Town implemented the following improvements:

- a number of enhancements to the characteristics of the roundabout and traffic circles (i.e. raising the truck apron; widening and enhancing the painted yield lines, etc.);
- improved signage for approaching motorists; and
- a public awareness program regarding the proper use of roundabouts and traffic circles.

Despite these improvements, Administration continued to receive concerns from residents and commuters respecting the traffic operations within the Brighton Road corridor i.e. the functionality and operating characteristics of the two traffic circles; overall driver behaviour; and operating speeds.

At the December 11, 2018 Regular Meeting of Council, Council approved recommendations of Report No. PWES-2018-08 titled "2019-2023 Public Works & Environmental Services Five Year Capital Works Plan" that authorized Administration to proceed with the 2019 capital works projects including the Brighton Road Traffic Study (Motion: RCM-361/18).

Dillon was retained to complete this project to undertake a traffic engineering assessment for the Brighton Road corridor (including the intersecting roads).

Comments

The report titled "Brighton Road Corridor Review – Review of Intersection Traffic Control Operations, October 2019," outlines the results of the traffic operations analysis relating to the existing configuration of Brighton Road, including an evaluation of alternative solutions and recommendations. A copy of Dillon's report is appended as Attachment No. 1.

Existing Road Configuration

For the purpose of this administrative report, and as referenced throughout Dillon's report, the portion of Tecumseh Road located east of Brighton Road will be referred to as "Old Tecumseh Road" and the segment of Tecumseh Road located west of Brighton Road will be referred to as "Tecumseh Road".

In accordance with the Town of Tecumseh Transportation Master Plan, road classification guides planning and operating decisions related to road design, land development, access management, road maintenance and traffic operations.

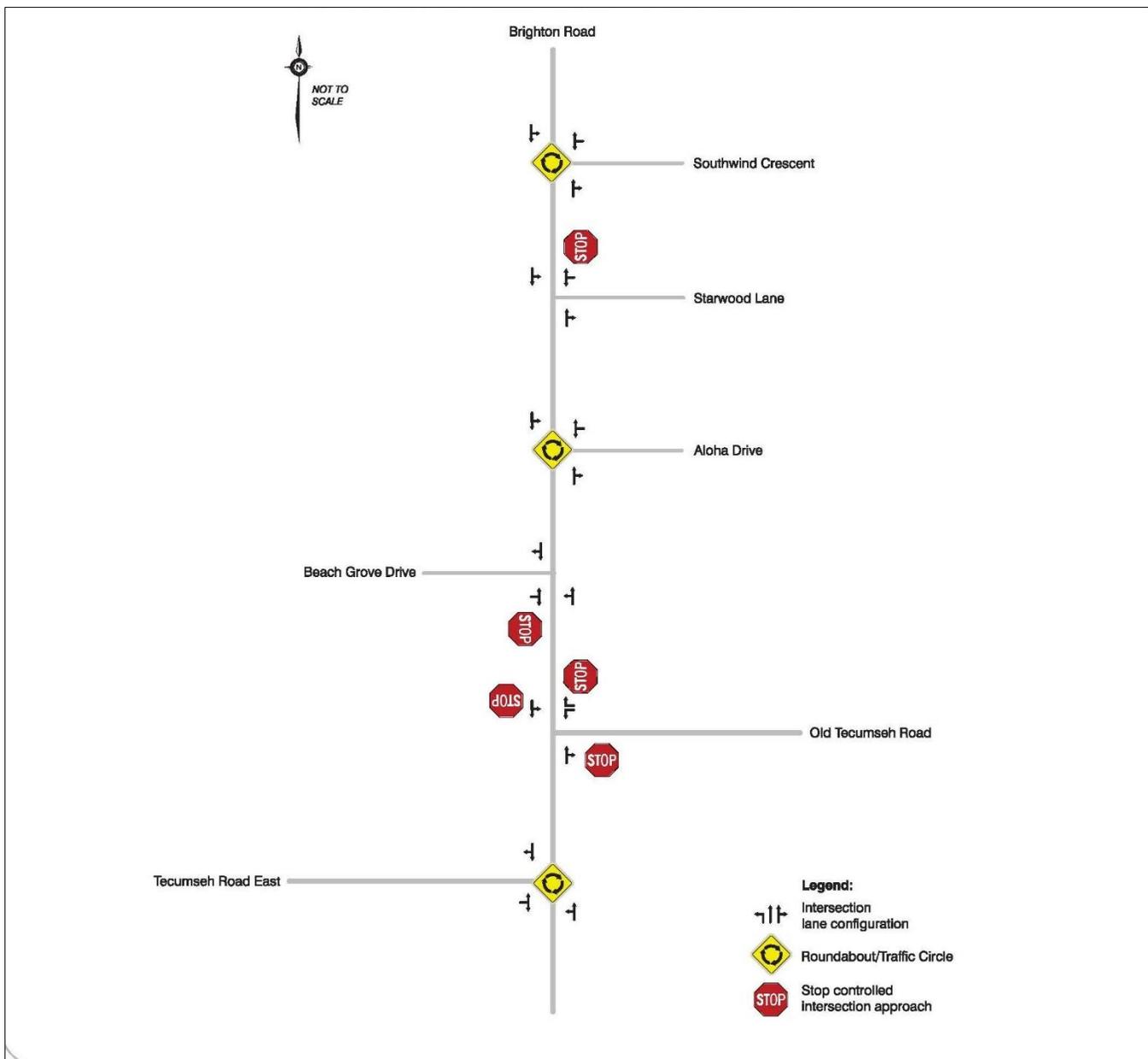
Old Tecumseh Road and Tecumseh Road are classified as Minor Arterials and are key in the roadway network connecting to Brighton Road.

