

AMHERST MIXED-USE DEVELOPMENT AMHERSTBURG, ON TRAFFIC IMPACT STUDY



RC SPENCER ASSOCIATES INC.
Consulting Engineers

Windsor: 800 University Avenue W. - Windsor ON N9A 5R9
Leamington: 18 Talbot Street W. - Leamington ON N8H 1M4
Chatham-Kent: 49 Raleigh Street - Chatham ON N7M 2M6

**AMHERST MIXED-USE DEVELOPMENT
AMHERSTBURG, ON
TRAFFIC IMPACT STUDY (NOVEMBER 2024)**

Table of Contents

Introduction and Background	1
Traffic Data Collection.....	1
Methodology.....	2
Trip Generation and Distribution.....	2
Capacity and Level of Service Analysis.....	5
Geometric and Traffic Control Improvements	9
Sight Line Analysis.....	9
Summary and Conclusions.....	10

Figure 1: Area Plan

Figure 2: Study Area

Figure 3: Site Plan

Figure 4: Site Generated Traffic (AM / PM Peak Hour)

Figure 5: Existing Traffic (AM / PM Peak Hour)

Figure 6: Total Traffic 2029 (AM / PM Peak Hour)

Figure 7: Total Traffic 2034 (AM / PM Peak Hour)

Figure 8A: Sight Line Analysis: Site Access at Laird Avenue South

Figure 8B: Sight Line Analysis: Northerly Site Access at Sandwich Street South

Figure 8C: Sight Line Analysis: Southerly Site Egress at Sandwich Street South

Appendix A: Traffic Data Collection

- Maple Avenue at Laird Avenue South
- North Street at Laird Avenue South
- Maple Avenue at Sandwich Street South
- Fort Street at Sandwich Street South
- North Street at Sandwich Street South

Appendix B: ITE Trip Generation Manual – 11th Edition References

- Government Office Building, AM Peak Hour
- Government Office Building, PM Peak Hour

- Hotel, AM Peak Hour
- Hotel, PM Peak Hour
- High-Turnover (Sit-Down) Restaurant, AM Peak Hour
- High-Turnover (Sit-Down) Restaurant, PM Peak Hour
- Strip Retail Plaza (<40k), AM Peak Hour
- Strip Retail Plaza (<40k), PM Peak Hour
- Health / Fitness Club, AM Peak Hour
- Health / Fitness Club, PM Peak Hour
- Multifamily Housing (Mid-Rise), AM Peak Hour
- Multifamily Housing (Mid-Rise), PM Peak Hour
- Proposed Site Development Trip Generation and Distribution

Appendix C: Traffic Projection Figures

- Maple Avenue at Laird Avenue South
- Site Access at Laird Avenue South
- North Street at Laird Avenue South
- Maple Avenue at Sandwich Street South
- Northerly Site Access / Fort Street at Sandwich Street South
- Southerly Site Egress at Sandwich Street South
- North Street at Sandwich Street South

Appendix D: Detailed Synchro Results

- Maple Avenue at Laird Avenue South
- Site Access at Laird Avenue South
- North Street at Laird Avenue South
- Maple Avenue at Sandwich Street South
- Northerly Site Access / Fort Street at Sandwich Street South
- North Street at Sandwich Street South

Appendix E: Traffic Signal Warrants

- Northerly Site Access / Fort Street at Sandwich Street South

Appendix F: Sight Line Analysis

- Site Access at Laird Avenue South
- Northerly Site Access at Sandwich Street South
- Southerly Site Egress at Sandwich Street South

INTRODUCTION AND BACKGROUND

A redevelopment is proposed for the former General Amherst High School, located at 130 Sandwich Street South, in Amherstburg, Ontario. As illustrated on **Figure 1**, the development site is bounded by Laird Avenue South, Sandwich Street South, and North Street. The study area is defined on **Figure 2**; it includes Laird Avenue South and its intersections with Maple Avenue and North Street, as well as Sandwich Street South and its intersections with Maple Avenue, Fort Street, and North Street. Laird Avenue is a north / south two-lane residential collector roadway (divided by a tree-lined raised centre median); it begins at North Street and runs north past Alma Street. Maple Avenue is a short east / west residential street, which runs approximately 130m, from Laird Avenue South to Sandwich Street South. Sandwich Street South (County Road 20) is a north / south arterial roadway comprised of a three-lane cross-section at this location. North Street is a local 300m east / west roadway between Dalhousie Street and Sandwich Street South. All study area intersections are currently stop-controlled, but to accommodate this development, the Town is planning to signalize the intersection of Fort Street at Sandwich Street South.

