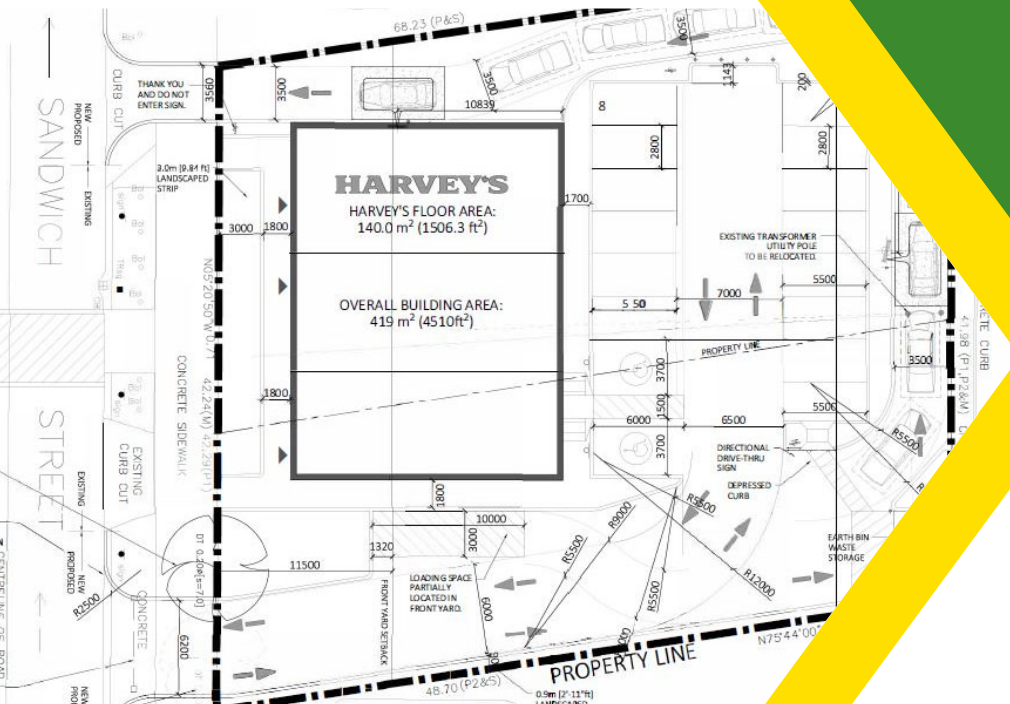


# 131 & 135 Sandwich Street

## Transportation Impact Assessment



# 131 & 135 Sandwich Street Transportation Impact Assessment

Prepared for:

Dino Soltani  
c/o Nicholas Caragianis  
131 & 135 Sandwich Street  
Amherstburg, ON N9V 1Z9

Prepared by:



628 Haines Road  
Newmarket, ON L3Y 6V5

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PN: 2021-139

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## 1 Introduction

This Transportation Impact Assessment (TIA) and Parking Justification has been prepared to support the proposed development located at 131 & 135 Sandwich Street in Amherstburg, Ontario. The development land is currently designated as a General Commercial Zone. The site is proposed to include a 140 m<sup>2</sup> drive-through restaurant (anticipated to be a Harvey's), and 247 m<sup>2</sup> allocated towards two take-out restaurants. A total of 15 parking spaces, nine queuing spaces, and one loading space are proposed. The anticipated use of two adjacent municipal parking lots will provide additional parking areas.

Two site accesses are proposed, the first access being an out-only access located 50 metres south of Fort Street (Site Access #1), and the second being a full-movement access 85 metres south of Fort Street. As customers are anticipated to also park in the existing parking lot north of the subject site, site traffic will also enter and exit the parking lot driveway which is located 40 metres south of Fort Street. These intersection distances are measured intersection centreline to intersection centreline.

The subject site is anticipated to be built-out in one phase with a build-out year in 2023. The scope of this TIA has been confirmed with staff from both Essex County and the Town of Amherstburg in the form of a Terms of Reference (TOR) document and subsequent correspondence which can be seen in Appendix A.

Figure 1 illustrates the Study Area Context. Figure 2 illustrates the concept site plan.

*Figure 1: Area Context Plan*

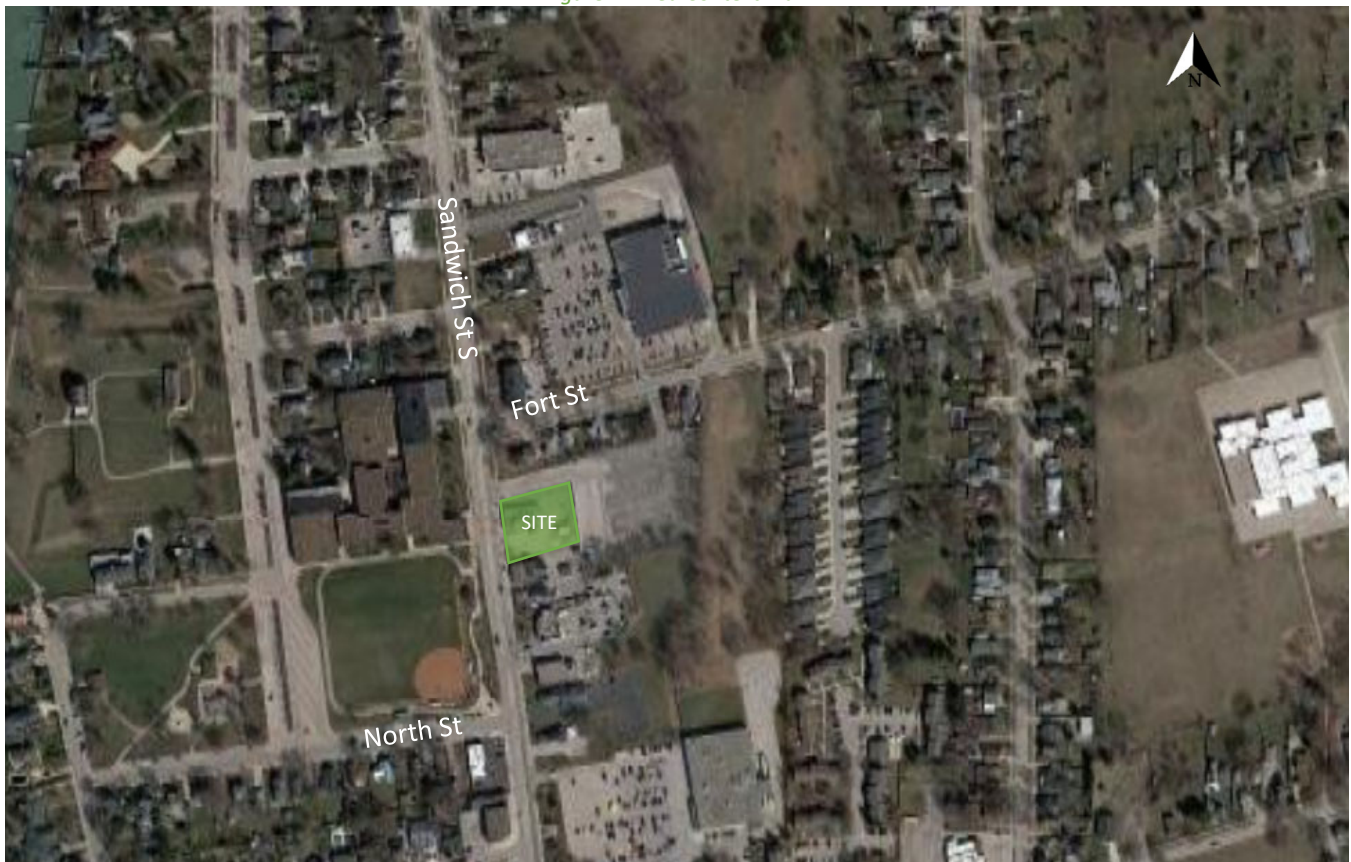
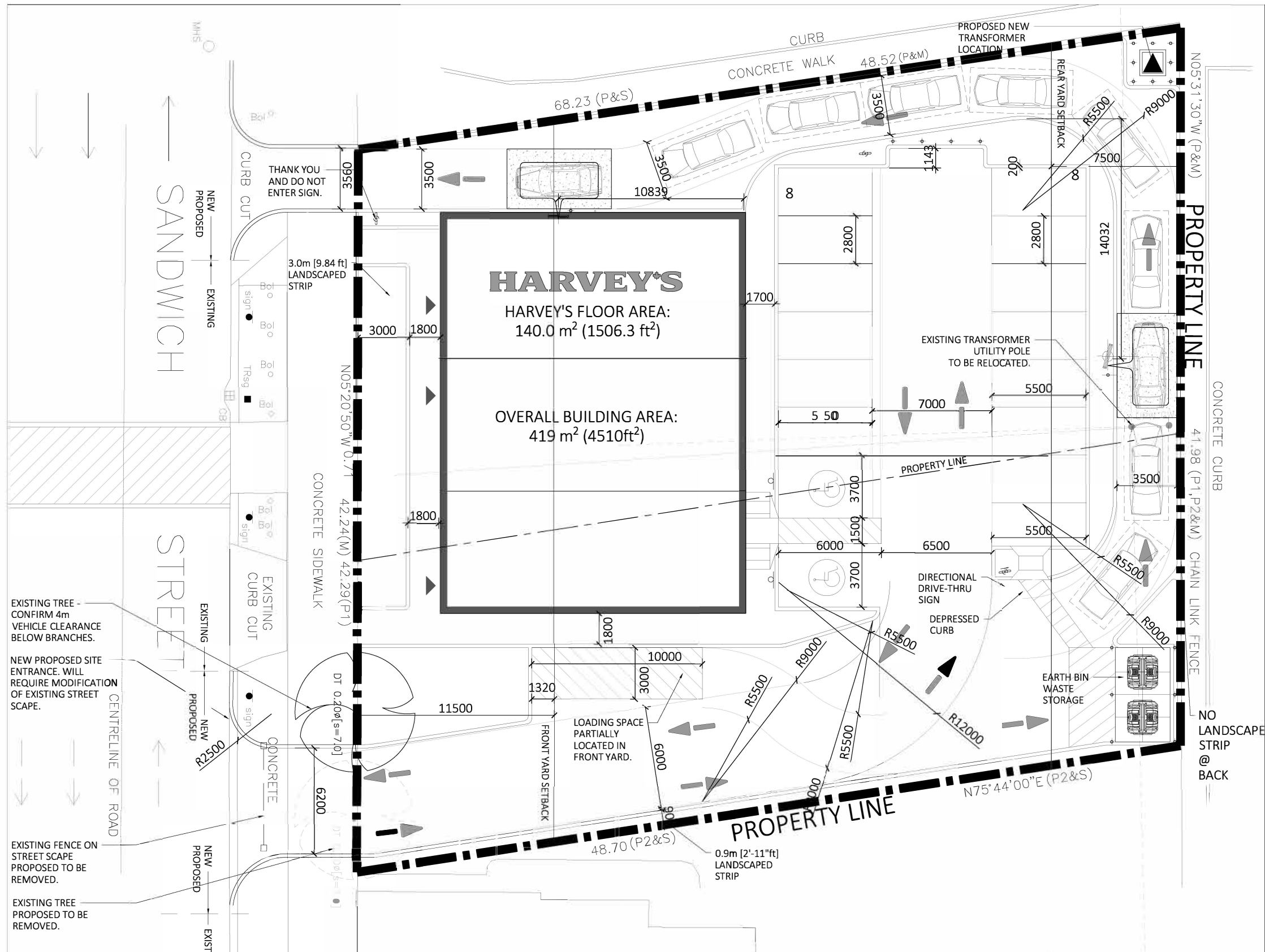


Figure 2: Concept Site Plan



**NOTE:**

LOT AREAS & DIMENSIONS TAKEN FROM CLIENT SUPPLIED SURVEY DATED 20-10-2021  
PROVISIONAL SUMMARY ONLY - ALL PARKING REQUIREMENTS TO BE CONFIRMED WITH  
FINAL OCCUPANCY IN PROPOSED BUILDING.

**\*NET FLOOR AREA USED FOR PARKING CALCULATIONS, AS PER CONVERSATION WITH AMHERSTBURG PLANNER - EXTERIOR WALL AREAS NOT IN CALCULATIONS**

## PARKING SUMMARY

**BUILDING FOOTPRINT AREA = 419 sq. m [4510 sq. ft]**

	PROPOSED DRIVE-THROUGH RESTAURANT	PROPOSED TAKE-OUT RESTAURANT
NET FLOOR AREA* - ESTIMATE ONLY TO BE CONFIRMED	140.0 sq. m [1506.3 sq. ft]	247 sq. m [2659 sq. ft]
ZONING PARKING REQUIREMENT	SECTION 3 (23) Amherstburg Zoning: 1 / 10 sq. m	SECTION 3 (23) Amherstburg Zoning: 1 / 10 sq. m
REQUIRED PARKING SPACES PER OCCUPANCY TYPE & AREA	140.0 sq. m / 10 sq. m = 14 SPACES	247 sq. m / 10 sq. m = 25 SPACES
DRIVE-THROUGH QUEUING SPACE REQUIREMENT	6 Queuing Spaces / Drive-thru	N/A
ACCESSIBLE ZONING PARKING REQUIREMENT	1 Accessible / First 20 Spaces + 1 Accessible / 100 Spaces	
LOADING SPACE REQUIREMENT	1 Required to Serve all 3 Building Occupants.	
TOTAL REQUIRED PARKING	39 PARKING SPACES (2 ACCESSIBLE) 6 QUEUING SPACES 1 LOADING SPACE	
PROVIDED NUMBER OF SPACES	15 PARKING SPACES (2 ACCESSIBLE) 9 QUEUING SPACES 1 LOADING SPACE	

nicholas  
caragianis  
architect  
inc.



PROJECT NAME:	HAR AMHRTSAND131 <i>NCA #21055</i>
ADDRESS:	131 & 135 SANDWICH ST. S AMHERSTBURG, ON

PARKING BEHIND BUILDING & DRIVE-THROUGH AT THE REAR OF SITE. NON-COMPLIANT WITH FRONT YARD SETBACK AND PARKING REQ'S. BACK-IN LOADING SPACE.

## DSK-004-R4: PROPOSED SITE PLAN

**DRAFT - FOR DISCUSSION**

DATE:	2022-03-30
SCALE:	1:250
DWG.:	<b>DSK-004-R4</b> 1 OF 1

## 2 Study Area

The Study Area will consist of the following intersections:

- Fort Street and Sandwich Street South
- Parking Lot Driveway and Sandwich Street South
- Signalized Pedestrian Crossing and Sandwich Street South
- North Street / 165 Sandwich Street South Driveway and Sandwich Street South

## 3 Existing Conditions

### 3.1 Area Road Network

#### *Sandwich Street South*

Sandwich Street South (Essex County Road 20) is a County of Essex major arterial road with a three-lane cross-section and a posted speed limit of 50 km/h. Sidewalks as well as curbs and gutters are present on both sides of Sandwich Street South within the Study Area. The Town of Amherstburg Official Plan reserves a 30.0 metre right-of-way for Sandwich Street South where possible.