Brighton Road is classified as a Minor Arterial from the southern border with the Town of Lakeshore (at the VIA Rail tracks) to Old Tecumseh Road. Northward from Old Tecumseh Road to Riverside Drive, Brighton Road is classified as a Collector.

Brighton Road is a two-lane roadway with no turning lanes present at any intersection along its entire length. There are currently several forms of traffic control, including the following:

- a three-legged roundabout controls the intersection of Tecumseh Road and Brighton Road;
- an all-way stop control (AWSC) is present at the three legged intersection of Old Tecumseh Road and Brighton Road;
- two traffic circles on Brighton Road at Aloha Drive and Southwind Crescent;
- remaining intersections are controlled with a two-way stop control (TWSC) with traffic on Brighton Road having the right-of-way.

Figure 1: Current Intersection Controls along Brighton Road



Pedestrian/cycling facilities are provided along Brighton Road for the majority of the corridor's length. From the roundabout with Tecumseh Road East north, a concrete sidewalk is found on the west side of Brighton road, while an asphalt multi-use pathway is found on the east side. South of the roundabout, the concrete sidewalk and asphalt pathway switch sides. The multi-use pathway terminates approximately 75 metres south of the roundabout, while the sidewalk on the east side of Brighton Road transitions to an at-grade asphalt pathway that crosses over the VIA railway line into the Town of Lakeshore.

Tecumseh Transit operates its community bus service in the northbound direction (once an hour) along Brighton Road with a bus stop at the intersection of Brighton Road and Old Tecumseh Road. This service operates between 6:00 AM and 6:00 PM from Monday to Saturday.

Public Engagement

Public feedback from the local community was solicited regarding Brighton Road and the operations of the roundabout, traffic circles and the corridor as part of the study.

For the month of April in 2019 an on-line survey was open to the public for comment. Postcards were distributed to approximately 375 properties within the general vicinity of the Brighton Road corridor promoting public participation and the information was also posted on the Town's website and social media accounts. A total of 285 responses to the survey were received.

On Thursday, July 11, 2019, an Open House was held in Council Chambers at Town Hall from 3:00 PM to 5:00 PM and from 6:00 PM to 8:00 PM. A total of 24 attendees signed in and 14 comment forms were completed representing nine properties (four of which are located directly on Brighton Road). The completed sign-in sheets and comment forms are located in Appendix C of Dillon's report (see Attachment 1).

Council Presentation

The Town's consultant, Dillon Consulting Limited, will be in attendance at the November 12, 2019 Special Meeting of Council to make a presentation that summarizes their report, details the on-site review, describes the data analysis and identifies the recommended traffic enhancements to the traffic control operations along the Brighton Road corridor. A copy of the presentation is appended as Attachment 2.

Traffic Analysis

In May 2019, Dillon completed field data collection and an on-site review of operations. This included counting turning movements at the traffic circles, roundabout and stop controls measuring vehicle speeds at three locations along Brighton Road, and performing a walkthrough along the entire corridor during both the AM and PM peak hours (AM peak hours are between 7:00 AM to 9:00 AM and PM peak hours are between 4:00 PM to 6:00 PM).