The site plan is provided on **Figure 3**; the proposed redevelopment consists of a 35,000 sq. ft. Town Hall, including a 9,000 sq. ft. civic theatre, a mixed-use building with approximately 12,000 sq. ft. of first floor commercial space, a 5,000 sq. ft. ground-floor restaurant, 54 hotel rooms, and 109 midrise apartment units; approximately 10,000 sq. ft. is allocated for a standalone gym. Various parking areas will service the redevelopment, including a large parking area with access to underground parking (which can be accessed via a right-in right-out access at Laird Avenue South and an all-directional access at Sandwich Street South). The all-directional access at Sandwich Street South (near the north end of the site) will meet the existing tee intersection of Fort Street at Sandwich Street South. A one-way angled parking area will be available at Sandwich Street South. An area along Laird Avenue South is to be reconfigured for Town Hall parking, and an existing public parking lot (off Sandwich Street South, just south of Fort Street) will be made available for hotel patron parking.

TRAFFIC DATA COLLECTION

As provided in **Appendix A**, weekday turning movement counts were collected by RC Spencer Associates Inc. on 5 November 2024, for the following five intersections:

- Maple Avenue at Laird Avenue South
- North Street at Laird Avenue South
- Maple Avenue at Sandwich Street South
- Fort Street at Sandwich Street South
- North Street at Sandwich Street South

METHODOLOGY

The baseline traffic data provided the basis for industry-standard traffic operations analysis; the software package utilized for the analysis (Synchro 12) calculates various parameters of intersection performance, such as level of service (LOS), intersection capacity utilization (ICU), control delay, and queue lengths on individual approaches. The traffic modelling is based on the Highway Capacity Manual (7th Edition).

Signalized level of service results are reported based on the following industry standard:

Level of Service	Average Control Delay (sec/veh)	General Description (Signalized Intersections)
A	≤10	Free Flow
B	>10 - 20	Stable Flow (slight delays)
C	>20 - 35	Stable flow (acceptable delays)
D	>35 - 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 - 80	Unstable flow (intolerable delay)
F	>80	Forced flow (jammed)

Unsignalized level of service results are reported based on the following industry standard:

Level of Service	Average Control Delay (sec/veh)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

TRIP GENERATION AND DISTRIBUTION

The proposed development's trip generation was estimated from the Institute of Transportation Engineers Trip Generation Manual (11th Edition). The dataset's average rate was used instead of the fitted curve equation because the value of the independent variable is in the lower range of the dataset, and the fitted curve equation does not pass through the origin; furthermore, the fitted curve equation is not provided for many of the land uses. The detailed trip generation analysis results are provided in **Appendix B**, but the applied land use codes and calculations are explained in the following paragraphs:

ITE Land Use Code 730 – Government Office Building is the most appropriate code for the proposed 35,000 sq. ft. Town Hall / Civic Theatre building. This land use code provides average trip generation rates of 3.34 trips per 1000 sq. ft. GFA in the AM peak hour, with 75% entering and 25% exiting, and 1.71 trips per 1000 sq. ft. GFA in the PM peak hour, with 25% entering and 75% exiting; the trips generated by this land use are estimated as follows:

- 117 trips in the AM peak hour, with 88 entering and 29 exiting the site;
- 60 trips in the PM peak hour, with 15 entering and 45 exiting the site.