#### *Fort Street*

Fort Street is a Town of Amherstburg local road with a two-lane cross-section and a posted speed limit of 40 km/h. Sidewalks as well as curbs and gutters are present on both sides of Fort Street within the Study Area. The Town of Amherstburg Official Plan reserves a 20.0 metre right-of-way for local roads.

#### *North Street*

North Street is a Town of Amherstburg local road with a two-lane cross-section and an unposted assumed speed limit of 50 km/h. Sidewalks, on-street parking, and curbs and gutters are present on both sides of Fort Street within the Study Area. The Town of Amherstburg Official Plan reserves a 20.0 metre right-of-way for local roads.

### 3.2 Existing Intersections

#### *Fort Street & Sandwich Street South*

The intersection of Fort Street and Sandwich Street South is an unsignalized three-legged intersection with stop control on the westbound approach. The northbound approach consists of a shared through / right-turn lane and the southbound approach consists of an auxiliary left-turn lane and a through lane. The westbound approach has an auxiliary left-turn lane and a right-turn lane. Pedestrian crosswalks are provided on the east leg of the intersection. No turning restrictions were noted at this intersection.





### *Parking Lot Driveway & Sandwich Street South*

The intersection of the parking lot driveway and Sandwich Street South is an unsignalized three-legged intersection with stop-control on the westbound approach. The northbound approach consists of a shared through / right-turn lane and the southbound approach consists of an auxiliary left-turn lane and a through lane. The westbound approach has a shared left-turn lane / right-turn lane. Pedestrian crosswalks are provided on the east leg of the intersection. No turning restrictions were noted at this intersection.



### *Signalized Pedestrian Crossing & Sandwich Street South*

The signalized pedestrian crossing on Sandwich Street South is located adjacent to General Amherst High School as well as the proposed development.



### *North Street / 165 Sandwich Street South Driveway & Sandwich Street South*

The intersection of North Street and Sandwich Street South is an unsignalized four-legged intersection with stop-control on the eastbound and westbound legs. Both the southbound and northbound approach consists of an auxiliary left-turn and shared through / right-turn lane. Both the eastbound and westbound approach have a shared left-turn / right-turn lane. Pedestrian crosswalks are provided on the east and west legs of the intersection. No turning restrictions were noted at this intersection.



### 3.3 Existing Driveways

Existing driveways along Sandwich Street South within close proximity to the proposed development's accesses are primarily commercial in nature. These driveways may be considered traffic sources and as such may contribute to volume imbalances between Study Area intersections.

### 3.4 Cycling and Pedestrian Facilities

As described in Section 3.1 above, sidewalks are provided on both sides of Sandwich Street South, Fort Street, and North Street within the Study Area. As no cycling facilities are noted within the Study Area, cyclists will need to share the road with vehicles to facilitate cycling trips.

### 3.5 Existing Transit

There is no existing transit service noted within the Town of Amherstburg.

### 3.6 Existing Peak Hour Travel Demand

As shown below, existing Study Area intersection turning movement counts for the weekday AM Peak and weekday PM Peak were collected by Ontario Traffic Inc. Supplementary traffic data was also provided by the Town of Amherstburg. Table 1 summarizes the count locations, data sources, and identified peak hour periods.

*Table 1: Turning Movement Count Data Dates*

Location	Count Date	AM Peak Hour (PM Peak Hour)	Data Source
Sandwich St S at Fort St	Thursday February 24, 2022	8:00 – 9:00 (16:15 – 17:15)	Ontario Traffic Inc.
Sandwich St S at Parking Lot Driveway			
Sandwich St S at North St / 165 Sandwich St S			
Fort St btwn Sandwich St S & Balaclava St	2016	AADT	Town of Amherstburg
North St btwn Sandwich St S & Dalhousie St		AADT	

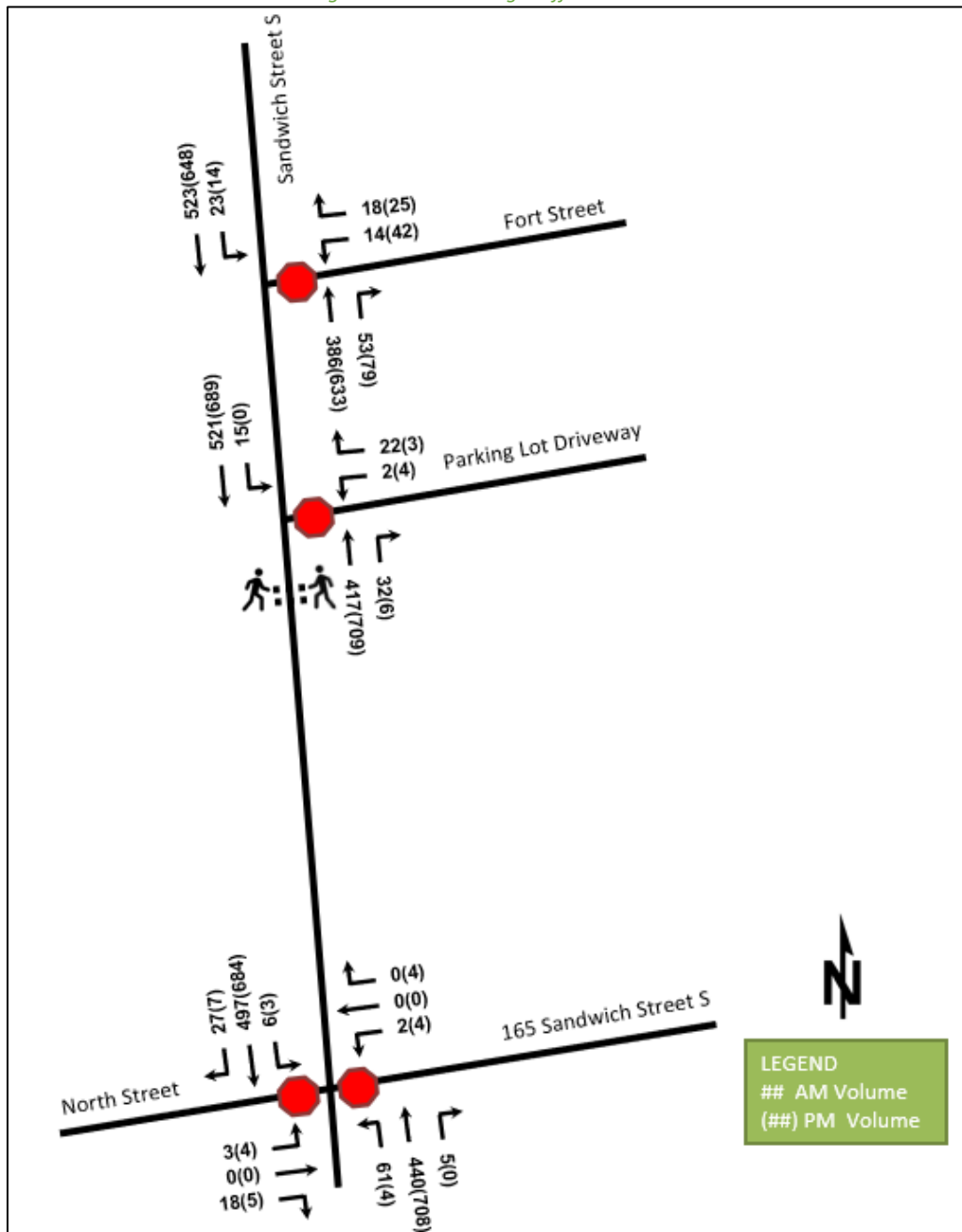
As shown above, the AADT counts have been collected in 2016. To grow these volumes to a consistent analysis horizon of 2022, a compound annual growth rate of 2% has been applied. A growth rate of 2% has been confirmed with Town staff as shown in Appendix A.

As all turning movement count intersection traffic data was collected in 2022, no growth rate is required to be applied to the turning movement counts as they already represent a consistent 2022 horizon. These counts have however been collected during the COVID-19 pandemic. Despite these counts occurring during a time period of minimal COVID-19 restrictions, adjustments to these counts are still required to capture any impact to these volumes. Using the 2022 volumes at the intersection of Sandwich Street South at Fort Street compared to the grown 2016 AADT volumes on Fort Street, an increase factor has been developed. An increase factor has also been calculated using the 2022 volumes at the intersection of Sandwich Street South at North Street / 165 Sandwich Street South compared to the grown 2016 AADT volumes on North Street. In both calculations, the PM peak period volume on Fort Street and on North Street has been calculated by dividing the provided AADT volume by 10, which is a generally accepted approach to determining the PM peak period volume based on AADT volumes. The increase factor developed using the volumes on Fort Street is 1.15, and the increase factor developed using the volumes on North Street is 5.26. Given the minimal COVID-19 restrictions in place at the time of traffic data collection, the

application of an increase factor is likely unnecessary and a relatively low increase factor is expected. As such, the increase factor of 5.26 is not applicable. This result is likely an indication that the generally accepted approach to determining the PM peak period volume based on AADT volumes is not applicable in this instance due to significant traffic generated outside of the AM and PM peak periods as a result of the Austin “Toddy” Jones Park and Bill Wigle park. As such, the calculated adjustment factor of 1.15 has been applied to every movement at all Study Area intersections. The calculations of these adjustment factors can be seen in Appendix B.

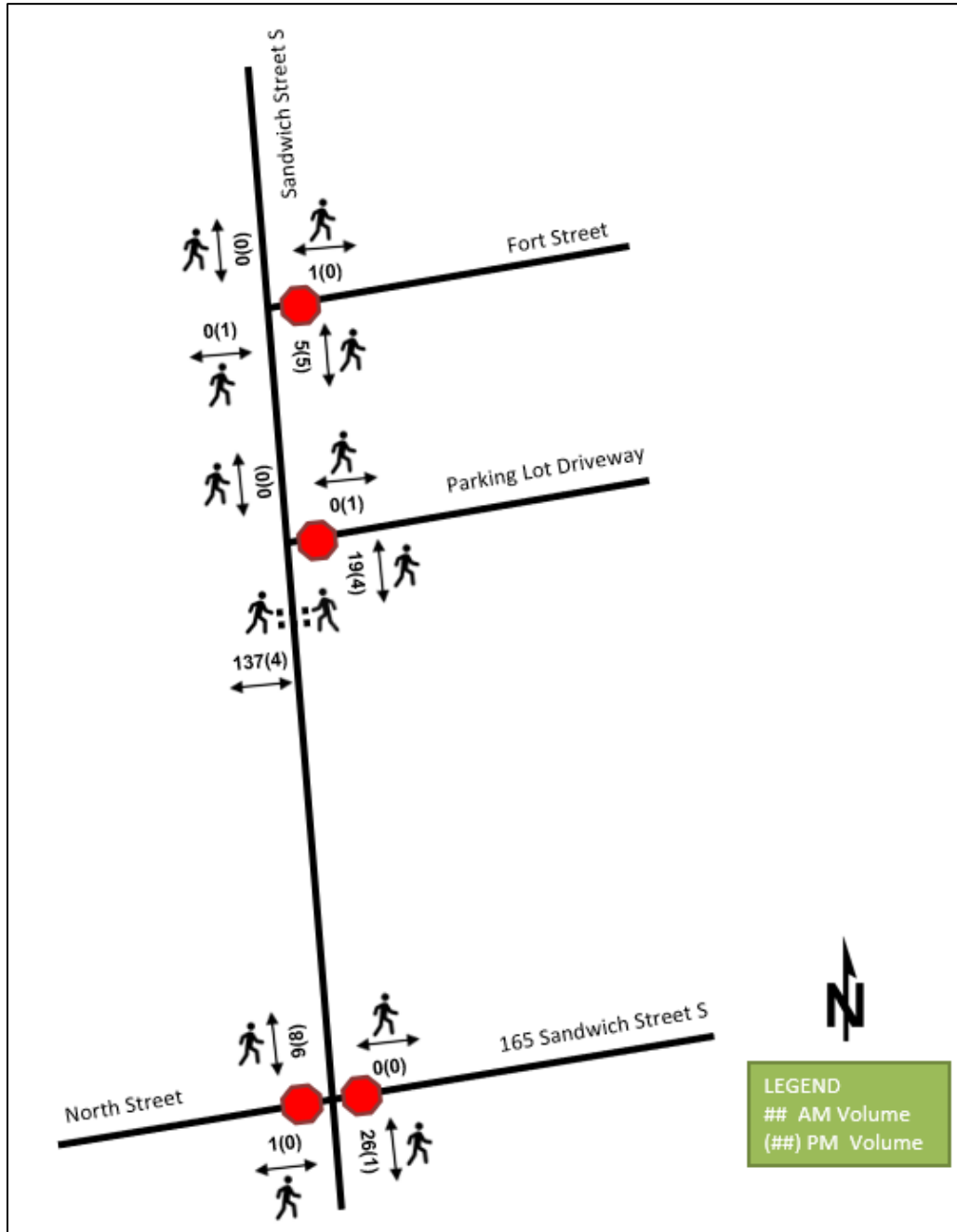
Figure 3 illustrates the 2022 existing horizon traffic volumes. Detailed turning movement count data can be found in Appendix C.

Figure 3: 2022 Existing Traffic Volumes



Cycling volumes are noted to be minimal at the Study Area intersections. Pedestrian volumes are not noted to be significant at the Study Area intersections either, however 137 pedestrians have been noted to use the pedestrian crossing during the AM peak period, and four pedestrians are noted to use the pedestrian crossing during the PM peak period. As General Amherst High School is located on the west side of Sandwich Street South adjacent to the pedestrian crossing, these pedestrian volumes are expected as the AM peak hour overlaps with the typical high school start time. The existing 2022 pedestrian volumes are shown in Figure 4 below.

Figure 4: 2022 Existing Pedestrian Volumes



## 4 Future Background Conditions

### 4.1 Planned Changes to the Area Transportation Network

The County of Essex's County Wide Active Transportation System (CWATS) indicates that Sandwich Street South within the Study Area is proposed to be a signed bicycle route.

No other changes to the area transportation network are anticipated. This was confirmed through the Terms of Reference submission and subsequent correspondence which can be seen in Appendix A.

### 4.2 Other Study Area Developments

At the time of this report, no other development applications were available for the adjacent properties. This was confirmed through the Terms of Reference submission and subsequent correspondence which can be seen in Appendix A.

### 4.3 Background Growth

As discussed in Section 3.6 above, a 2% compound annual growth rate was approved by Town of Amherstburg staff. As such a 2% growth rate has been applied to all Study Area intersection movements to determine the 2023 future background analysis horizon traffic volumes.