Tables 1 and 2 outline the volume-to-capacity (v/c) ratio, level of service (LOS)¹, average delay and 95th percentile queue at these intersections. The results were reviewed to identify any critical movements, as defined as the following:

- any lane/movement with a v/c ratio of 0.85 or higher;
- any movement operating at LOS E or F; and
- any turning movement with a 95th percentile queue exceeding the available storage.

The highest possible rating is LOS ‘A’. LOS ‘A’ to ‘D’ presents the acceptable operating conditions, while LOS ‘E’ reflects congested conditions and LOS ‘F’ reflects failure (i.e. long delays).

Traffic operations along the Brighton Road corridor at the roundabout with Tecumseh Road and the all-way-stop control intersection with Old Tecumseh Road were analyzed based on existing and forecast volumes. For analysis purposes, a conservative 1.5% growth rate was utilized to forecast increased traffic volumes through to a 10-year horizon (2029).

Table 1: Brighton Road and Tecumseh Road – Roundabout

| Scenario | Movement | Weekday AM peak hour | | | | Weekday PM peak hour | | | |
|-----------------|----------------|----------------------|----------|---------------|-----------------------------------|----------------------|----------|---------------|-----------------------------------|
| | | v/c | LOS | Delay (s/veh) | 95 th %ile queue (veh) | v/c | LOS | Delay (s/veh) | 95 th %ile queue (veh) |
| Existing (2019) | EB approach | 0.23 | A | 5.2 | 1 | 0.29 | A | 5.6 | 1 |
| | NB approach | 0.28 | A | 5.8 | 1 | 0.25 | A | 5.6 | 1 |
| | SB approach | 0.35 | A | 6.8 | 2 | 0.26 | A | 5.4 | 1 |
| | Overall | — | A | 6.0 | — | — | A | 5.5 | — |
| Forecast (2029) | EB approach | 0.27 | A | 5.8 | 1 | 0.34 | A | 6.3 | 2 |
| | NB approach | 0.33 | A | 6.5 | 1 | 0.32 | A | 6.5 | 1 |
| | SB approach | 0.42 | A | 7.9 | 2 | 0.31 | A | 6.0 | 1 |
| | Overall | — | A | 6.9 | — | — | A | 6.3 | — |

In both the AM and PM peak hours under existing and forecast conditions, the roundabout at Brighton Road and Tecumseh Road operates in an excellent manner with little or no delay, queuing or congestion.

¹ Level of Service (LOS), applied to an intersection, is a measure qualifying the amount of delay experienced by motorists, expressed either for specific turning movements or for the intersection as a whole. A more detailed explanation of LOS is provided in Appendix E of Dillon’s report.

Table 2: Brighton Road and Old Tecumseh Road – All-Way Stop

| Scenario | Movement | Weekday AM peak hour | | | | Weekday PM peak hour | | | |
|-----------------|----------------|----------------------|----------|---------------|-----------------------------------|----------------------|----------|---------------|-----------------------------------|
| | | v/c | LOS | Delay (s/veh) | 95 th %ile queue (veh) | v/c | LOS | Delay (s/veh) | 95 th %ile queue (veh) |
| Existing (2019) | NB approach | 0.29 | B | 10.4 | 1 | 0.60 | C | 15.6 | 4 |
| | WB left | 0.41 | B | 13.2 | 2 | 0.49 | C | 16.1 | 3 |
| | WB right | 0.27 | A | 9.7 | 1 | 0.26 | B | 10.5 | 1 |
| | SB approach | 0.38 | B | 11.8 | 2 | 0.52 | C | 15.3 | 3 |
| | Overall | — | B | 11.4 | — | — | B | 14.9 | — |
| Forecast (2029) | NB approach | 0.36 | B | 11.6 | 2 | 0.76 | C | 24.3 | 7 |
| | WB left | 0.50 | C | 15.7 | 3 | 0.61 | C | 21.1 | 4 |
| | WB right | 0.34 | B | 10.8 | 2 | 0.33 | B | 12.0 | 1 |
| | SB approach | 0.46 | B | 13.5 | 2 | 0.67 | C | 21.1 | 5 |
| | Overall | — | B | 13.1 | — | — | C | 21.0 | — |

In both the weekday AM and PM peak hours under both existing and forecast conditions, the all-way stop control intersection at Brighton Road and Old Tecumseh Road operates in a good manner. In both peak hours under existing conditions, the intersection operates at LOS B overall, with a 95th percentile queue of four vehicles (in the northbound direction during the PM peak hour). The delay at all approaches would be under 20 seconds per vehicle. Under forecast conditions, the intersection is anticipated to operate at LOS C overall in the PM peak hour, with a 95th percentile queue of seven vehicles (in the northbound direction).