ITE Land Use Code 310 – Hotel is the most appropriate code for the proposed 54-room hotel building. This land use code provides average trip generation rates of 0.46 trips per room in the AM peak hour, with 56% entering and 44% exiting and 0.59 trips per room in the PM peak hour, with 51% entering and 49% exiting; the trips generated by this land use are estimated as follows:

- 25 trips in the AM peak hour, with 14 entering and 11 exiting the site;
- 32 trips in the PM peak hour, with 16 entering and 16 exiting the site.

ITE Land Use Code 932 – High-Turnover (Sit-Down) Restaurant is the most appropriate code for the proposed 5,000 sq. ft. restaurant on the ground-level of the hotel. This land use code provides average trip generation rates of 9.57 trips per 1000 sq. ft. GFA in the AM peak hour, with 55% entering and 45% exiting and 9.05 trips per 1000 sq. ft. GFA in the PM peak hour, with 61% entering and 39% exiting; the trips generated by this land use are estimated as follows:

- 48 trips in the AM peak hour, with 26 entering and 22 exiting the site;
- 45 trips in the PM peak hour, with 27 entering and 18 exiting the site;

ITE Land Use Code 822 – Strip Retail Plaza (<40k) is the most appropriate code for the proposed 12,000 sq. ft. of first-floor retail space. This land use code provides average trip generation rates of 2.36 trips per 1000 sq. ft. GLA in the AM peak hour, with 60% entering and 40% exiting and 6.59 trips per 1000 sq. ft. GLA in the PM peak hour, with 50% entering and 50% exiting; the trips generated by this land use are estimated as follows:

- 28 trips in the AM peak hour, with 17 entering and 11 exiting the site;
- 79 trips in the PM peak hour, with 40 entering and 39 exiting the site.

ITE Land Use Code 492 – Health / Fitness Club is the most appropriate code for the proposed 10,000 sq. ft. standalone gym facility. This land use code provides average trip generation rates of 1.31 trips per 1000 sq. ft. GFA in the AM peak hour, with 51% entering and 49% exiting, and 3.45 trips per 1000 sq. ft. GFA in the PM peak hour, with 57% entering and 43% exiting; the trips generated by this land use are estimated as follows:

- 13 trips in the AM peak hour, with 7 entering and 6 exiting the site;
- 35 trips in the PM peak hour, with 20 entering and 15 exiting the site;

ITE Land Use Code 221 – Multifamily Housing (Mid-Rise) is the most appropriate code for the proposed apartment units. This land use code provides average trip generation rates of 0.37 trips per dwelling unit in the AM peak hour, with 23% entering and 77% exiting, and 0.39 trips per dwelling unit in the PM peak hour, with 61% entering and 39% exiting; the trips generated by this land use are estimated as follows:

- 40 trips in the AM peak hour, with 9 entering and 31 exiting the site;
- 43 trips in the PM peak hour, with 26 entering and 17 exiting the site;

Accordingly, the total trips generated by the proposed redevelopment are estimated to be 271 trips during the weekday AM peak hour, with 161 entering and 110 exiting and 294 trips during the weekday PM peak hour, with 144 entering and 150 exiting. Although ITE data suggests that internal capture and pass-by trips could account for a portion of the trips generated by the proposed redevelopment, to be overly conservative, all site generated trips were assumed to be “new on-street trips”.

Site generated traffic was distributed to and from the site based on the directional distribution of the collected turning movement counts. All traffic generated by the hotel, restaurant, retail, and gym space was directed to and from the accesses at Sandwich Street South. Furthermore, the traffic generated by the Town Hall was distributed to and from the site access at Laird Avenue South. Finally, the traffic generated by the apartment units was distributed to and from the accesses at Sandwich Street South and Laird Avenue South. Off-site parking areas are available for hotel and Town Hall patrons, and street parking on Laird Avenue South is also available for public use; however, to consider the “worst-case” traffic operations conditions, all site generated traffic was assumed to enter / exit the site via the proposed site accesses. The resulting site-generated turning movements are illustrated on **Figure 4**.