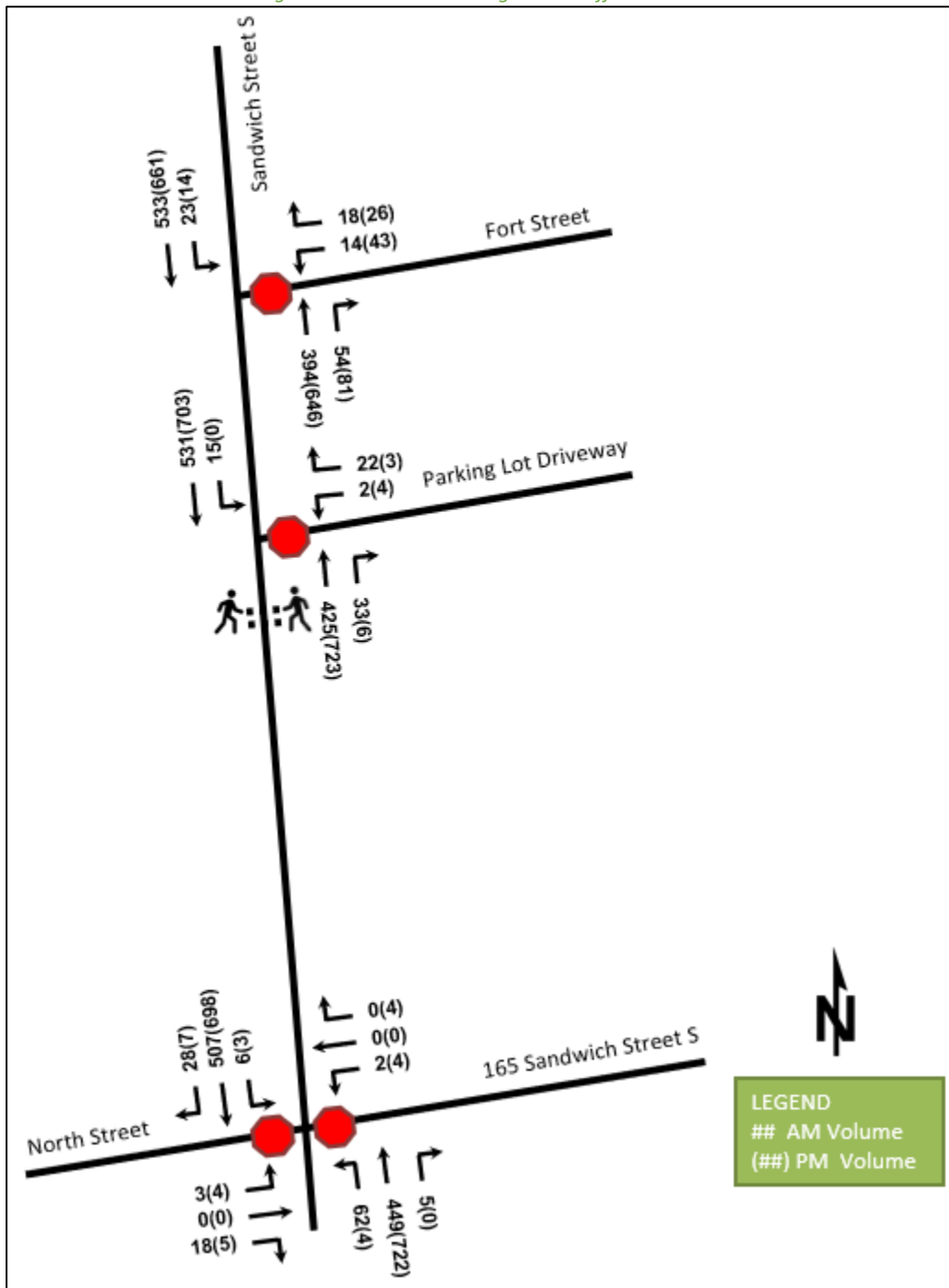
### 4.4 Future Background Traffic Volumes

Combining the background growth rate discussed in Section 4.3 above, the 2022 existing traffic volumes, future background traffic volumes were projected.

Figure 5 illustrates the 2023 future background traffic volumes. All intersection lane configurations have been carried forward from the 2022 existing conditions as there are no anticipated changes for the 2023 horizon.



Figure 5: 2023 Future Background Traffic Volumes



## 5 Demand Forecasting

### 5.1 Site Trip Generation

The proposed development will include a 140 m<sup>2</sup> drive-through restaurant and two take-out restaurants that total 247 m<sup>2</sup>. All three restaurants will have both indoor seating as well as a take-out counter.

Appropriate trip generation weighted average vehicle trip rates for the restaurants were obtained from the 11<sup>th</sup> Edition of *Institute of Transportation Engineers (ITE) Trip Generation Manual* and are summarized in Table 2.

Table 2: ITE Trip Generation Rate

Land Use	Land Use Code	Trip Rates	
		AM Peak	PM Peak
Fast Casual Restaurant	ITE 930	$T = 1.43(X)$	$T = 12.55(X)$
Fast-food Restaurant with Drive-Through	ITE 934	$T = 44.61(X)$	$T = 33.03(X)$
Notes: $T$ = Average Vehicle Trip Ends, $X$ = 1000 ft <sup>2</sup> GFA			

Based on these rate equations, the total vehicle site trip generation during the weekday AM Peak and weekday PM Peak are summarized in Table 3. It is noted that as the fast-food restaurant with a drive-through is known to be a Harvey's, no AM peak period trip generation has been considered for this land use as Harvey's are not open during the AM peak period.

Table 3: Vehicle Site Trip Generation

Land Use	GFA	AM Peak (veh/hr)			PM Peak (veh/hr)		
		In	Out	Total	In	Out	Total
Fast Casual Restaurant	2,659 ft <sup>2</sup>	2	2	4	18	15	33
Fast-food Restaurant with Drive-Through	1,506 ft <sup>2</sup>	-	-	-	26	24	50
<b>Total</b>		<b>2</b>	<b>2</b>	<b>4</b>	<b>44</b>	<b>39</b>	<b>83</b>

Where applicable, pass-by trips have been accounted for. The pass-by rate has been selected using the ITE Trip Generation Manual 11<sup>th</sup> Edition for the fast-food restaurant with drive-through only as no pass-by rates are available for the fast casual restaurant land use. The average pass-by trip percentage for the PM peak period has been identified and is shown in Table 4 below.

Table 4: Land Use Pass-by Rates

Land Use	Pass-by Rate	
	AM	PM
Fast-food Restaurant with Drive-Through	-	55%

Using the above pass-by rate, the net new vehicle trips have been projected and are shown in Table 5.

Table 5: Net New Vehicle Trips

Land Use	AM Peak (veh/hr)			PM Peak (veh/hr)		
	In	Out	Total	In	Out	Total
Fast Casual Restaurant	2	2	4	18	15	33
Fast-food Restaurant with Drive-Through	-	-	-	26	24	50
Pass-by	-	-	-	-14	-13	-27
<b>Net New Auto Driver Total</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>30</b>	<b>26</b>	<b>56</b>

As shown above, four AM, and 56 PM net new peak hour two-way vehicle trips are projected as a result of the proposed development.

## 5.2 Vehicle Traffic Distribution and Assignment

Traffic distribution was based on the existing volume splits on Sandwich Street South as well as at Study Area intersections and our knowledge of the surrounding area. The resultant distribution is outlined as follows:

- 49% to/from the north along Sandwich Street South;
- 51% to/from the south along Sandwich Street South;

Based on the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the Study Area road network.

To assign the pass-by trips to Site Access #1, Site Access #2, and the Parking Lot intersection on Sandwich Street South, a ratio of northbound trips as a portion of all traffic on Sandwich Street South, and southbound trips as a portion of all traffic on Sandwich Street South was developed. It was determined that approximately 51% of the total traffic is northbound and 49% of the total traffic is southbound in the 2023 PM peak period. Using these percents, the traffic has been logically distributed to Site Access #1, Site Access #2, and the Parking Lot driveway intersection.

It has been assumed that 60% of the traffic generated by the Harvey's will use the drive-through, and the remaining 40% will park. As discussed above, parking spaces will be provided on the subject site lands, and additional parking spaces within the adjacent parking lot to the north will likely be used by customers given its proximity to the subject site. In order to reflect this situation, the parking demand for the subject site was determined using the ITE Parking Generation Web Application, 5<sup>th</sup> Edition. The resulting parking demand can be seen below in Table 6.

*Table 6: ITE Parking Generation Manual - Parking Demand*

Land Use	Land Use Code	GFA	Parking Demand
Fast Casual Restaurant	ITE 930	2,659 ft <sup>2</sup>	26
Fast-food Restaurant with Drive-Through	ITE 934	1,506 ft <sup>2</sup>	13
<b>Total</b>			<b>39</b>

As shown above, the parking demand of the proposed development is anticipated to be 39 spaces. It is noted that the Town of Amherstburg Zoning By-law requires 39 parking spaces for the proposed development. As 15 parking spaces (38%) are provided at the subject site, an additional 24 (62%) spaces will likely be used in the adjacent parking lot to the north. As such, 38% of the vehicle trips generated by the proposed development that are anticipated to use a parking space will use Site Access #2, and the remaining 62% of vehicle trips generated by the proposed development that are anticipated to use a parking space will use the Parking Lot Driveway.

Figure 6 illustrates the forecasted site pass-by trips for the 2023 future horizon. Figure 7 illustrates the 2023 new site traffic generated volumes, and Figure 8 illustrates the 2023 net new site generated volumes.

