The Corporation of the Town of LaSalle

Date	October 2, 2018	**Report No:**	PW-47-18
Directed To:	Mayor and Members of Council	**Attachments:**	~Dillon Consulting Report
Department:	Public Works	**Policy References:**	
Prepared By:	Mark Beggs – Manager of Roads and Parks		
Subject:	Michigan and International 4-Way Stop Warrant		

RECOMMENDATION:

That Council approve the recommendation to implement a 4-Way Stop at the intersection of Michigan and International.

REPORT:

Over the past several years, Public Works has received numerous requests to implement a 4-way stop at the intersection of Michigan and International.

In 2014, Dillon Consulting completed a study of the intersection including a traffic count and warrant analysis for an all-way stop controlled intersection. From that study, it was concluded that the warrants were not met and the intersection did not warrant an all-way stop.

Through 2018, Public Works has continued to received complaints and concerns regarding the Michigan and International intersection, as well as traffic concerns on International in the area from Front Road to Michigan. It was noted that vacant lots had filled in resulting in increased traffic as well as the addition of the LaSalle transit route, which runs on both International and Michigan, increasing both vehicular and pedestrian traffic.

Because of the continued concern, the study of the at Michigan and International intersection was updated to include current traffic counts including pedestrian crossing, as well as review the warrants for an all-way controlled stop. (See attached report)

The report concludes that based on existing traffic volumes and collision frequency at the intersection of Michigan and International, an all-way STOP control is not warranted. The report indicates that there are potential sight line obstructions with the current stop configuration on Michigan, and it recommends flipping the STOP sign control to International.

Under certain situations, specific intersection conditions could support the implementation of a 4-way stop when warrants are not met. Some of the condition that are considered here include:

1. Transit Service (bus) turning movements
2. High volume transit stops
3. Intersection of two (2) collector roads

Upon further internal review, since both Michigan and International are part of the Transit route, the transit stops on both International and Michigan have a high volume of ridership and both Michigan and International are classified as collector roads, the implementation of a 4-way stop should be considered. The warrants to implement a 4-way STOP are not met; however, there is a recommendation in the Dillon report to flip the STOP sign location to International. It is felt there would be less driver confusion and it would be more practical to implement an All-Way controlled STOP at the location of Michigan and International.

The recommendation is that a 4-way STOP be installed at the intersection of Michigan and International recognizing that the warrants were not met in this location for a 4-Way STOP; however, specific intersection conditions are present as per above that constitute a recommendation to install a 4-way stop in this location.

Respectfully submitted,

Mark Beggs
Manager of Roads and Parks

Reviewed by:							
CAO	Treasury	Clerks	Public Works	Planning	Cult. & Rec.	Building	Fire

MEMO

DILLON CONSULTING

TO: Mark Beggs – Town of LaSalle

FROM: Mike Walters, P.Eng. – Dillon Consulting Limited (Dillon)

cc: Nicole Caza, P.Eng. – Dillon

DATE: June 28, 2018

SUBJECT: Michigan Avenue and International Avenue
All-way Stop Warrant

OUR FILE: 18-7779

Introduction

The Town of LaSalle retained Dillon Consulting Limited (Dillon) to complete an all-way stop warrant review for the intersection of Michigan Avenue and International Avenue, in LaSalle.

Existing Traffic Volumes

Dillon conducted an eight-hour turning movement count at the intersection of Michigan Avenue and International Avenue on June 6, 2018. The count data is summarized in ***Table 1***.

TABLE 1: EIGHT-HOUR TURNING MOVEMENT COUNT

Time	Hourly Traffic Volumes																	
	Eastbound				Westbound				Northbound				Southbound				Total	
Begin	LT	Thru	RT	Ped	LT	Thru	RT	Ped	LT	Thru	RT	Ped	LT	Thru	RT	Ped	Peds	Vehicles
8:00	16	12	1	2	0	31	28	9	3	23	1	4	6	15	27	2	**17**	**163**
9:00	16	12	3	0	0	17	16	3	8	13	1	5	10	14	35	0	**8**	**145**
11:00	17	12	4	1	2	16	11	2	4	11	0	0	10	20	22	0	**3**	**129**
12:00	13	11	4	0	0	10	5	6	4	17	2	1	9	12	30	0	**7**	**117**
14:00	12	14	5	6	1	11	6	3	3	25	2	2	9	14	20	2	**13**	**122**
15:00	18	16	6	0	1	14	13	12	3	20	0	7	24	33	34	2	**21**	**182**
16:00	16	25	5	2	1	20	9	4	5	16	1	7	24	27	21	0	**13**	**170**
17:00	17	30	6	1	1	14	14	5	4	18	1	4	22	35	33	3	**13**	**195**

The volume of traffic on the north-south approaches (i.e., Michigan Avenue approaches) tends to be higher than the east-west (International Avenue) approaches. This is shown in ***Table 2***. Typically, STOP signs are installed on the approaches with lower traffic volumes. At this specific location, the STOP signs are installed on Michigan Avenue, which carries more traffic than International Avenue.