According to the development team, as this project progresses and the site plan is refined, there could be slight changes to the proposed land use specifics. If the hotel and / or the Town Hall is withdrawn, the vacancy could be replaced with additional mid-rise housing units; if the hotel is removed, 22 residential units will be substituted in-lieu of 54 hotel rooms; if the Town Hall proposal does not move forward, 24 residential units will be added in-lieu of 35,000 sq. ft. of government office building space. To evaluate the “worst-case” scenarios for traffic operations, the highest-generating land uses were assumed when preparing the trip generation estimates; all other alternative development proposals will result in fewer trips generated.

CAPACITY AND LEVEL OF SERVICE ANALYSIS

Detailed Synchro 12 analyses were carried out with respect to the following traffic scenarios:

- Existing Traffic;
- Total Traffic 2029 (Background Traffic 2029 + Site Generated Traffic);
- Total Traffic 2034 (Background Traffic 2034 + Site Generated Traffic).

To be conservative, background traffic was increased by 2.0% per year, compounded annually, for the 2029 and 2034 horizon years. **Figures 5 to 7** summarize the total traffic estimates that result from adding site generated traffic to 2029 and 2034 horizon year forecasts. The effect of adding site generated traffic from the proposed development to existing traffic volumes at each specific intersection can be found in **Appendix C**; the resulting Synchro 12 simulation reports are provided in **Appendix D**.

To quantify and qualify the effect of traffic growth on intersections within the study area, the level of service results are summarized as follows:

Maple Avenue at Laird Avenue South

The existing tee intersection of Maple Avenue at Laird Avenue South is currently stop-controlled on the westbound approach, which is comprised of a shared approach lane. The northbound and southbound approaches are also comprised of a shared lane in each direction, divided by a 5m wide boulevard. On-street parking is provided on one side of Maple Avenue, depending upon the date. Based on the level of service results provided in **Table 1**, it is anticipated that the addition of site generated traffic and background traffic growth will have a nominal impact on future traffic operations.

Table 1: Level of Service by Approach – Maple Avenue at Laird Avenue South

Scenario	Maple Avenue at Laird Avenue South							
	AM Peak Hour				PM Peak Hour			
	E/B	W/B	N/B	S/B	E/B	W/B	N/B	S/B
Existing Traffic	-	A	A	A	-	A	A	A
Total Traffic 2029	-	A	A	A	-	A	A	A
Total Traffic 2034	-	A	A	A	-	A	A	A

Site Access at Laird Avenue South

The proposed right-in / right-out site access at Laird Avenue South is to be stop-controlled on the westbound approach. The 5m wide boulevard on Laird Avenue South prevents left turns in and out of the site. Angle parking is provided along the west side of Laird Avenue South. Based on the level of service results provided in **Table 2**, this intersection will perform well in all horizon scenarios; the proposed redevelopment will have a nominal impact on this intersection. It is likely that vehicles desiring to proceed south from this access will use the break in the median (to the north of the site access at Fort Malden Road) to perform a U-turn to head south to North Street; vehicles arriving from the north will perform a U-turn at the break in the median at Fort Malden Drive to approach the site access from the south. Both manoeuvres are depicted on the provided figures. The traffic volumes on Laird Avenue South are such that there are sufficient gaps provided for these manoeuvres; traffic operations on Laird Avenue South are not affected. The on-site 95th percentile queue length will not exceed one vehicle length.

Table 2: Level of Service by Approach – Site Access at Laird Avenue South

Scenario	Site Access at Laird Avenue South							
	AM Peak Hour				PM Peak Hour			
	E/B	W/B	N/B	S/B	E/B	W/B	N/B	S/B
Total Traffic 2029	-	A	A	A	-	A	A	A
Total Traffic 2034	-	A	A	A	-	A	A	A

North Street at Laird Avenue South

The tee intersection of North Street at Laird Avenue South is currently stop-controlled on the southbound approach, which is comprised of a shared lane (divided by a 5m wide boulevard). The eastbound and westbound approaches are also comprised of a shared lane in each direction. On-street parking is provided on both sides of North Street; angled parking is provided on the north side and parallel parking is provided on the south side. Based on the level of service results provided in **Table 3**, it is anticipated that the addition of site generated traffic and background traffic growth will have a nominal impact on future traffic operations.