The operations are forecast to be acceptable through to 2029; as such, no traffic modifications are recommended at either intersection.

Traffic Speed

Traffic speed data was collected (via pneumatic tubes) at three locations along Brighton Road over a 48-hour period in early May 2019:

1. Brighton Road south of Tecumseh Road;
2. Brighton Road between Aloha Drive and Starwood Lane; and
3. Brighton Road north of Southwind Crescent.

Additionally, the Town deployed the speed trailer for two weeks in June 2019 at Brighton Road north of Southwind Crescent.

The speed data recorded by the pneumatic tubes and speed trailer are summarized in Table 3.

Table 3: Traffic Data

| Location | Measuring Device | Average Daily Traffic | Posted Speed Limit | Average Speed | 85 th Percentile speed ² |
|---|------------------|-----------------------|--------------------|---------------|--|
| Brighton Road south of Tecumseh Road East | Pneumatic Tubes | 4,586 | 50 km/h | 53 km/h | 68 km/h |
| Brighton Road between Aloha Drive and Starwood Lane | Pneumatic Tubes | 4,573 | 50 km/h | 44 km/h | 50 km/h |
| Brighton Road north of Southwind Crescent | Pneumatic Tubes | 4,378 | 50 km/h | 51 km/h | 56 km/h |
| Brighton Road north of Southwind Crescent | Speed Trailer | 2,361 ³ | 50 km/h | 45 km/h | 50 km/h |

The 85th percentile speed (68 km/h) recorded at Brighton Road south of Tecumseh Road (south of the roundabout) is significantly over the posted speed limit of 50 km/h.

The 85th percentile recorded by the pneumatic tubes and speed trailer indicates that there is not a speeding issue on Brighton Road from the roundabout at Tecumseh Road, north to Riverside Drive.

On-site Observations

On Thursday, May 9, 2019, Dillon staff conducted an on-site review along the Brighton Road corridor during the AM peak and PM peak hours. During the walkthrough, Dillon staff recorded observations regarding traffic, the multi-use pathway, the raised islands, the Roundabout with Tecumseh Road, the All-way stop with Old Tecumseh Road, and the traffic circles. Further details on Dillon’s on-site review are included within the attached report – Attachment No. 1.

Recommendations

Dillon provided a number of recommendations to improve the traffic control operations along the Brighton Road corridor based on the following:

- Review of the public feedback received from the April 2019 on-line survey;

² The 85th percentile speed is the speed at which 85% of all measured traffic is traveling at or below

³ This value measured northbound traffic only. Speed data was collected farther south between Aloha Drive and Starwood Lane.

- Comments received at the July 11, 2019 Community Open House; and
- Field data analysis and an on-site review (i.e. turning movements, vehicular speed, and an on-site review along Brighton Road).

The suggested improvements are provided below.

1. Multi-use Pathway

- Level out and better define the location of the multi-use pathway on the east side of Brighton Road where it crosses over the commercial access off Brighton Road (the commercial property located at 14306 Tecumseh Road), i.e. the pathway asphalt surface should be continuous with the hard surface of the driveway access on either side of the pathway.
- Where the multi-use pathway crosses a side street that is stop-controlled, the pathway users should be granted the right-of-way. The stop sign paddles on the pathway should therefore be removed.
- Introduce pavement markings and signage in accordance to OTM Book 18 to have a mixed pedestrian and cyclist crossrides at locations where the multi-use pathway crosses a side street.
- Introduce 'Shared Pathway' signage and/or markings to highlight the pathway's multi-modal use.
- Determine if there are opportunities to extend the paved multi-use pathway farther south to the Town of Tecumseh limits along the west side of Brighton Road to the VIA Rail Tracks.