All-way Stop Minimum Volume Warrant (Minor Roads)

According to Ontario Traffic Manual (OTM) Book 5, all-way stop control (AWSC) may be considered on minor roads where the following conditions are met:

- Total vehicle volume on all intersection approaches exceeds 350 for the highest hour recorded; ***and***
- Vehicle volume split does not exceed 65/35 for four-way control.

Table 2 provides a detailed summary of the all-way stop minimum volume warrant for the intersection of Michigan Avenue and International Avenue.

TABLE 2: ALL-WAY STOP WARRANT (MINOR ROADS)

Warrant					All-way Stop Control Warranted?
Total Vehicle Volume	Time		Total Vehicular Volume		**No**
	8:00		163		
	9:00		145		
	11:00		129		
	12:00		117		
	14:00		122		
	15:00		182		
	16:00		170		
	17:00		195		
Vehicle Volume Split	Time	International Avenue	Michigan Avenue	Split	**Yes**
	8:00	88	75	54/46	
	9:00	64	81	44/56	
	11:00	62	67	48/52	
	12:00	43	74	37/63	
	14:00	49	73	40/60	
	15:00	68	114	37/63	
	16:00	76	94	45/55	
	17:00	82	113	42/58	

As seen in Table 2, the vehicular volume split is within the thresholds for all-way STOP control (since it doesn't exceed a 65/35 split). However, the highest hourly vehicular volume is not enough to meet the total vehicle volume warrant (a minimum of 350 vehicles in the highest hour), since the maximum hourly vehicle volume is 195. Therefore, from a volume perspective, the intersection of Michigan Avenue and International Avenue does not warrant all-way STOP control.

Collision Warrant

According to OTM Book 5, a high accident frequency is an average of four collisions per year over a three-year period. LaSalle Police Services were able to provide information on the collision frequency

(i.e., the number of collisions) occurring at the Michigan Avenue and International Avenue intersection since 2012. **Table 3** summarizes the collision frequency at the intersection.

TABLE 3: COLLISION FREQUENCY

Year	Number of Collisions
2012	1
2013	1
2014	0
2015	2
2016	0
2017	0
2018	0

Since the number of collisions at the Michigan Avenue and International Avenue does not average four collisions per year over a three-year period, AWSC is not warranted from a collision perspective.