Table 3: Level of Service by Approach – North Street at Laird Avenue South

Scenario	North Street at Laird Avenue South							
	AM Peak Hour				PM Peak Hour			
	E/B	W/B	N/B	S/B	E/B	W/B	N/B	S/B
Existing Traffic	A	A	-	A	A	A	-	A
Total Traffic 2029	A	A	-	A	A	A	-	A
Total Traffic 2034	A	A	-	A	A	A	-	A

Maple Avenue at Sandwich Street South

The tee intersection of Maple Avenue at Sandwich Street South is currently stop-controlled on the eastbound approach, which is comprised of a shared approach lane. The northbound and southbound approaches are comprised of a three-lane cross-section, including a centre two-way left turn lane. On-street parking is provided on one side of Maple Avenue, depending on the date; no parking is permitted on Sandwich Street South. Based on the level of service results provided in **Table 4**, it is anticipated that the addition of site generated traffic and background traffic growth will have a nominal impact on future traffic operations on Sandwich Street; however, any vehicles heading north using the Laird Avenue South site access will have to make a left turn at the intersection of Maple Avenue at Sandwich Street (and could experience a delay of close to one minute). Despite the delay, the 95th percentile queue is not expected to exceed one vehicle length. If drivers prefer to avoid the eastbound left turn manoeuvre, they may proceed further north on Laird Avenue South before shifting to Sandwich Street South, or they may instead work their way through the site to utilize the proposed signalized intersection of the site access / Fort Street at Sandwich Street South. There are many route options for drivers, and the trips are likely to be diluted (having very little effect on area roadways). The signalization of the intersection of Fort Street at Sandwich Street South (located approximately 70m to the south) should also provide gaps for vehicles turning left from Maple Avenue.

Table 4: Level of Service by Approach – Maple Avenue at Sandwich Street South

Scenario	Maple Avenue at Sandwich Street South							
	AM Peak Hour				PM Peak Hour			
	E/B	W/B	N/B	S/B	E/B	W/B	N/B	S/B
Existing Traffic	C	-	A	A	C	-	A	A
Total Traffic 2029	C	-	A	A	E	-	A	A
Total Traffic 2034	C	-	A	A	F	-	A	A

Site Access / Fort Street at Sandwich Street South

The proposed northerly site access at Sandwich Street South is to meet Fort Street at the current westbound stop-controlled tee intersection (to create a four-legged intersection); the Town of Amherstburg is planning to signalize the intersection. Fort Street currently consists of a left and a right turn lane. The northbound and southbound approaches are comprised of a three-lane cross-section, including a dedicated left turn lane to Fort Street. Based on the level of service results provided in **Table 5**, currently, this intersection performs satisfactorily as a stop-controlled intersection. Signal timings were implemented and optimized for future scenarios; the intersection will perform well in all horizon scenarios as a signalized intersection; the proposed redevelopment will have a nominal impact on traffic operations at this intersection.

Table 5: Level of Service by Approach – Site Access / Fort Street at Sandwich Street South

Scenario	Site Access / Fort Street at Sandwich Street South							
	AM Peak Hour				PM Peak Hour			
	E/B	W/B	N/B	S/B	E/B	W/B	N/B	S/B
Ex. Traffic (WB Stop-Controlled)	-	B	A	A	-	C	A	A
Total Traffic 2029 (Signalized)	B	B	A	A	B	B	B	B
Total Traffic 2034 (Signalized)	B	B	A	A	B	B	B	B

Southerly Site Egress at Sandwich Street South

The proposed southerly site egress at Sandwich Street South is to be stop-controlled on the eastbound approach. The northbound and southbound approaches are comprised of a three-lane cross-section with a centre two-way left turn lane. No parking is permitted on Sandwich Street South; only vehicles parked in the angled parking lot will utilize this egress. Conservatively, it is estimated that (at most) 10 vehicles will egress the site at this location during each peak hour. Due to the proposed signalized intersection located approximately 50m to the north, sufficient gaps should be provided to service the egressing vehicles. This intersection should perform well in all horizon scenarios; the proposed redevelopment will have a nominal impact on Sandwich Street South at this location.