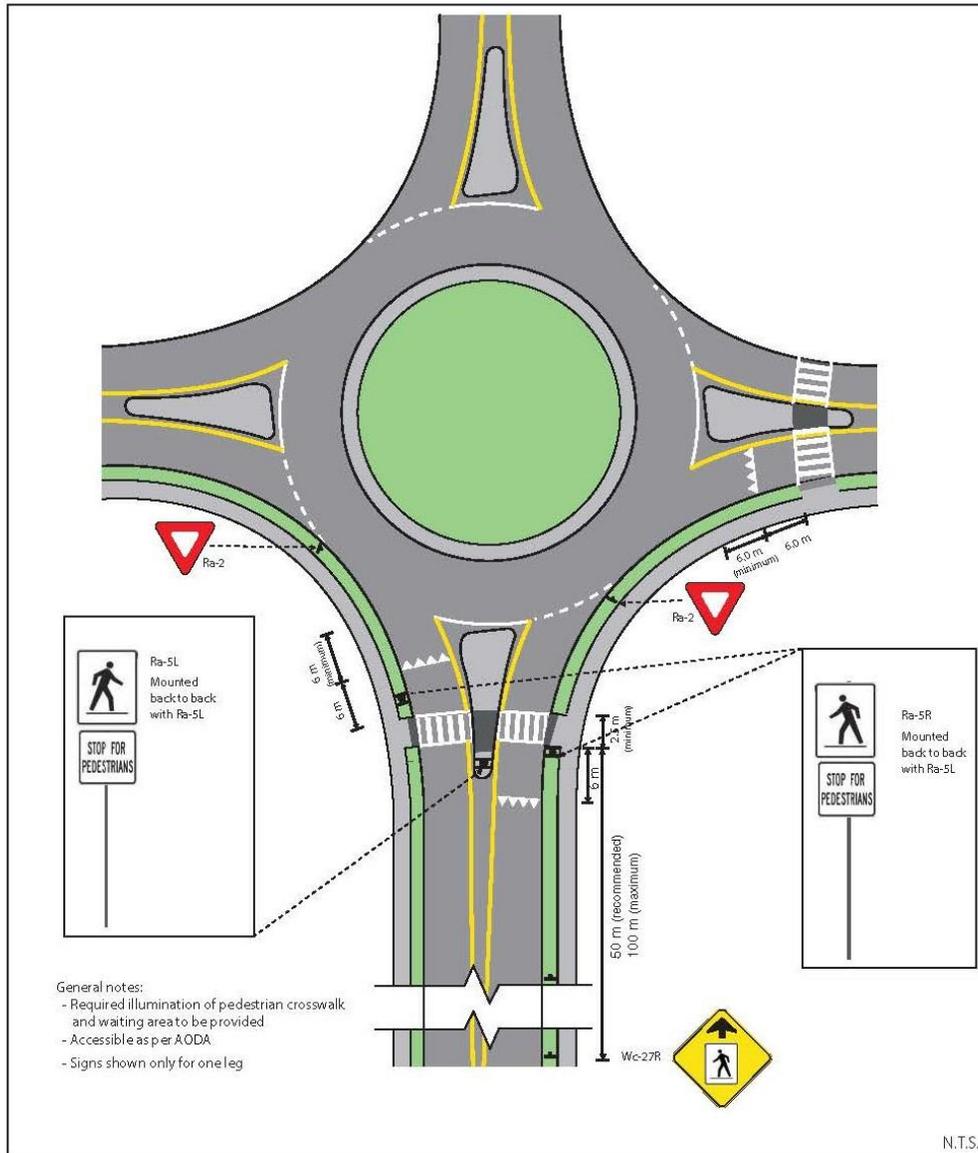
2. Raised Islands

- Raised islands can be retained – no modifications are required.

3. Roundabout with Tecumseh Road

- Enhance the pedestrian crossovers across all legs to give pedestrians the right-of-way. The south leg could be considered to be a shared bicycle/pedestrian crossride, as the asphalt multi-use pathway crosses Brighton Road at this intersection.

Figure 2: Pedestrian Crossover – Single-Lane Roundabout



- Consider painting/stripping a solid yellow line around the edge of the truck apron to better delineate the edge of the drive aisle.
- Use different colouring/surfacing between truck apron and the drive aisle to enhance visibility between the two areas.

4. All-Way Stop with Old Tecumseh Road

- Replace the Wa-8 Checkerboard sign with a Wa-8LR Checkerboard sign as westbound traffic on Old Tecumseh Road is permitted to turn both right and left onto Brighton Road.