Figure 6: Forecasted Site Pass-by Trip Volumes

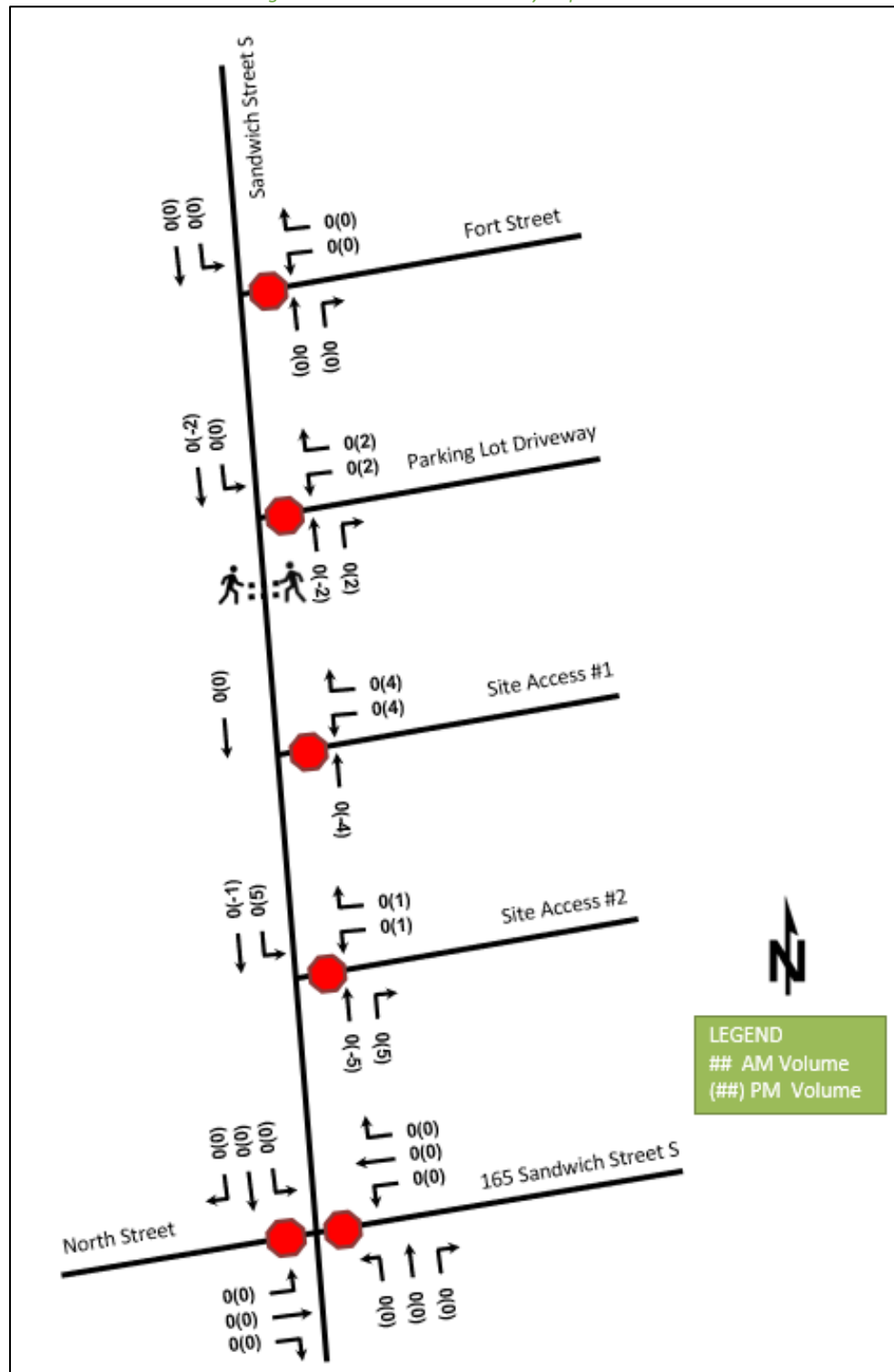


Figure 7: New Site Generated Auto Volumes

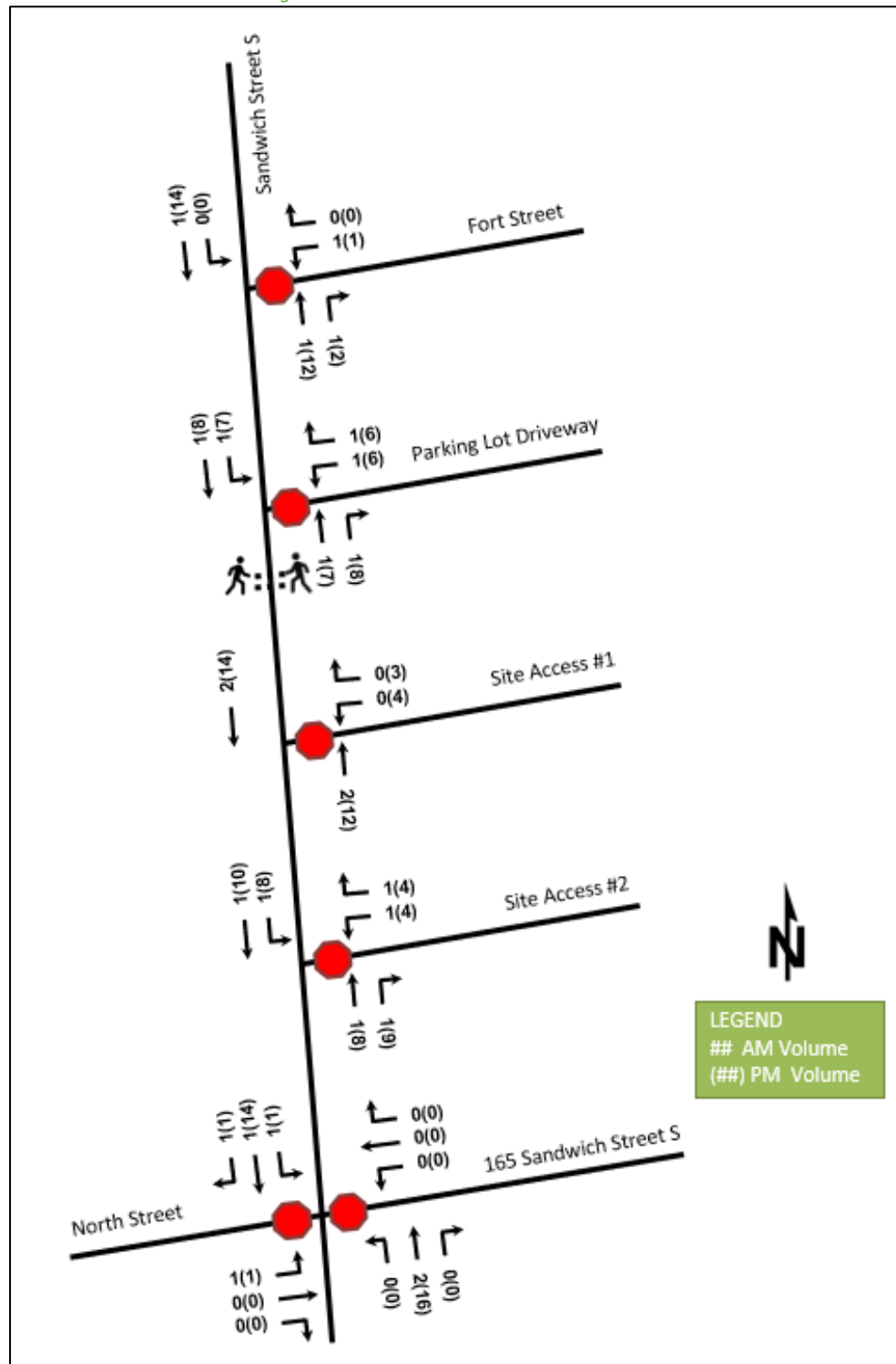
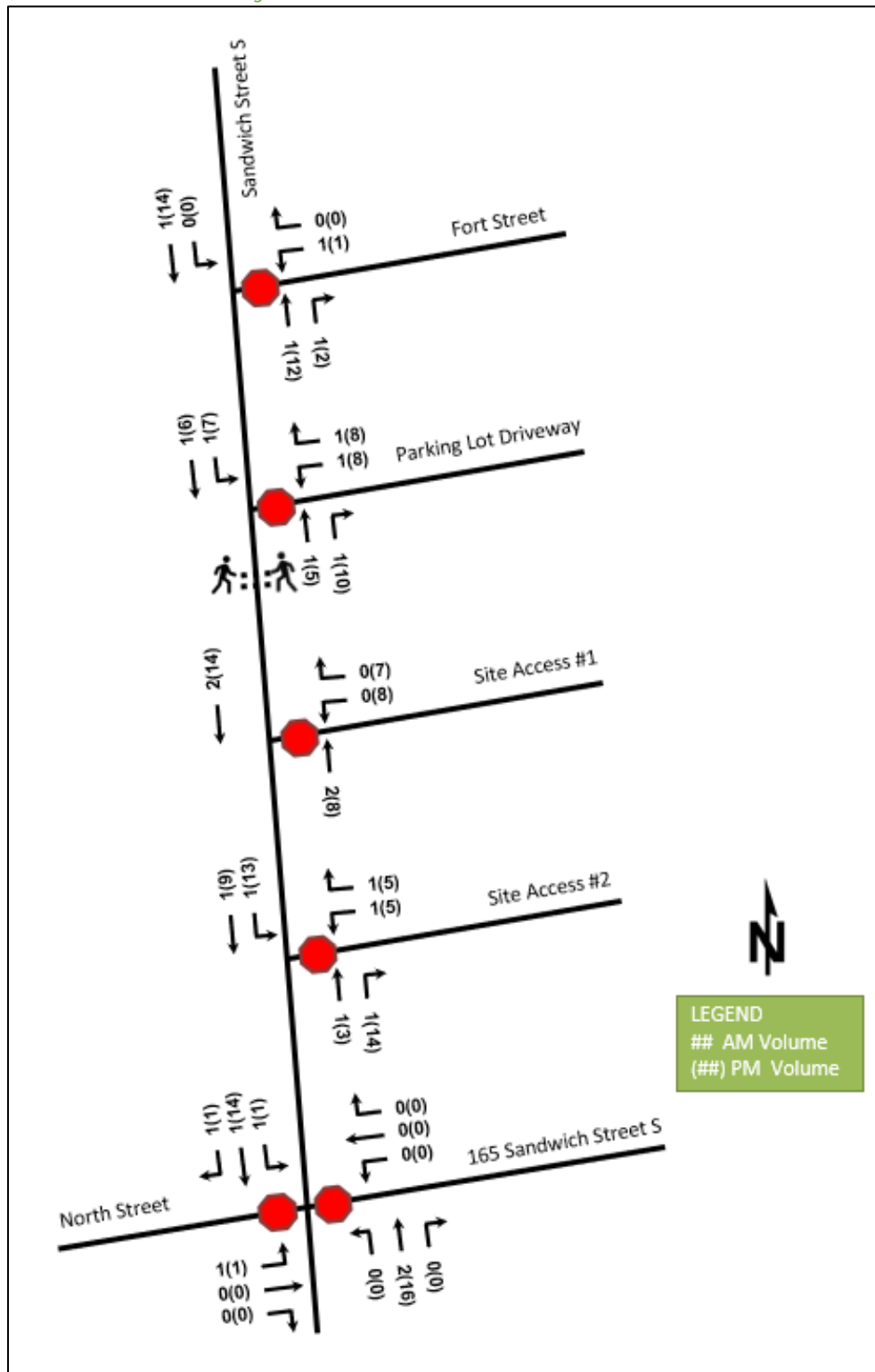


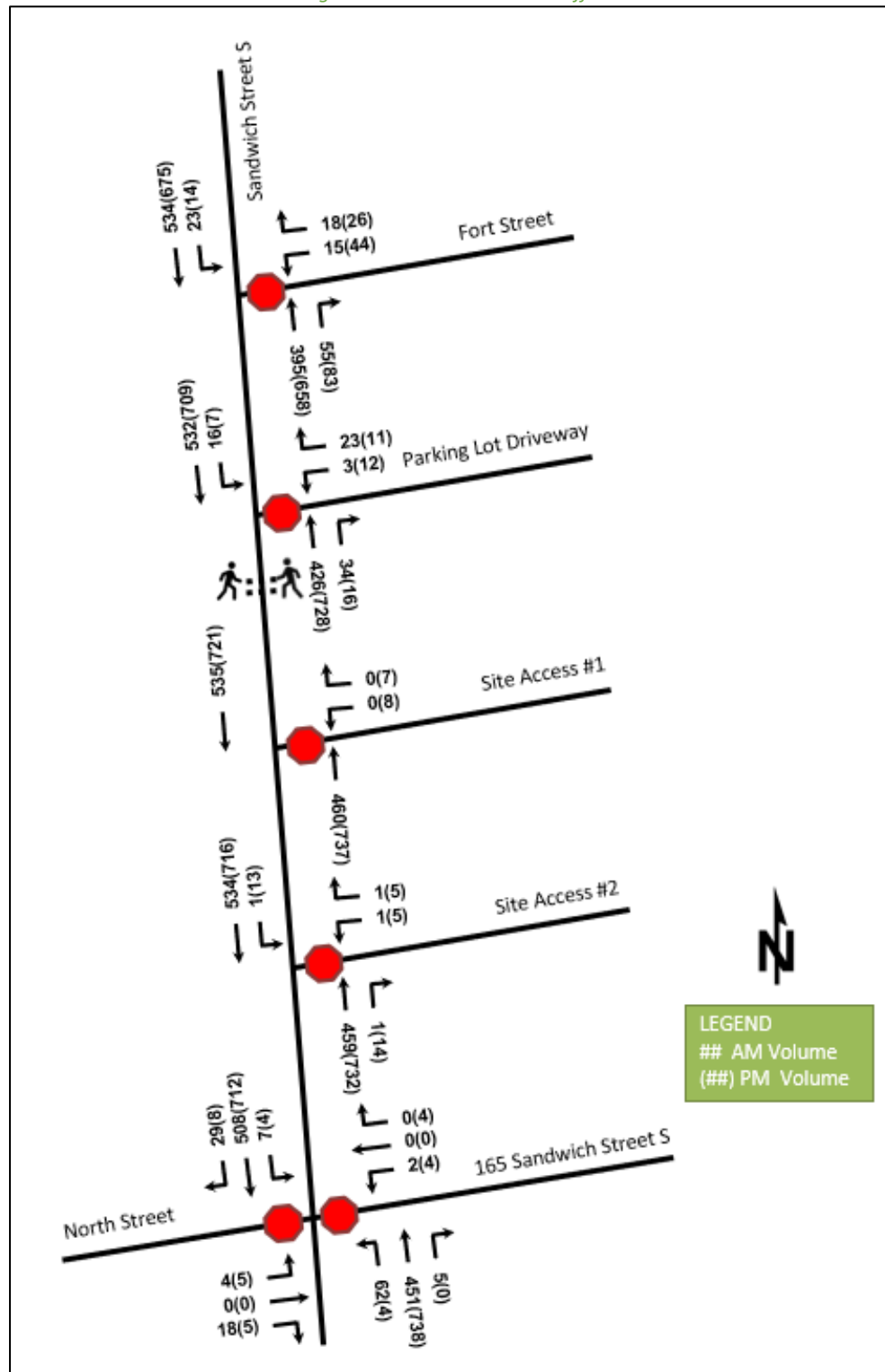
Figure 8: Net-New Site Generated Auto Volumes



### 5.3 Future Total Travel Demands

The 2023 site generated traffic has been combined with the 2023 future background traffic volumes to estimate the 2023 future total traffic volumes shown in Figure 9. Access configuration details are discussed in Section 6.3.

Figure 9: 2023 Future Total Traffic



## 6 Operational Analysis

To understand the operational characteristics of the Study Area intersections, a Synchro model has been created using Trafficware's Synchro (Version 10).

Heavy Vehicle percentages (HV%) have been calculated for each movement based on the existing turning movement counts for the Study Area intersections and have been applied to both the existing and future analysis horizons. Any HV% calculated to be less than 2% was entered as 2% in Synchro to ensure a conservative analysis. At intersections where no Heavy Vehicle percentage is available, 2% has been used. Heavy Vehicle percentage calculations can be found in Appendix D.

Pedestrian and cyclist volumes were provided for those intersections with turning movement count information collected in 2022 and have been applied to the existing and future conditions analysis. For future intersections where no pedestrian volumes are available, a conservative assumption of 5 pedestrians/h has been used for each intersection leg with pedestrian facilities. For future intersections where no cyclist volumes were provided, a conservative assumption of 5 cyclists/h has been used for each intersection leg where applicable.

Peak Hour Factors (PHF) have been entered for each intersection based on the turning movement counts provided. At future intersections where no 15-minute count data is available, the Peak Hour Factors from the closest adjacent intersection has been used. The Peak Hour Factors used for each intersection are shown in Appendix C and are summarized below in Table 7.

Table 7: Peak Hour Factors

Intersection	Peak Hour Factor	
	AM	PM
Sandwich St S at Fort St	0.95	0.97
Sandwich St S at Parking Lot Driveway	0.96	0.98
Sandwich St S & North St / 165 Sandwich St S	0.90	0.98
Sandwich St S at Site Access #1	0.96*	0.98*
Sandwich St S at Site Access #2	0.96*	0.98*

*\*PHF taken from adjacent intersection of Sandwich Street South at the Parking Lot Driveway*

All other parameters have been coded using accepted best practices and default parameters, where applicable.

LOS has been defined using the HCM 2010 definition for LOS at unsignalized intersections (Table 8) and signalized intersections (Table 9).

Table 8: Level of Service Criteria for Unsignalized Intersections

Delay (s)	LOS
≤10	A
>10 and ≤15	B
>15 and ≤25	C
>25 and ≤35	D
>35 and ≤50	E
>50	F

Table 9: Level of Service Criteria for Signalized Intersections

Average Control Delay (Seconds/Vehicle)	LOS
≤10	A
>10 – 20	B
>20 – 35	C
>35 – 55	D
>55 – 80	E
>80	F



Critical movements and critical intersections have been defined as individual movements with LOS F or a v/c ratio of 1.00 or greater, and intersections with an overall LOS F. Critical movements and critical intersections will be indicated in red below and require mitigation measures.

The 95<sup>th</sup> percentile queue of each movement was determined using SimTraffic. A minimum of five simulations comprised of a 60-minute simulation and a 15-minute seeding time were used to produce the corresponding queuing reports.

### 6.1 2022 Existing Operational Analysis

Table 10 summarizes the operational analysis for the 2022 existing conditions in both the AM and PM peak periods. Critical movements, as defined above, have been identified in red where applicable. Synchro and SimTraffic worksheets for the 2022 existing traffic conditions are included in Appendix E.

The Study Area intersections have been designed based on aerial photos and turning lane storage lengths have been rounded to the closest five-metre. All other parameters have been coded using accepted best practices and default parameters where applicable.

The Synchro model has been coded to best reflect the timing information provided by Town of Amherstburg staff regarding the existing signalized pedestrian crossing. As shown in Appendix A, it has been indicated that the signal is callable by pedestrians and has a 30 second pedestrian phase. As no further information was provided, assumptions regarding the signal timing were made. The northbound and southbound signal timing splits as well as the cycle length was optimized, and Amber Clearance and All Red Clearance times were based on methodology provided in OTM Book 12 – Traffic Signals. A walk time of seven seconds was assumed, and a resulting Flash Don't Walk time of 19 seconds was used to allow for a 30 second pedestrian crossing phase.

Table 10: 2022 Existing Intersections Operational Analysis

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	Delay	V/C	Q (95 <sup>th</sup> )	LOS	Delay	V/C	Q (95 <sup>th</sup> )
<b>Sandwich St S &amp; Fort St</b> <i>Unsignalized</i>	WBL	C	15	0.04	11	C	19	0.15	16
	WBR	B	11	0.03	12	B	14	0.06	14
	NBT/R	-	-	-	2	-	-	-	4
	SBL	A	8	0.02	10	A	9	0.02	9
	SBT	-	-	-	18	-	-	-	2
	<b>Overall</b>	<b>A</b>	<b>1</b>	-	-	<b>A</b>	<b>1</b>	-	-
<b>Sandwich St S &amp; Parking Lot Driveway</b> <i>Signalized</i>	WBL/R	B	12	0.05	12	C	16	0.02	7
	NBT/R	-	-	-	1	-	-	-	5
	SBL	A	9	0.02	8	A	0	-	-
	SBT	-	-	-	60*	-	-	-	14
	<b>Overall</b>	<b>A</b>	<b>&lt;1</b>	-	-	<b>A</b>	<b>&lt;1</b>	-	-
<b>Sandwich St S &amp; North St / 165 Sandwich St S</b> <i>Unsignalized</i>	EBL/T/R	C	15	0.06	12	D	26	0.05	10
	WBL/T/R	D	33	0.02	4	D	27	0.05	10
	NBL	A	9	0.07	16	A	9	0.01	1
	NBT/R	-	-	-	5	-	-	-	-
	SBL	A	9	0.01	4	A	9	0.00	3
	SBT/R	-	-	-	2	-	-	-	-
	<b>Overall</b>	<b>A</b>	<b>1</b>	-	-	<b>A</b>	<b>&lt;1</b>	-	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	Delay	V/C	Q (95 <sup>th</sup> )	LOS	Delay	V/C	Q (95 <sup>th</sup> )
<b>Sandwich St S &amp; Pedestrian Crossing Signalized</b>	NBT	B	13	0.42	67	A	6	0.44	32
	SBT	B	14	0.48	112*	A	5	0.42	22
	<b>Overall</b>	<b>B</b>	<b>13</b>	-	-	<b>A</b>	<b>5</b>	-	-
<b>Note:</b>		*Queue extends beyond available roadway linkage distance.							