North Street at Sandwich Street South

The tee intersection of North Street at Sandwich Street South is currently stop-controlled on the eastbound approach, which is comprised of a shared approach lane. The east leg of the intersection is a driveway to Petras Family Dental; this leg exhibits a nominal volume of traffic during each peak hour. The northbound and southbound approaches are comprised of a three-lane cross-section, including a two-way left turn lane. On-street parking is provided on both sides of North Street; angled parking is provided on the north side, and parallel parking is provided on the south side. Based on the level of service results provided in **Table 6**, it is anticipated that the addition of site generated traffic and background traffic growth will have a nominal effect on traffic operations during the AM peak hour; however, during the PM peak hour, the eastbound / westbound traffic experiences LOS F and LOS E in the future 2034 PM peak hour scenario (with a delay of up to 92.6 seconds and a 95th percentile queue length of up to 4.0 vehicles on the eastbound approach). No site generated traffic is expected to be make an eastbound left turn from North Street, so it is the engineers' opinion that the worsening levels of service are primarily the result of compounding 2% annual increases to the background traffic growth.

Table 6: Level of Service by Approach – North Street at Sandwich Street South

Scenario	North Street at Sandwich Street South							
	AM Peak Hour				PM Peak Hour			
	E/B	W/B	N/B	S/B	E/B	W/B	N/B	S/B
Existing Traffic	C	C	A	A	D	C	A	A
Total Traffic 2029	C	C	A	A	F	D	A	A
Total Traffic 2034	C	C	A	A	F	E	A	A

GEOMETRIC AND TRAFFIC CONTROL IMPROVEMENTS

Since the road authority has plans to signalize the intersection, future traffic signal warrants (based on Justification 7 of the Ontario Traffic Manual, Book 12) were evaluated for Fort Street at Sandwich Street South. The warrants are provided in **Appendix E**. Upon evaluation, it was determined that signalization is not warranted at the subject intersection; however, due to the vehicle volume on the major street (and the anticipated increase in traffic on the minor street and site access), signalization could be implemented at the discretion of the road authority to ensure that sufficient gaps are provided for eastbound / westbound traffic. Furthermore, a signalized control would provide safe (and controlled) passage for pedestrians. If the road authority chooses to implement a traffic signal at this location, the Midblock Pedestrian Signal (located approximately 55m south of this intersection) should be decommissioned because the Ontario Traffic Manual recommends 200m minimum spacing between traffic signals (and controlled pedestrian crossing treatments).

SIGHT LINE ANALYSIS

Sight line analyses were completed for the proposed site accesses at Laird Avenue South and Sandwich Street South. The analyses were completed in accordance with the TAC Geometric Design Guide for Canadian Roads (2017). The speed limit on both Laird Avenue South and Sandwich Street South is 50 km/h, so the analysis was completed for a 60 km/h design speed. As recommended by the TAC, the sight triangles were evaluated at 4.4m from the edge of the nearest travelled lane. As calculated in **Appendix F**, intersection sight distance for a passenger car was determined to be 125m for the worst-case left turn egress maneuvers; intersection sight distance for right turn egress maneuvers was determined to be 108m.

Based on the illustrated sight triangles provided on **Figures 8A to 8C**, it is the engineers' opinion that there is sufficient sight distance in both directions for safe egress from the proposed development accesses.

SUMMARY AND CONCLUSIONS

A redevelopment is proposed for the former General Amherst High School, located at 130 Sandwich Street South, in Amherstburg, Ontario. As illustrated on **Figure 1**, the development site is bounded by Laird Avenue South, Sandwich Street South, and North Street. The study area includes Laird Avenue South and its intersections with Maple Avenue and North Street, as well as Sandwich Street South and its intersections with Maple Avenue, Fort Street, and North Street. All study area intersections are currently stop-controlled tee intersections, although the Town is considering signalization of Fort Street at Sandwich Street South.