5. Traffic Circles

The traffic circles have a positive impact on reducing the overall speeds within this segment of Brighton Road. However, feedback from the on-line survey and at the community open house indicate that respondents were split with the presence of the traffic circles, largely due to the behaviour of some motorists at the traffic circles. Nevertheless, traffic circles are seen as effective in reducing overall vehicle speeds and with several improvements, increased safety for all modes can be provided.

It is therefore recommended to retain the two traffic circles but provide the following minor enhancements:

- Enhance and introduce durable pavement markings along all legs, including centrelines, yield lines and pedestrian crossovers on the north and south legs;
- Introduce a shared bicycle and pedestrian crossing on the east leg, linking the multi-use pathway together;
- Increase the advisory speed tab from 10 km/h to 30 km/h on the northbound and southbound approaches;
- Remove the stop sign tabs/paddles facing pedestrians/cyclists on all legs;
- Remove the street lighting found within the middle of the two circles;
- Elevate the median splitter at both traffic circles on the east leg only to be mountable above the surface of the road (75mm) so they would be mountable by larger turning vehicles but would discourage smaller vehicles from cutting the corner when making the left turn movement into or out of the side street (Aloha Drive and Southwind Crescent).

6. Traffic Calming

- South of the roundabout at Tecumseh Road to the border with Lakeshore (VIA Rail Tracks):
 - Retain existing median.
 - Consider introducing speed cushions on Brighton Road
 - Public consultation respecting the introduction of traffic calming measures may be required on this portion of Brighton Road, as this segment is classified as a County Connecting Link.
- Between the roundabout at Tecumseh Road and the all-way stop at Old Tecumseh Road:
 - No recommended changes as this segment of Brighton Road is classified as a minor arterial roadway, is a County Connecting Link within Essex County and is intended to serve higher volumes of traffic.
- North of the all-way stop at Old Tecumseh Road to the curve with Riverside Drive:

- Make geometric enhancements to the two traffic circles and retain the raised island found on both sides of the curve between Brighton Road and Riverside Drive.

Ontario Provincial Police (OPP)

The OPP were consulted and provided data respecting motor vehicle collision (MVC) reports within the Brighton Road corridor.

The OPP identified eight MVCs from 2010 to 2019. With the Annual Average Daily Traffic (AADT) of 5,800, this represents a 0.0023% chance of a motor vehicle collision occurring along Brighton Road.

The number of MVCs reported from 2010 to 2019 is very low. The data provided by the OPP confirms that methods and measures used in the design of the Brighton Road corridor promotes road safety for motorists, cyclists and pedestrians.

Consultations

Financial Services
Dillon Consulting Limited
Ontario Provincial Police

Financial Implications

The recommended modifications for the Brighton Road corridor will be incorporated as part of future Roads operational budgets.

Link to Strategic Priorities

| Applicable | 2019-22 Strategic Priorities |
|-------------------------------------|---|
| <input type="checkbox"/> | Make the Town of Tecumseh an even better place to live, work and invest through a shared vision for our residents and newcomers. |
| <input checked="" type="checkbox"/> | Ensure that Tecumseh's current and future growth is built upon the principles of sustainability and strategic decision-making. |
| <input type="checkbox"/> | Integrate the principles of health and wellness into all of Tecumseh's plans and priorities. |
| <input checked="" type="checkbox"/> | Steward the Town's "continuous improvement" approach to municipal service delivery to residents and businesses. |
| <input type="checkbox"/> | Demonstrate the Town's leadership role in the community by promoting good governance and community engagement, by bringing together organizations serving the Town and the region to pursue common goals. |

Communications

Not applicable

Website

Social Media

News Release

Local Newspaper

This report has been reviewed by Senior Administration as indicated below and recommended for submission by the Chief Administrative Officer.

Prepared by:

Cheryl Curran, BES
Clerk I Administrative Clerk

Reviewed by:

Kirby McArdle, P.Eng.
Manager Roads & Fleet

Reviewed by:

Tom Kitsos, CPA, CMA, BComm
Director Financial Services & Chief Financial Officer

Reviewed by:

Phil Bartnik, P.Eng.
Director Public Works & Environmental Services

Recommended by:

Margaret Misek-Evans, MCIP, RPP
Chief Administrative Officer

| Attachment Number | Attachment Name |
|--------------------------|--|
| 1 | Brighton Road Corridor Review, Review of Intersection Traffic Control Operations, October 2019 |
| 2 | Dillon Consulting Limited, Council Presentation – Brighton Road Traffic Review |