The existing Study Area intersections operate satisfactorily during the peak hours with no movements operating with a LOS F and a V/C ratio greater than 1.00. As noted, the southbound through queues on Sandwich Street at the signalized pedestrian crossing, as well as at the Parking Lot Driveway extend beyond the available roadway linkage distance in the AM peak period as a result of the signalized pedestrian crossing. This indicates that the southbound through queues recorded on Sandwich Street South at both the Parking Lot Driveway, and at Front Street are a result of extended vehicle queuing due to the signalized pedestrian crossing. This crossing prioritizes pedestrian safety over vehicle operation on Sandwich Street. As shown above, these movements do not have high v/c ratios, or delays and the queues are expected to clear quickly. As such, no mitigation measures are recommended at the Study Area intersections

## 6.2 Future Background Conditions

### 6.2.1 Future Background Traffic Control Warrants

Using Ontario Traffic Manual (OTM) Book 12 Justification 7 methodology for examining traffic control signal warrants, the intersections of Sandwich Street South at Fort Street, Sandwich Street South at the Parking Lot Driveway, and Sandwich Street South at North Street / 165 Sandwich Street South have been evaluated. In the 2023 future background analysis horizon, signalization is not warranted. Traffic control warrant sheets have been included in Appendix F.

### 6.2.2 Future Background Intersection Design

All Study Area intersections have been analyzed with the same configuration as shown in existing conditions.

### 6.2.3 Future Background 2023 Conditions

The 2023 future background intersection volumes have been analyzed to allow for a comparison of the future volumes with and without the proposed development.

Table 11 summarizes the operational analysis for the 2023 future background conditions in both the AM and PM peak periods. Critical movements, as defined above, have been identified in red where applicable. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 6.2.1 and Section 6.2.2, respectively. Synchro and SimTraffic worksheets for the 2023 future background traffic conditions are included in Appendix G.

*Table 11: 2023 Future Background Conditions Operational Analysis*

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	Delay	V/C	Q (95 <sup>th</sup> )	LOS	Delay	V/C	Q (95 <sup>th</sup> )
<b>Sandwich St S &amp; Fort St Unsignalized</b>	WBL	C	15	0.04	10	C	20	0.15	18
	WBR	B	11	0.03	11	B	14	0.06	15
	NBT/R	-	-	-	2	-	-	-	2
	SBL	A	8	0.02	9	A	9	0.02	9
	SBT	-	-	-	9	-	-	-	7
	<b>Overall</b>	<b>A</b>	<b>1</b>	-	-	<b>A</b>	<b>1</b>	-	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	Delay	V/C	Q (95 <sup>th</sup> )	LOS	Delay	V/C	Q (95 <sup>th</sup> )
<b>Sandwich St S &amp; Parking Lot Driveway</b> <i>Signalized</i>	WBL/R	B	12	0.05	13	C	16	0.02	7
	NBT/R	-	-	-	1	-	-	-	6
	SBL	A	9	0.02	13	A	0	-	-
	SBT	-	-	-	47*	-	-	-	14
	<b>Overall</b>	<b>A</b>	<b>&lt;1</b>	-	-	<b>A</b>	<b>&lt;1</b>	-	-
<b>Sandwich St S &amp; North St / 165 Sandwich St S</b> <i>Unsignalized</i>	EBL/T/R	C	15	0.06	12	D	27	0.05	9
	WBL/T/R	D	34	0.02	4	D	28	0.05	10
	NBL	A	9	0.07	17	A	9	0.01	5
	NBT/R	-	-	-	9	-	-	-	-
	SBL	A	9	0.01	4	A	9	0.00	3
	SBT/R	-	-	-	3	-	-	-	-
	<b>Overall</b>	<b>A</b>	<b>1</b>	-	-	<b>A</b>	<b>&lt;1</b>	-	-
<b>Sandwich St S &amp; Pedestrian Crossing</b> <i>Signalized</i>	NBT	B	13	0.42	68	A	6	0.44	41
	SBT	B	14	0.49	103*	A	5	0.43	44*
	<b>Overall</b>	<b>B</b>	<b>13</b>	-	-	<b>A</b>	<b>6</b>	-	-
<b>Note:</b> *Queue extends beyond available roadway linkage distance.									

Generally, the Study Area intersections are shown to operate in a similar manner to the existing conditions with good overall LOS and low delays and no identified critical movements (v/c ratio greater than 0.90 or LOS E or worse). As noted, the southbound through queues on Sandwich Street at the signalized pedestrian crossing, as well as at the Parking Lot Driveway extend beyond the available roadway linkage distance in the AM peak period as a result of the signalized pedestrian crossing. In the PM peak period, the southbound through queue will also extend beyond the available roadway linkage distance. This indicates that the southbound through queues recorded on Sandwich Street South at the Parking Lot Driveway in both the AM and PM peak period, and at Front Street in the AM peak period are a result of extended vehicle queuing due to the signalized pedestrian crossing. This crossing prioritizes pedestrian safety over vehicle operation on Sandwich Street. As shown above, these movements do not have high v/c ratios, or delays and the queues are expected to clear quickly. As such, no mitigation measures are recommended at the Study Area intersections.

### 6.3 Future Total Conditions

#### 6.3.1 Future Total Traffic Control Warrants

Using the Ontario Traffic Manual (OTM) Book 12 Justification 7 methodology for examining traffic control signal warrants, the intersections of Sandwich Street South at Fort Street, Sandwich Street South at the Parking Lot Driveway, Sandwich Street South at North Street / 165 Sandwich Street South, Sandwich Street South and Access #1, and Sandwich Street South and Access #2 have been evaluated. Signalization is not warranted at any of these intersections in the 2023 future total analysis horizon. Traffic control warrant sheets have been included in Appendix F.

#### 6.3.2 Future Total Intersection Design

All Study Area intersections have been analyzed with the same configuration as shown in existing conditions.

The intersection of Sandwich Street South and Site Access #1 has been analyzed as an unsignalized intersection with stop-control on the east leg. The intersection consists of a northbound through lane, a southbound through lane, and a shared westbound left-turn / right-turn lane. The east leg functions as the exit to the Harvey's drive-through and does not allow for inbound movements.

The intersection of Sandwich Street South and Site Access #2 has been analyzed as an unsignalized intersection with stop-control on the east leg. The intersection consists of a shared northbound through/right-turn lane, a southbound left-turn lane, a southbound through lane, and a shared westbound left-turn / right-turn lane. The southbound left-turn lane is part of the existing two-way left-turn lane on Sandwich Street South.

### 6.3.3 Future Total 2023 Conditions

The proposed development's trip generation has been added to the 2023 future background traffic volumes to project the impact of the new traffic on the future road network.

Table 12 summarizes the operational analysis for the 2023 future total conditions in both the AM and PM peak periods. Critical movements, as defined above, have been identified in red where applicable. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 6.3.1 and Section 6.3.2, respectively. Synchro and SimTraffic worksheets for the 2023 future total traffic conditions are included in Appendix H.

*Table 12: 2023 Future Total Conditions Operational Analysis*

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	Delay	V/C	Q (95 <sup>th</sup> )	LOS	Delay	V/C	Q (95 <sup>th</sup> )
<b>Sandwich St S &amp; Fort St</b> <i>Unsignalized</i>	WBL	C	15	0.04	14	C	20	0.16	17
	WBR	B	11	0.03	11	B	14	0.06	16
	NBT/R	-	-	-	7	-	-	-	4
	SBL	A	8	0.02	9	A	9	0.02	9
	SBT	-	-	-	8	-	-	-	5
	<b>Overall</b>	<b>A</b>	<b>1</b>	-	-	<b>A</b>	<b>1</b>	-	-
<b>Sandwich St S &amp; Parking Lot Driveway</b> <i>Signalized</i>	WBL/R	B	12	0.05	12	C	17	0.07	13
	NBT/R	-	-	-	5	-	-	-	12
	SBL	A	9	0.02	10	A	9	0.01	6
	SBT	-	-	-	49*	-	-	-	15
	<b>Overall</b>	<b>A</b>	<b>&lt;1</b>	-	-	<b>A</b>	<b>&lt;1</b>	-	-
<b>Sandwich St S &amp; North St / 165 Sandwich St S</b> <i>Unsignalized</i>	EBL/T/R	C	16	0.07	11	D	30	0.07	11
	WBL/T/R	D	34	0.02	3	D	29	0.05	9
	NBL	A	9	0.07	15	A	9	0.01	4
	NBT/R	-	-	-	3	-	-	-	-
	SBL	A	9	0.01	5	A	9	0.01	4
	SBT/R	-	-	-	2	-	-	-	-
	<b>Overall</b>	<b>A</b>	<b>1</b>	-	-	<b>A</b>	<b>&lt;1</b>	-	-
<b>Sandwich St S &amp; Pedestrian Crossing</b> <i>Signalized</i>	NBT	B	13	0.43	29*	A	6	0.45	17*
	SBT	B	14	0.50	85*	A	6	0.44	31*
	<b>Overall</b>	<b>B</b>	<b>13</b>	-	-	<b>A</b>	<b>6</b>	-	-
<b>Sandwich St S &amp; Access #1</b> <i>Unsignalized</i>	WBL/R	A	0	-	-	C	17	0.05	13
	NBT	-	-	-	-	-	-	-	4
	SBT	-	-	-	113*	-	-	-	41*
	<b>Overall</b>	<b>A</b>	<b>0</b>	-	-	<b>A</b>	<b>&lt;1</b>	-	-
<b>Sandwich St S &amp; Access #2</b> <i>Unsignalized</i>	WBL/R	B	13	0.00	4	C	17	0.03	9
	NBT/R	-	-	-	42	-	-	-	18
	SBL	A	9	0.00	1	A	9	0.02	6
	SBT	-	-	-	133*	-	-	-	50*
	<b>Overall</b>	<b>A</b>	<b>0</b>	-	-	<b>A</b>	<b>&lt;1</b>	-	-
<b>Note:</b>		*Queue extends beyond available roadway linkage distance.							

Generally, the Study Area intersections are shown to operate in a similar manner to the 2023 future background conditions with good overall LOS and low delays and no identified critical movements (v/c ratio greater than 0.90 or LOS E or worse). Additionally, the site access intersections are also shown to operate with good overall LOS, and low delays. This indicates that the addition of site traffic from the proposed development will have a minimal impact on the Study Area intersections.

As shown above, the southbound through queues on Sandwich Street at the signalized pedestrian crossing, and the Parking Lot Driveway extend beyond the available roadway linkage distance in the AM peak period as a result of the signalized pedestrian crossing. In the PM peak period, the southbound through queue will also extend beyond the available roadway linkage distance at the signalized pedestrian crossing. This indicates that the southbound through queues recorded on Sandwich Street South at the Parking Lot Driveway in both the AM and PM peak period, and at Fort Street in the AM peak period are a result of extended vehicle queuing due to the signalized pedestrian crossing. The northbound queues on Sandwich Street at the signalized pedestrian crossing also extend beyond the available roadway linkage distance in the AM peak period as a result of the pedestrian crossing. This crossing prioritizes pedestrian safety over vehicle operation on Sandwich Street. As shown above, these movements do not have high v/c ratios, or delays and the queues are expected to clear quickly. As such, no mitigation measures are recommended at the Study Area intersections.

It is also noted that in both the AM and PM peak period, the southbound through queue on Sandwich Street South is shown to extend beyond the available roadway linkage distance at both Site Access #1 and Site Access #2. This is a reflection of Synchro and SimTraffic's limited ability to accurately capture queuing between such closely spaced intersections. In reality these queues are not expected to be realized.

## 7 Site Plan Review

This section provides an overview of site accesses, site circulation, parking and active mode facilities. The proposed concept Site Plan was previously illustrated in Figure 2.

### 7.1 Site Circulation

A site circulation assessment was completed using AutoTURN 11.0 to develop turning templates for garbage and loading trucks on site. A Garbage Truck vehicle has been used for the garbage truck circulation analysis and both an HSU and MSU vehicle have been used for the loading truck circulation analysis.

Garbage trucks will enter and exit the site in a forward motion using Site Access #2. Garbage collection will occur on the southeast corner of the subject site and the parking aisle will be used for the trucks to turnaround.

Both HSU and MSU vehicles have been used to test the loading vehicle circulation within the site. Loading vehicles will enter and exit the site in a forward motion using Site Access #2. Loading vehicles will reverse into the loading space and the parking aisle will be used for the trucks to turnaround. HSU vehicles have been used to perform a conservative analysis and are noted to circulate through the site without issue, however some turns may be tight. The MSU analysis is more likely to represent the actual size of the loading vehicle and does not indicate any issues.

Turning template analysis can be found in Appendix I

### 7.2 Site Access

The proposed development will have two unsignalized site accesses on Sandwich Street South. Two site accesses are proposed, the first access being an out-only access located 50 metres south of Fort Street (Site Access #1), and the second being a full-movement access 85 metres south of Fort Street (Site Access #2). As customers are also anticipated to park at the existing parking lot north of the subject site when required, site traffic will also enter

and exit the parking lot driveway which is located 40 metres south of Fort Street. These intersection distances are measured intersection centreline to intersection centreline.

As discussed above, a signal warrant analysis has been conducted for the 2023 future total horizon using the OTM Book 12 Justification 7 criteria at both proposed site accesses as well as the parking lot driveway. Using this criteria, it was found that a signal is not warranted at any of these intersections.

### 7.3 Parking Supply

The proposed development will have a total of 15 vehicle parking spaces, nine drive-through queuing spaces, and one loading space. The Town of Amherstburg Zoning By-law indicates the parking requirements for the subject site, and Table 13 below summarizes both the provided and required vehicle parking spaces.

*Table 13: Parking Statistics Summary*

Land Use	Required Parking Rate (spaces/GFA)	Required Parking Spaces	Provided Parking Spaces	Difference
<b>Restaurant Drive-through</b>	1.00 space/10 m <sup>2</sup>	14	15	-24
<b>Restaurant Fast Food &amp; Take-out</b>	1.00 space/10 m <sup>2</sup>	25		
<b>Total</b>	-	<b>39</b>	-	-

As shown above, the proposed development provides 15 vehicle parking spaces which is 24 spaces less than the required number as per the Town of Amherstburg Zoning By-law. These additional 24 required vehicle parking spaces are anticipated to be accommodated in the adjacent parking lot to the north of the subject site. On Thursday, February 24, 2022, a parking count survey of this adjacent parking lot was conducted at the expected peak parking lot occupancy time periods. The maximum number of parked vehicles counted was 56, leaving 97 spaces available. As such, the adjacent parking lot can accommodate the use of 24 of its parking spaces to support the subject site. The parking count data can be found in Appendix J.