The proposed redevelopment consists of a 35,000 sq. ft. Town Hall (including a 9,000 sq. ft. civic theatre), a mixed-use building with approximately 12,000 sq. ft. of first floor commercial space, a 5,000 sq. ft. ground-floor restaurant, 54 hotel rooms, and 109 midrise apartment units. Approximately 10,000 sq. ft. is allocated for a standalone gym. Various parking areas will service the redevelopment, including a large parking area with access to underground parking (which can be accessed via a right-in / right-out access at Laird Avenue South and an all-directional access at Sandwich Street South. The all-directional access at Sandwich Street South (near the north end of the site) will meet the existing tee intersection of Fort Street at Sandwich Street South. A one-way angled parking area will be provided along Sandwich Street South (to facilitate ingress from the signalized intersection of Sandwich Street South at Fort Street and egress via an “exit only” to the south via Sandwich Street South). An existing area along Laird Avenue South is to be reconfigured for Town Hall parking. An existing public parking lot off Sandwich Street South (just south of Fort Street) will be made available for hotel patron parking.

Using recently obtained turning movement counts and applying the best available trip generation and distribution data and methodologies, an analysis was completed to measure the potential impact of the proposed development on area traffic operations.

Upon completion of the analysis, it was concluded that:

- The eastbound stop-controlled intersection of Maple Avenue at Laird Avenue South is expected to operate at a good level of service in all horizon traffic scenarios;
- The proposed eastbound stop-controlled intersection of the site access at Laird Avenue South is expected to operate at a good level of service in all horizon traffic scenarios;
- The southbound stop-controlled intersection of North Street at Laird Avenue South is expected to operate at a good level of service in all horizon traffic scenarios;

- The eastbound stop-controlled intersection of Maple Avenue at Sandwich Street South is currently operating at a satisfactory LOS C; with the addition of site generated traffic, there is a delay for eastbound vehicles turning north in the future PM peak hour scenarios, but a number of alternate routes are also available to dilute potential impacts;
- The westbound stop-controlled intersection of Fort Street at Sandwich Street South is currently operating at a satisfactory level of service in the PM peak hour traffic scenario;
- The proposed signalized intersection of the site access / Fort Street at Sandwich Street South is anticipated to operate at a good level of service in all horizon traffic scenarios;
- The eastbound stop-controlled intersection of the site egress at Sandwich Street South is expected to operate at a good level of service in all horizon traffic scenarios;
- The eastbound stop-controlled intersection of North Street at Sandwich Street South is currently operating at a satisfactory level of service in the PM peak hour traffic scenario; although there is a decreased level of service for eastbound traffic during the PM peak hour future scenarios, no site traffic generated traffic is expected to make an eastbound left turn from North Street;
- Signalization is not warranted at the intersection of the Fort Street (Site Access) at Sandwich Street South; however, due to the vehicle volume on the major street and the anticipated increase in traffic on the minor street and site access (as well as possible pedestrian connectivity considerations), signalization could be implemented at the road authority's discretion;
- If the road authority chooses to implement a traffic signal at the intersection of Fort Street at Sandwich Street South, the Midblock Pedestrian Signal (located approximately 55m south of this intersection) should be decommissioned;
- There is sufficient sight distance in both directions for safe egress from the proposed development accesses.

Therefore, based on the results of the technical work, it is the engineers' opinion that the proposed development will not adversely impact area traffic operations.

All of which is respectfully submitted,

RC Spencer Associates Inc.

Aaron D. Blata, M.Eng., P.Eng., PTOE, RSP1
Consulting Engineer, Road Safety Professional &
Professional Traffic Operations Engineer
Associate / Leamington Office Manager

Richard C. Spencer, M.A.Sc., P.Eng., PE
Consulting Engineer &
Fellow ITE Member
President / Windsor Office Manager