Sight Line Assessment

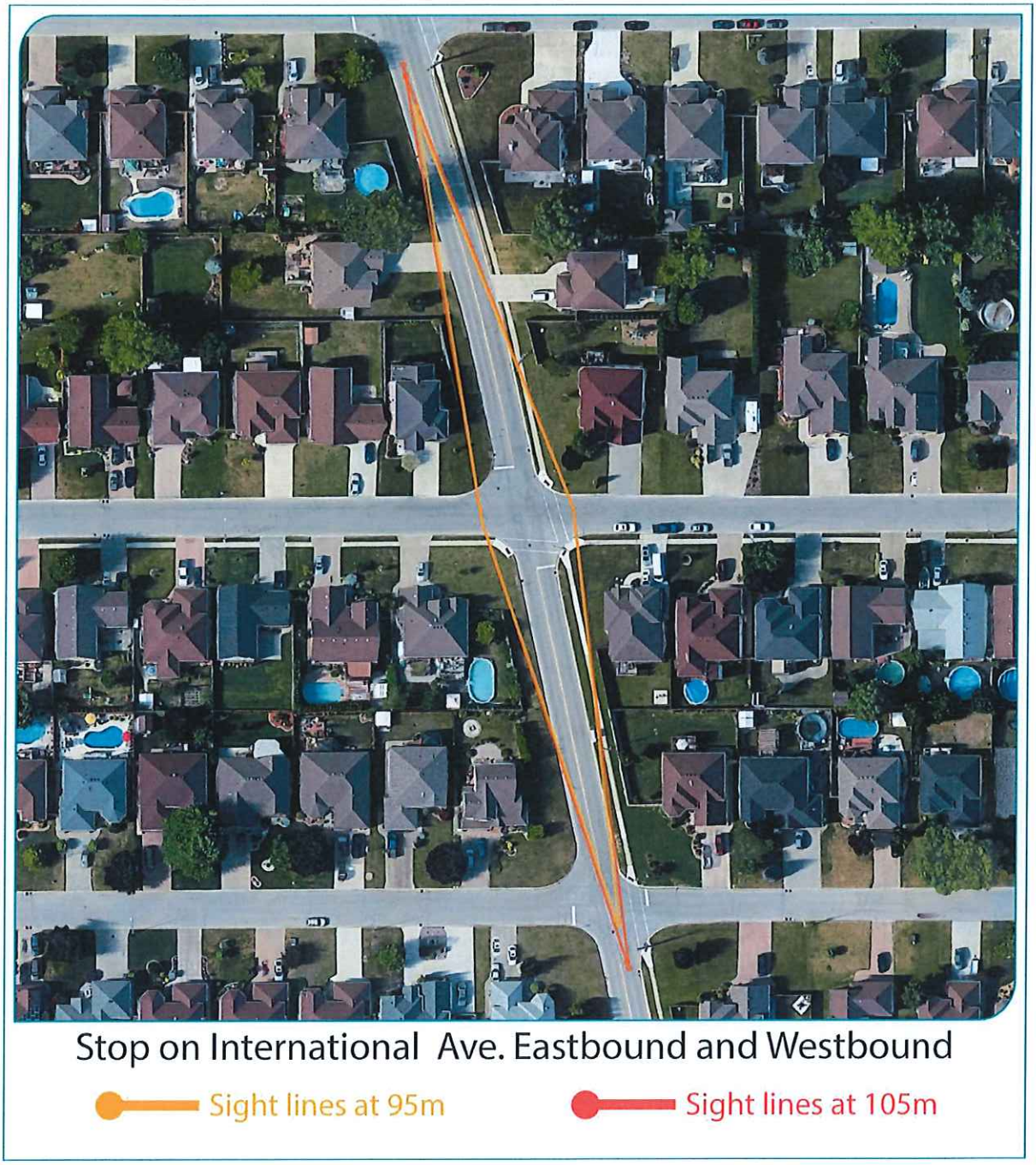
A review of potential sight line issues has been completed since Michigan Avenue and International Avenue intersect at a skewed angle.

The Transportation Association of Canada's *Geometric Design Guide for Canadian Roads* outlines the sight distances required at intersections based on certain parameters (e.g., roadway design speed, desired turning movement, etc.). Using a design speed of 50 km/h, a vehicle on the minor roadway requires 95 metres of sight distance to proceed straight through the intersection, and 105 metres of sight distance in order to perform a left turn movement. Given the setback of the STOP bars on Michigan Avenue this sight line projects through the nearby residential driveways on International Avenue. Therefore, if vehicles are parked at the end of these nearby driveways, it would limit the sight distance for motorists at the STOP bars on Michigan Avenue as shown in **Figure 1**.

FIGURE 1: SIGHT LINE ASSESSMENT

If the STOP control was instead placed on the International Avenue approaches, the sight line issues are largely resolved as there are fewer residential driveways and boulevard vegetation, etc. along Michigan Avenue which would restrict a motorist's line of sight. This is illustrated in **Figure 2**.

FIGURE 2: SIGHT LINES WITH FLIPPED STOP SIGN CONTROL



Further, flipping the STOP control would provide Michigan Avenue motorists (which tend to be in the majority most of the time) the right of way at the intersection, meaning fewer motorists would have to come to a stop at the intersection, which could reduce motorist frustration along Michigan Avenue.

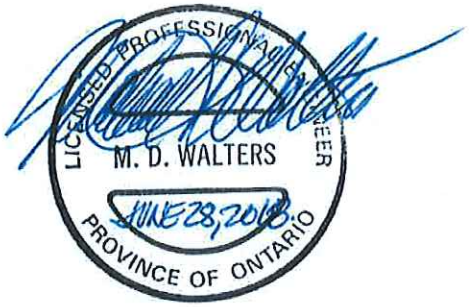
Conclusion

Based on the existing traffic volumes and the collision frequency at the Michigan Avenue and International Avenue intersection, all-way STOP control is not warranted.

A sight line assessment determined that there are potential sight line obstructions with the current two-way STOP control on Michigan Avenue. By flipping the STOP sign control to International Avenue, the sight line obstructions would be minimized and the number of motorists having to come to a stop is reduced (since Michigan Avenue traffic volumes are higher than International Avenue volumes).

Yours sincerely,

DILLON CONSULTING LIMITED



Mike Walters, P.Eng.
Transportation Engineer