Additionally, two accessible parking spaces have been provided on the subject site. As outlined in the Town of Amherstburg Zoning By-law, two accessible parking spaces are required to support the proposed development.

### 7.4 Queuing Space Supply

Nine queuing spaces are provided to support the Harvey's drive-through which is three spaces in excess of the required six queuing spaces as per the Town of Amherstburg Zoning By-law. This can be seen in Table 14 below.

*Table 14: Queuing Space Statistics Summary*

Land Use	Required Queuing Spaces	Provided Queuing Spaces	Difference
<b>Restaurant Drive-through</b>	6 spaces	9 spaces	-3 spaces

### 7.5 Loading Space Supply

The Town of Amherstburg Zoning By-law requires one loading space to support the subject site. As shown in Table 15 below, one loading space is provided and satisfies this requirement.

Table 15: Loading Space Statistics Summary

Land Use	Required Loading Space Rate	Required Loading Spaces	Provided Loading Spaces	Difference
<b>Restaurant Drive-through</b>	1 space to support btwn 250 m <sup>2</sup> and 2,500 m <sup>2</sup> net floor area	1 space	1 space	0 spaces

It is noted the providing loading space is three metres in width and 10 metres in length. While the loading bay is less than 3.5 metres in with, the trucks are narrower than three metres and can enter and exit the loading space without issues as shown in Appendix I.

## 7.6 Active Mode Considerations

The proposed development provides active mode facilities and connections within the development as well as connections to Sandwich Street South. Direct connections are provided within the site to the restaurant entrances and parking area and link to the existing sidewalk on the east side of Sandwich Street South. The parking lot to the north is accessible using the sidewalk on the east side of Sandwich Street South. Additionally, as the signalized pedestrian crossing is located along the frontage of the site a direct pedestrian connection is provided to General Amherst High School on the west side of Sandwich Street and allows for greater pedestrian connection to the overall Study Area.

## 8 Findings and Recommendations

- The development, located at 131 & 135 Sandwich Street, includes a 140 m<sup>2</sup> drive-through restaurant, and 247 m<sup>2</sup> allocated towards two take-out restaurants.
- A total of 15 parking spaces, nine queuing spaces, and one loading space are proposed. 24 additional parking spaces are anticipated to be utilized in the adjacent parking lot to the north.
- The proposed development will have two unsignalized accesses located on Sandwich Street South. The first access being an out-only access located 50 metres south of Fort Street (Site Access #1), and the second being a full-movement access 85 metres south of Fort Street.
- The full build-out horizon year of 2023 has been analyzed.
- No significant planned changes to area transportation network have been noted and no surrounding background developments have been considered.
- The proposed development is projected to generate new two-way vehicle volumes of approximately four and 88 veh/h during the weekday morning and afternoon peak hours respectively.
- A 2% compound annual growth rate was selected to generate the 2023 future background traffic volumes.
- Using the existing 2022 traffic volumes, adjusted for the impact of COVID-19, an operational analysis of existing conditions was undertaken. As no high v/c ratios or high delays were noted, no mitigation measures were recommended.
- The 2023 future background operational analysis was similar to the existing analysis as no high v/c ratios, or high delays were noted and therefore no mitigation measures were recommended.
- With the addition of site traffic volumes to the Study Area intersections, the intersections operate with minimally worse v/c ratios and higher delays in the 2023 future total horizon. These are minor and do not cause critical movements. Additionally, the site access intersections operate well with no required mitigation measures.
- Traffic volumes within the Study Area are relatively low, and as such, signalization is not warranted at any unsignalized intersections at any analysis horizon.



- l) AutoTURN 11.0 has been used to develop turning templates for garbage trucks and loading trucks within the site with no noted conflicts
- m) On Thursday, February 24, 2022, a parking count survey of the adjacent parking lot north of the subject site was conducted at the expected peak parking lot occupancy time periods. The maximum number of parked vehicles counted was 56, leaving 97 spaces available.
- n) An additional 24 vehicle parking spaces are anticipated to be utilized from the parking lot north of the subject site to fulfill the requirement of the Amherstburg Zoning By-law of 39 vehicle parking spaces.
- o) The subject site will provide nine queuing spaces to support the proposed drive-through which is three spaces in excess of the required six queuing spaces as per the Town of Amherstburg Zoning By-law.
- p) One loading space has been provided to support the subject site which is in accordance with the Town of Amherstburg Zoning By-law.
- q) The proposed development will allow for active transportation through the provision of active mode facilities on-site and through connections to the surrounding Study Area transportation network.

The 131 & 135 Sandwich Street development will have a minor impact on the Study Area road network. The proposed accesses will operate with reasonable LOS and delay on the turning movements into and out of the site. Additionally, through the provision of on-site and off-site facilities, this development will be supportive of active mode transportation. It is recommended that, from a transportation perspective, the proposed development application proceed.

Prepared By:

Reviewed By:



Robin Marinac, E.I.T.  
437-242-5183  
[Robin.marinac@CGHTransportation.com](mailto:Robin.marinac@CGHTransportation.com)

Mark Crockford, P. Eng.  
905-251-4070  
[Mark.Crockford@CGHTransportation.com](mailto:Mark.Crockford@CGHTransportation.com)



# Appendix A

Terms of Reference and Correspondence



# Technical Memorandum

To:	Frank Garardo – Town of Amherstburg Jerry Behl – County of Essex	Date:	2022-01-19
Cc:	Mark Crockford – CGH Transportation Dino Soltani Nicholas Caragianis		
From:	Robin Marinac	Project Number:	2021-139

## Re: 131 & 135 Sandwich Street Transportation Impact Assessment - Terms of Reference

We have been asked to undertake the Transportation Impact Assessment and Parking Justification to support the proposed development located at 131 & 135 Sandwich Street in Amherstburg, Ontario. The development land is currently designated as a General Commercial Zone. The site is proposed to include a 140 m<sup>2</sup> drive-through restaurant, and 247 m<sup>2</sup> allocated towards a take-out restaurant land use. A total of 15 parking spaces, nine queuing spaces, and one loading space are proposed. Two site accesses are proposed, the first being a full-movement access 90 metres south of Fort Street, and the second access being an out-only access located 55 metres south of Fort Street. A build-out and occupancy year of 2023 is anticipated.

The proposed site plan can be seen in Attachment 1.

We have prepared the following scope of work for review and endorsement. Please let us know if you have any comments or additions. All data requests are noted in *red* and have also been summarized at the end of the memo.

### Transportation Impact Assessment Requirements (TIA):

The study will be in accordance with the *Institute of Transportation Engineers Transportation Impact Analyses for Site Development*.

### Study Area:

- An overview of the transportation system existing conditions will be documented (including transit, cycling, pedestrian and automobile modes).
- A summary of existing transportation policies within the Study Area will be identified.
- An overview of the Study Area road network will be provided including the road classification and descriptions of:
  - Fort Street
  - North Street
  - Sandwich Street South
  - The parking lot access north of the site

The following intersections will be included in the Transportation Impact Assessment:

- Fort Street and Sandwich Street South
- North Street and Sandwich Street South
- Parking lot access north of the site
- Signalized Pedestrian Crossing on Sandwich Street along the site frontage (dependent on requested information below)
- All proposed Site Accesses (two accesses on Sandwich Street)

#### Existing Traffic Data:

- Turning Movement Counts (TMCs) at the Study Area intersections of Fort Street at Sandwich Street South, North Street at Sandwich Street South, and the parking lot access north of the site are requested from County of Essex staff. *(Data request)*
  - In the event that TMCs are unavailable at these intersections, existing TMCs will be collected by a third-party consultant.
- AADT/ATR counts collected in 2016 have been indicated to exist on both Fort Street and North Street by Town of Amherstburg staff. Detailed reports of these counts are requested. *(Data request)*
  - Given the current COVID-19 related restrictions, the collected intersection data will be compared and if needed, factored using a calculated “adjustment factor” based on the AADT/ATR counts discussed above.
- A compound annual growth rate is requested for application to any received TMCs, should they be available, to determine the 2022 existing traffic volumes. *(Data request)*
- Collision data (over the past five years if available) is requested at the four existing intersections that are listed above (Fort Street at Sandwich Street South, North Street at Sandwich Street South, the parking lot driveway on Sandwich Street north of the subject site, and the signalized pedestrian crossing on Sandwich Street), should these be available. *(Data request)*
- While the signalized pedestrian crossing on Sandwich Street has been indicated above as an intersection of interest, the inclusion of this intersection in the TIA depends on the future plans for the General Amherst High School and consequently the future need for this pedestrian crossing. Please provide any existing pedestrian volumes at this crossing, as well as any anticipated future changes to or removal of this signalized crossing. *(Data request)*

#### Study Horizon and Peak Periods:

- Base year 2022, followed by a future build-out and occupancy horizon of 2023.
- AM and PM peak hours for all horizons.

#### Background Growth:

- A compound annual growth rate is requested for application to the 2022 existing intersection volumes to determine the Study Area intersection volumes for the future horizon year of 2023. *(Data request)*
- Surrounding development traffic impact assessments and reports will be used as reference to identify additional growth from surrounding developments in the area. Any relevant reports are requested. *(Data request)*
- Please provide additional information on the future plans for the General Amherst High School. *(Data request)*

### Changes to Area Transportation Network

- The County of Essex's County Wide Active Transportation System (CWATS) indicates that Sandwich Street South within the Study Area is proposed to be a signed bicycle route.
- No other changes to the Study Area transportation network are noted. Please provide information on any future changes to the Study Area Transportation network to be considered. *(Data request)*

### Development Site Traffic:

- Trip generation: ITE Trip Generation Manual 11<sup>th</sup> Edition.
- Existing Modal Split: If applicable, please provide modal splits to be used. *(Data request)*
- Trip distribution and assignment of auto trips: Surrounding area characteristics.

### Traffic Analysis:

- Traffic analysis to be performed using Synchro 10 on Study Area network intersections to determine the LOS, delay, V / C ratio and the 95<sup>th</sup> percentile queues for overall intersections as well as individual movements using Highway Capacity Manual 2010 (HCM) methodology.
  - Heavy Vehicle %, pedestrian volumes, and cyclist volumes will be taken from the collected TMC data. Where information is not available, a pedestrian volume of 5 pedestrians/hour, a cyclist volume of 5 cyclists/hour, and a Heavy Vehicle % of 2% will be used.
  - Other Synchro inputs will be based on site observations and Synchro default parameters.
- A qualitative transit, cycling, and pedestrian analysis including consideration of any planned improvements.

### Site Review:

- Parking space analysis and justification will be completed using the Town of Amherstburg's Zoning By-law (2019) with consideration given to on-street parking as well as the use of two adjacent municipal parking lots.
- Turning templates within the site will be completed to evaluate on-site circulation.
- Qualitative access location analysis where necessary.

### Recommendations:

- Any recommended offsite and onsite improvements or mitigation measures, which may include turn lane requirements, pedestrian / cycling / transit amenities, TDM measures, construction impacts, safety measures etc.

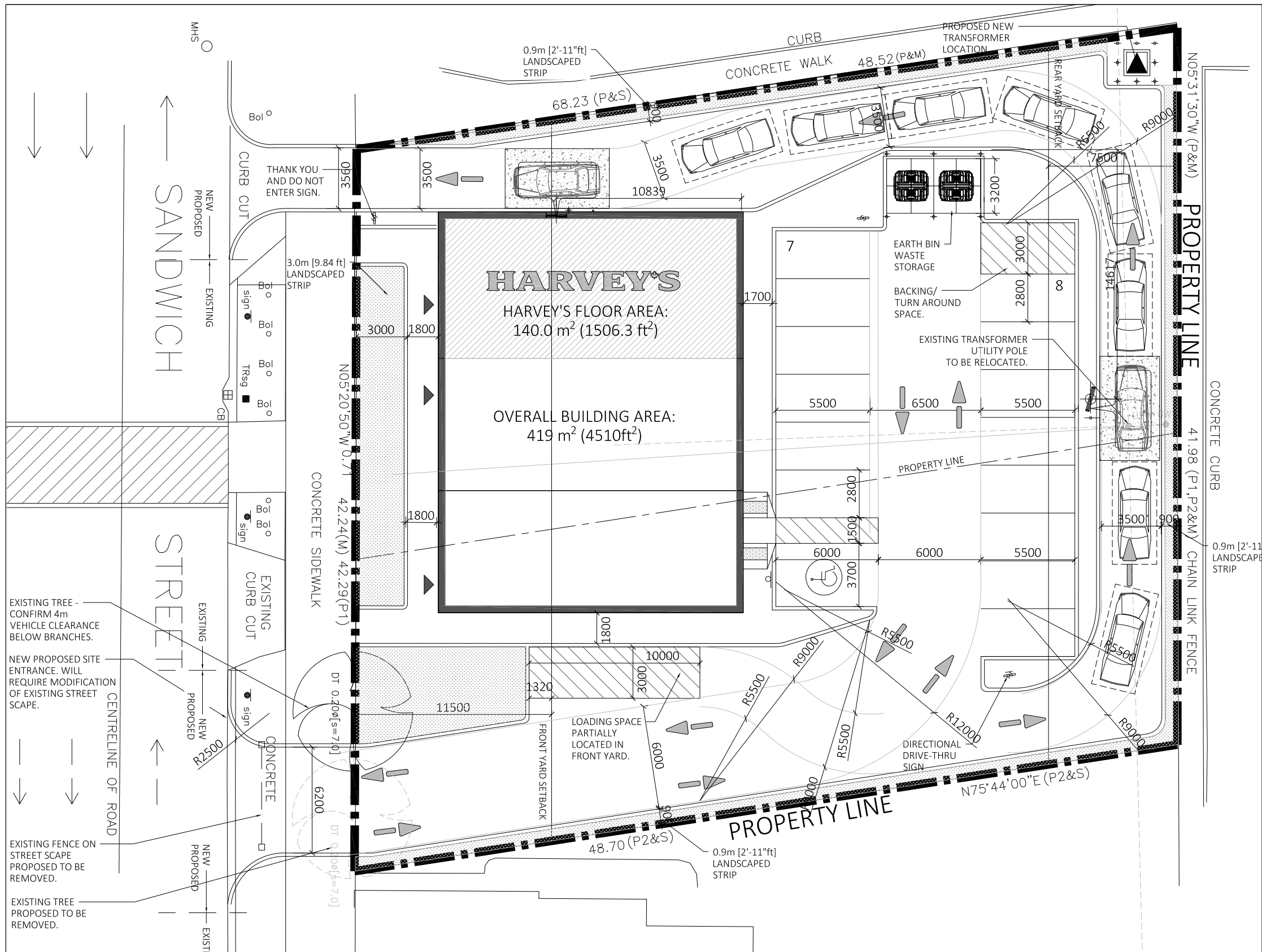
The following is a list of requested information, some of which has been indicated in *red* above, that we are requesting to inform the TIS:

- Any other guidelines you would like us to consider.
- TMC and AADT/ATR data as specified above.
- Historical collision data as specified above.
- Growth rates to be applied to Study Area intersections.
- Future plans for the General Amherst High School.
- Future plans for the signalized pedestrian crossing adjacent to the subject site.

- Any relevant developments that may influence the background growth within the proposed Study Area.
- Suggested modal splits if required.
- Specific changes to the Study Area Road network that you would like us to consider.

# Attachment 1

Proposed Site Plan



NOTE:  
LOT AREAS & DIMENSIONS TAKEN FROM CLIENT SUPPLIED SURVEY DATED 20-10-2021  
PROVISIONAL SUMMARY ONLY - ALL PARKING REQUIREMENTS TO BE CONFIRMED WITH  
FINAL OCCUPANCY IN PROPOSED BUILDING.

\*NET FLOOR AREA USED FOR PARKING CALCULATIONS, AS PER CONVERSATION WITH  
AMHERSTBURG PLANNER - EXTERIOR WALL AREAS NOT IN CALCULATIONS

PARKING SUMMARY		
BUILDING FOOTPRINT AREA = 419 sq. m [4510 sq. ft]		
	PROPOSED DRIVE-THROUGH RESTAURANT	PROPOSED TAKE-OUT RESTAURANT
NET FLOOR AREA* - ESTIMATE ONLY TO BE CONFIRMED	140.0 sq. m [1506.3 sq. ft]	247 sq. m [2659 sq. ft]
ZONING PARKING REQUIREMENT	SECTION 3 (23) Amherstburg Zoning: 1 / 10 sq. m	SECTION 3 (23) Amherstburg Zoning: 1 / 10 sq. m
REQUIRED PARKING SPACES PER OCCUPANCY TYPE & AREA	140.0 sq. m / 10 sq. m = 14 SPACES	247 sq. m / 10 sq. m = 25 SPACES
DRIVE-THROUGH QUEUING SPACE REQUIREMENT	6 Queuing Spaces / Drive-thru	N/A
ACCESSIBLE ZONING PARKING REQUIREMENT	1 Accessible / First 20 Spaces + 1 Accessible / 100 Spaces	
LOADING SPACE REQUIREMENT	1 Required to Serve all 3 Building Occupants.	
TOTAL REQUIRED PARKING	39 PARKING SPACES (2 ACCESSIBLE) 6 QUEUING SPACES 1 LOADING SPACE	
PROVIDED NUMBER OF SPACES	15 PARKING SPACES (1 ACCESSIBLE) 9 QUEUING SPACES 1 LOADING SPACE	

## Robin Marinac

---

**From:** Kristoffer Balallo <KBalallo@countyofessex.ca>  
**Sent:** February 2, 2022 2:46 PM  
**To:** Robin Marinac  
**Cc:** Jerry Behl; Ray Sayyadi  
**Subject:** RE: 131 & 135 Sandwich Street TIA Terms of Reference Scoping Document

Good afternoon Robin,

From a County of Essex perspective, we have no comments pertaining to the proposal. The location of the proposed is outside of the County's jurisdiction.

Kind Regards



**Kristoffer Balallo**  
*Engineering Technologist*  
County of Essex  
360 Fairview Ave. W. Suite 315 | Essex, ON | N8M 1Y6  
**P:** 519-776-6441 ext. 1564  
**F:** 519-776-4455  
**TTY:** 1-877-624-4832

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---

**From:** Robin Marinac <[robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)>  
**Sent:** January 19, 2022 11:30 AM  
**To:** Frank Garardo <[fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)>; Jerry Behl <[JBehl@countyofessex.ca](mailto:JBehl@countyofessex.ca)>  
**Cc:** Mark Crockford <[mark.crockford@cghtransportation.com](mailto:mark.crockford@cghtransportation.com)>; [dino.soltani80@gmail.com](mailto:dino.soltani80@gmail.com); Nicholas Caragianis at Nicholas Caragianis Architect Inc. <[nicholas@ncarchitect.ca](mailto:nicholas@ncarchitect.ca)>  
**Subject:** 131 & 135 Sandwich Street TIA Terms of Reference Scoping Document

**CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Hi Frank and Jerry,

Please find attached our 131 & 135 Sandwich Street South Terms of Reference (TOR) for your review. Please let us know if you have any comments or questions as we would like to ensure that our TOR reflects the appropriate scope of work to support the proposed development.



Kind regards,  
Robin Marinac



Robin Marinac, EIT  
**CGH Transportation Inc.**  
P: 437-242-5183  
E: [robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)

## Robin Marinac

---

**From:** Todd Hewitt <thewitt@amherstburg.ca>  
**Sent:** February 11, 2022 2:32 PM  
**To:** Robin Marinac; Frank Garardo  
**Cc:** Mark Crockford  
**Subject:** RE: 131 & 135 Sandwich Street TIA Terms of Reference Scoping Document  
**Attachments:** 21\_Balaclava St S & Fort St.xlsx; 21\_Balaclava St S & Fort St.pdf

Robin,

See answers below in red

Todd

### Todd Hewitt

*Manager of Engineering and Operations*

Town of Amherstburg

512 Sandwich St South, Amherstburg, ON, N9V 3R2

Tel: 519-736-3664 ext 2313 Fax: 519-736-7080 TTY: 519-736-9860



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**From:** Robin Marinac <robin.marinac@cghtransportation.com>  
**Sent:** February 3, 2022 4:00 PM  
**To:** Frank Garardo <fgarardo@amherstburg.ca>; Todd Hewitt <thewitt@amherstburg.ca>  
**Cc:** Mark Crockford <mark.crockford@cghtransportation.com>  
**Subject:** RE: 131 & 135 Sandwich Street TIA Terms of Reference Scoping Document

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Hi Frank,

Thank you for the feedback and approval on our Terms of Reference. I've summarized our remaining information and data requests below and included Todd on this email for his assistance. Our requests are as follows:

- Unless otherwise noted, we will assume a 2% compound annual growth rate at our Study Area intersections. As no planned background developments were indicated to be considered, 2% is deemed an appropriate growth

rate to capture any increase in background traffic. Please clarify that this is a correct assumption or alternatively provide a growth rate to be used to develop future background intersection volumes. **2% is acceptable**

- ATR/AADT counts on Fort Street and North Street were provided from 2016. It was indicated that ATR/AADT counts are also available at these locations from 2021, however they are skewed because of the pandemic. Could you please provide these 2021 counts, and if available the raw data as well. **Balaclava and Fort intersection data attached.**

Kind regards,  
Robin Marinac



Robin Marinac, EIT  
**CGH Transportation Inc.**  
P: 437-242-5183  
E: [robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)

---

**From:** Frank Garardo <[fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)>  
**Sent:** February 2, 2022 1:25 PM  
**To:** Robin Marinac <[robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)>; [jbehl@countyofessex.ca](mailto:jbehl@countyofessex.ca)  
**Cc:** Mark Crockford <[mark.crockford@cghtransportation.com](mailto:mark.crockford@cghtransportation.com)>  
**Subject:** RE: 131 & 135 Sandwich Street TIA Terms of Reference Scoping Document

Good afternoon,

The terms of reference are fine. Please send any data request in an email format to Todd Hewitt from the Public works department.

**Todd Hewitt**  
*Manager of Engineering and Operations*  
Town of Amherstburg  
512 Sandwich St South, Amherstburg, ON, N9V 3R2  
Tel: 519-736-3664 ext 2313 Fax: 519-736-7080 TTY: 519-736-9860

**Frank Garardo**  
*Manager, Planning Services*  
Town of Amherstburg  
3295 Meloche Rd., Amherstburg, ON, N9V 2Y8  
Tel: Fax: TTY: 519-736-9860



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**From:** Robin Marinac <[robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)>  
**Sent:** February 1, 2022 2:34 PM  
**To:** Frank Garardo <[fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)>; [jbehl@countyofessex.ca](mailto:jbehl@countyofessex.ca)  
**Cc:** Mark Crockford <[mark.crockford@cghtransportation.com](mailto:mark.crockford@cghtransportation.com)>  
**Subject:** RE: 131 & 135 Sandwich Street TIA Terms of Reference Scoping Document

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Frank and Jerry,

I hope you are both doing well. As you can see below, our client is pushing for a quick turnaround on our report. As our Terms of Reference scoping document requests your feedback, additional information, and approval regarding our scope of work we are eager to get your responses as quickly as possible. With this in mind, can you please provide us with an idea of when we will hear back from you regarding our Terms of Reference document?

Kind regards,  
Robin Marinac



Robin Marinac, EIT  
**CGH Transportation Inc.**  
P: 437-242-5183  
E: [robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)

**From:** Nicholas Caragianis at Nicholas Caragianis Architect Inc. <[nicholas@ncarchitect.ca](mailto:nicholas@ncarchitect.ca)>  
**Sent:** February 1, 2022 10:06 AM  
**To:** Robin Marinac <[robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)>; Frank Garardo <[fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)>; [jbehl@countyofessex.ca](mailto:jbehl@countyofessex.ca)  
**Cc:** Mark Crockford <[mark.crockford@cghtransportation.com](mailto:mark.crockford@cghtransportation.com)>; [dino.soltani80@gmail.com](mailto:dino.soltani80@gmail.com); Jessica Penn at Nicholas Caragianis Architect Inc. <[jpenn@ncarchitect.ca](mailto:jpenn@ncarchitect.ca)>; Scott Allen <[sallen@mhbcplan.com](mailto:sallen@mhbcplan.com)>; [nvanoyen@mhbcplan.com](mailto:nvanoyen@mhbcplan.com)  
**Subject:** 131 & 135 Sandwich Street TIA Terms of Reference Scoping Document

Robin – please follow up with the Municipality as the client wishes to submit the applications ASAP.

**Nicholas Caragianis**

Arch, MRAK, CAA, CAQ, NSAA  
email: [nicholas@ncarchitect.ca](mailto:nicholas@ncarchitect.ca)  
cel - 613 850 0382



**nicholascaragianisarchitect inc.**

137 Pamela Street, Ottawa, ON K1S 3K9  
telephone: 613 937 6801 fax 613 937 8989  
[www.ncarchitect.ca](http://www.ncarchitect.ca)

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---

**From:** Robin Marinac [<mailto:robin.marinac@cghtransportation.com>]

**Sent:** January 19, 2022 11:30 AM

**To:** Frank Garardo <[fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)>; [jbehl@countyofessex.ca](mailto:jbehl@countyofessex.ca)

**Cc:** Mark Crockford <[mark.crockford@cghtransportation.com](mailto:mark.crockford@cghtransportation.com)>; [dino.soltani80@gmail.com](mailto:dino.soltani80@gmail.com); Nicholas Caragianis at Nicholas Caragianis Architect Inc. <[nicholas@ncarchitect.ca](mailto:nicholas@ncarchitect.ca)>

**Subject:** 131 & 135 Sandwich Street TIA Terms of Reference Scoping Document

Hi Frank and Jerry,

Please find attached our 131 & 135 Sandwich Street South Terms of Reference (TOR) for your review. Please let us know if you have any comments or questions as we would like to ensure that our TOR reflects the appropriate scope of work to support the proposed development.

Kind regards,

Robin Marinac



Robin Marinac, EIT

**CGH Transportation Inc.**

P: 437-242-5183

E: [robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)

## Robin Marinac

---

**From:** Todd Hewitt <[thewitt@amherstburg.ca](mailto:thewitt@amherstburg.ca)>  
**Sent:** January 19, 2022 8:50 AM  
**To:** Robin Marinac  
**Cc:** Frank Garardo  
**Subject:** RE: Traffic Data Request - Sandwich Street TIS and Parking Study

Robin,

I would suggest that the your firm arrange to have the traffic counts completed directly.

Todd

**From:** Robin Marinac <[robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)>  
**Sent:** January 19, 2022 8:22 AM  
**To:** Todd Hewitt <[thewitt@amherstburg.ca](mailto:thewitt@amherstburg.ca)>  
**Cc:** Frank Garardo <[fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)>  
**Subject:** RE: Traffic Data Request - Sandwich Street TIS and Parking Study

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Todd,

Thank you for letting me know. Do you know who we could contact to get that original data collection information?

Kind regards,  
Robin Marinac



Robin Marinac, EIT  
**CGH Transportation Inc.**  
P: 437-242-5183  
E: [robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)

---

**From:** Todd Hewitt <[thewitt@amherstburg.ca](mailto:thewitt@amherstburg.ca)>  
**Sent:** January 18, 2022 10:50 AM  
**To:** Robin Marinac <[robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)>  
**Cc:** Frank Garardo <[fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)>  
**Subject:** RE: Traffic Data Request - Sandwich Street TIS and Parking Study

Robin,

We do not have that type of data.

Todd

**From:** Robin Marinac <[robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)>  
**Sent:** January 18, 2022 9:41 AM  
**To:** Todd Hewitt <[thewitt@amherstburg.ca](mailto:thewitt@amherstburg.ca)>  
**Cc:** Frank Garardo <[fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)>  
**Subject:** RE: Traffic Data Request - Sandwich Street TIS and Parking Study

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Todd,

Thank you for that information. As we begin to get further into our study, I was wondering if you could provide the actual count data for the 2016 AADT/ATR counts at Fort Street and North Street discussed below. I believe this data is typically shown in 15-minute increments.

Kind regards,  
Robin Marinac



Robin Marinac, EIT  
**CGH Transportation Inc.**  
P: 437-242-5183  
E: [robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)

---

**From:** Todd Hewitt <[thewitt@amherstburg.ca](mailto:thewitt@amherstburg.ca)>  
**Sent:** January 17, 2022 12:54 PM  
**To:** Robin Marinac <[robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)>  
**Cc:** Frank Garardo <[fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)>  
**Subject:** RE: Traffic Data Request - Sandwich Street TIS and Parking Study

The pedestrian crossing is strictly on demand. I believe it is a 30 second crossing.

Todd

**From:** Robin Marinac <[robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)>  
**Sent:** January 17, 2022 11:57 AM  
**To:** Todd Hewitt <[thewitt@amherstburg.ca](mailto:thewitt@amherstburg.ca)>  
**Cc:** Frank Garardo <[fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)>  
**Subject:** RE: Traffic Data Request - Sandwich Street TIS and Parking Study

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Todd,

Thank you for your responses below. My request for a STP refers to a Signal Timing Plan. Sorry for the confusion.

Kind regards,  
Robin Marinac



Robin Marinac, EIT  
**CGH Transportation Inc.**  
P: 437-242-5183  
E: [robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)

---

**From:** Todd Hewitt <[thewitt@amherstburg.ca](mailto:thewitt@amherstburg.ca)>  
**Sent:** January 14, 2022 2:46 PM  
**To:** Robin Marinac <[robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)>  
**Cc:** Frank Garardo <[fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)>  
**Subject:** RE: Traffic Data Request - Sandwich Street TIS and Parking Study

Robin,

See answers below in **RED**

Todd

**Todd Hewitt**

*Manager of Engineering and Operations*  
Town of Amherstburg  
512 Sandwich St South, Amherstburg, ON, N9V 3R2  
Tel: 519-736-3664 ext 2313 Fax: 519-736-7080 TTY: 519-736-9860



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---

**From:** Frank Garardo  
**Sent:** January 14, 2022 1:44 PM  
**To:** Todd Hewitt <[thewitt@amherstburg.ca](mailto:thewitt@amherstburg.ca)>  
**Subject:** FW: Traffic Data Request - Sandwich Street TIS and Parking Study

**Frank Garardo**

*Manager, Planning Services*  
Town of Amherstburg



3295 Meloche Rd., Amherstburg, ON, N9V 2Y8

Tel: Fax: TTY: 519-736-9860



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**From:** Robin Marinac <[robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)>

**Sent:** January 14, 2022 9:10 AM

**To:** Frank Garardo <[fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)>

**Subject:** RE: Traffic Data Request - Sandwich Street TIS and Parking Study

**[EXTERNAL EMAIL]** DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Frank,

I realized I hadn't included the figure that was referenced. I've included it below:



Kind regards,  
Robin Marinac

Robin Marinac, EIT  
**CGH Transportation Inc.**



P: 437-242-5183

E: [robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)

---

**From:** Robin Marinac

**Sent:** January 13, 2022 11:49 AM

**To:** [fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)

**Subject:** Traffic Data Request - Sandwich Street TIS and Parking Study

Hi Frank,

I am a traffic consultant looking to obtain traffic and transportation data for use in a TIS for 131 Sandwich Street – a site I believe you are familiar with. I apologize if you are not the correct person to contact for this information and ask that you please forward my request to the appropriate individual.

Could you please provide the following data if available:

- TMC at Sandwich Street South and Fort Street **We do not track this**
- TMC at North Street and Sandwich Street South **We do not track this**
- TMC at Sandwich Street South and the parking lot access shown in the figure below **We do not track this**
- STP for the Signalized Pedestrian Crossing on Sandwich Street, approximately 75 metres south of Fort Street **Unfamiliar with STP terminology**
- Any ATR/AADT counts along Sandwich Street between Maple Avenue and Rankin Avenue **Refer to County of Essex mapping data for Sandwich Street information (if any)**
- Any ATR/AADT counts along Fort Street between Sandwich Street and Balaclava Street **1400 – 2016 (2021 counts skewed by pandemic)**
- Any ATR/AADT counts along North Street between Sandwich Street and Dalhousie Street **700 – 2016 (2021 counts skewed by pandemic)**
- Any collision data (preferably over the past 5 years) at the intersections of Sandwich Street at Fort Street and Sandwich Street and North Street. **Do not track**
- Any collision data (preferably over the past 5 years) along Sandwich Street between Maple Avenue and Rankin Avenue **Do not track**
- Any collision data (preferably over the past 5 years) along Fort Street between Sandwich Street and Balaclava Street **Do not track**
- Any collision data (preferably over the past 5 years) along North Street between Sandwich Street and Dalhousie Street **Do not track**

Thank you very much in advance for your help.

Kind regards,  
Robin Marinac



Robin Marinac, EIT

**CGH Transportation Inc.**

P: 437-242-5183

E: [robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)

# Appendix B

COVID-19 Adjustment Factor Calculations

Sandwich St S & Fort St											
NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
0	335	46	12	0	15	20	454	0	0	0	0
0	550	68	36	0	21	12	563	0	0	0	0

AADT Fort St btwn Sandwich St & Balaclava St			
2016	1400	PM	140
2022	1577		158

2022 East of Sandwich St		
AADT	TMC	Increase Factor
-	-	-
158	137	1.15

AM  
PM

Sandwich St S & North St/165 Sandwich St											
NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
53	382	4	1	0	0	5	432	23	2	0	15
3	615	0	3	0	3	2	594	6	3	0	4

AADT Fort St btwn Sandwich St & Balaclava St			
2016	700	PM	70
2022	789		79

2022 West of Sandwich St		
AADT	TMC	Increase Factor
-	-	-
79	15	5.26

AM  
PM

# Appendix C

Traffic Data

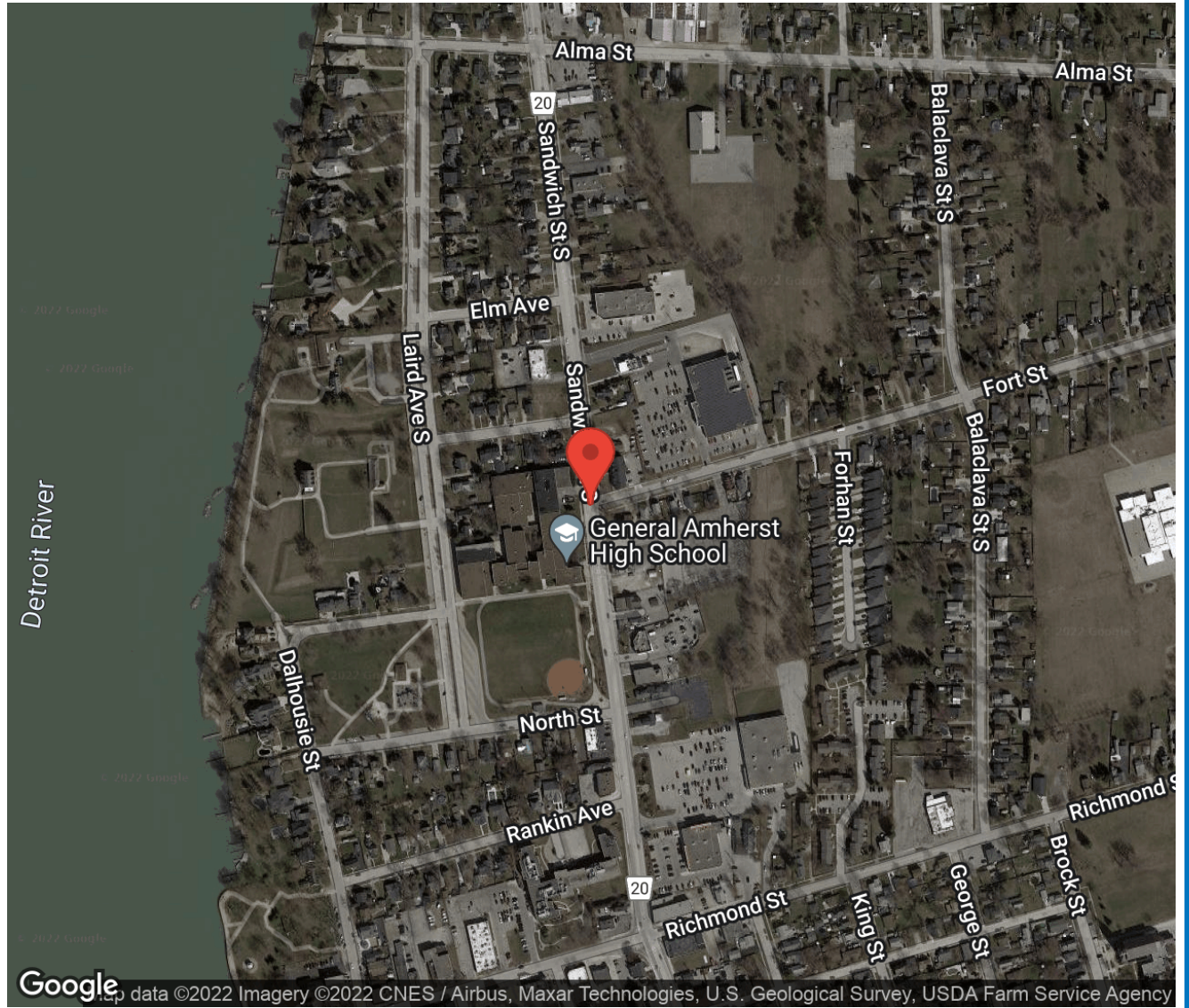
## Project #22-044 - CGH Transportation

### Intersection Count Report

<b>Intersection:</b>	Sandwich St S & Fort St
<b>Municipality:</b>	Amherstburg
<b>Count Date:</b>	Feb 24, 2022
<b>Site Code:</b>	2204400001
<b>Count Categories:</b>	Cars, Trucks, Buses, Bicycles, Pedestrians
<b>Count Period:</b>	07:00-09:00, 16:00-18:00
<b>Weather:</b>	Clear

## Traffic Count Map

Intersection:	Sandwich St S & Fort St
Site Code:	2204400001
Municipality:	Amherstburg
Count Date:	Feb 24, 2022





## Traffic Count Summary

Intersection: Sandwich St S & Fort St  
Site Code: 2204400001  
Municipality: Amherstburg  
Count Date: Feb 24, 2022

### Sandwich St S - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Buses, Bicycles						Includes Cars, Trucks, Buses, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	7	244	0	0	251	1	0	310	18	0	328	0	579
08:00 - 09:00	20	454	0	0	474	1	0	335	46	0	381	0	855
BREAK													
16:00 - 17:00	14	580	0	0	594	1	0	515	77	0	592	1	1186
17:00 - 18:00	8	497	0	0	505	0	0	449	64	0	513	0	1018
GRAND TOTAL	49	1775	0	0	1824	3	0	1609	205	0	1814	1	3638

## Traffic Count Summary

Intersection: Sandwich St S & Fort St  
Site Code: 2204400001  
Municipality: Amherstburg  
Count Date: Feb 24, 2022

### Fort St - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Buses, Bicycles						Includes Cars, Trucks, Buses, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	7	0	7	0	14	1	0	0	0	0	0	0	14
08:00 - 09:00	12	0	15	0	27	5	0	0	0	0	0	0	27
BREAK													
16:00 - 17:00	40	0	22	0	62	6	0	0	0	0	0	0	62
17:00 - 18:00	31	0	9	0	40	2	0	0	0	0	0	0	40
GRAND TOTAL	90	0	53	0	143	14	0	0	0	0	0	0	143

## Traffic Count Data

Intersection: Sandwich St S & Fort St  
Site Code: 2204400001  
Municipality: Amherstburg  
Count Date: Feb 24, 2022

### North Approach - Sandwich St S

Start Time	Cars					Trucks					Buses					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	2	37	0	0	39	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0
07:15	1	45	0	0	46	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	0
07:30	1	62	0	0	63	0	4	0	0	4	0	5	0	0	5	0	0	0	0	0	1
07:45	3	79	0	0	82	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	0
08:00	11	95	0	0	106	0	1	0	0	1	0	3	0	0	3	0	0	0	0	0	0
08:15	7	117	0	0	124	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0
08:30	1	99	0	0	100	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
08:45	1	124	0	0	125	0	6	0	0	6	0	2	0	0	2	0	0	0	0	0	1
<b>SUBTOTAL</b>	27	658	0	0	685	0	22	0	0	22	0	18	0	0	18	0	0	0	0	0	2

## Traffic Count Data

Intersection: Sandwich St S & Fort St  
Site Code: 2204400001  
Municipality: Amherstburg  
Count Date: Feb 24, 2022

### North Approach - Sandwich St S

Start Time	Cars					Trucks					Buses					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	3	142	0	0	145	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1
16:15	5	146	0	0	151	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
16:30	1	147	0	0	148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	5	140	0	0	145	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:00	1	127	0	0	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	2	133	0	0	135	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:30	3	115	0	0	118	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:45	2	119	0	0	121	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
<b>SUBTOTAL</b>	22	1069	0	0	1091	0	5	0	0	5	0	3	0	0	3	0	0	0	0	0	1
<b>GRAND TOTAL</b>	49	1727	0	0	1776	0	27	0	0	27	0	21	0	0	21	0	0	0	0	0	3

## Traffic Count Data

Intersection: Sandwich St S & Fort St  
Site Code: 2204400001  
Municipality: Amherstburg  
Count Date: Feb 24, 2022

### South Approach - Sandwich St S

Start Time	Cars					Trucks					Buses					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	0	63	6	0	69	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
07:15	0	74	1	0	75	0	3	1	0	4	0	3	0	0	3	0	0	0	0	0	0
07:30	0	84	4	0	88	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
07:45	0	74	5	0	79	0	3	1	0	4	0	1	0	0	1	0	0	0	0	0	0
08:00	0	101	9	0	110	0	3	0	0	3	0	3	0	0	3	0	0	0	0	0	0
08:15	0	73	20	0	93	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
08:30	0	78	6	0	84	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
08:45	0	72	10	0	82	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL</b>	0	619	61	0	680	0	17	3	0	20	0	9	0	0	9	0	0	0	0	0	0

## Traffic Count Data

Intersection: Sandwich St S & Fort St  
Site Code: 2204400001  
Municipality: Amherstburg  
Count Date: Feb 24, 2022

### South Approach - Sandwich St S

Start Time	Cars					Trucks					Buses					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	0	111	21	0	132	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
16:15	0	123	17	0	140	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16:30	0	138	17	0	155	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1
16:45	0	136	22	0	158	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
17:00	0	145	12	0	157	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
17:15	0	115	19	0	134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	95	17	0	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	92	15	0	107	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	955	140	0	1095	0	8	1	0	9	0	1	0	0	1	0	0	0	0	0	1
GRAND TOTAL	0	1574	201	0	1775	0	25	4	0	29	0	10	0	0	10	0	0	0	0	0	1

[illegible]



[illegible]

## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 08:00:00  
To: 09:00:00

**Intersection:** Sandwich St S & Fort St  
**Site Code:** 2204400001  
**Count Date:** Feb 24, 2022

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Sandwich St S runs N/S

### North Approach

	Out	In	Total
	455	339	794
	12	8	20
	7	3	10
	0	0	0
<b>Totals</b>	<b>474</b>	<b>350</b>	<b>824</b>

### Sandwich St S

	0	0	0
	7	0	0
	12	0	0
	435	20	0
<b>Totals</b>	<b>454</b>	<b>20</b>	<b>0</b>

Peds: 1



Peds: 0

	<b>335</b>	<b>46</b>	<b>0</b>
	324	45	0
	8	1	0
	3	0	0
	0	0	0
<b>Totals</b>	<b>335</b>	<b>46</b>	<b>0</b>

### Sandwich St S

### East Approach

	Out	In	Total
	26	65	91
	1	1	2
	0	0	0
	0	0	0
<b>Totals</b>	<b>27</b>	<b>66</b>	<b>93</b>

### Fort St

Totals				
<b>0</b>	0	0	0	0
<b>15</b>	15	0	0	0
<b>12</b>	11	1	0	0

### South Approach

	Out	In	Total
	369	446	815
	9	13	22
	3	7	10
	0	0	0
<b>Totals</b>	<b>381</b>	<b>466</b>	<b>847</b>

- Cars

- Trucks

- Buses

- Bicycles

## Comments

## Peak Hour Summary

Intersection: Sandwich St S & Fort St  
Site Code: 2204400001  
Count Date: Feb 24, 2022  
Period: 07:00 - 09:00

### Peak Hour Data (08:00 - 09:00)

	North Approach Sandwich St S						South Approach Sandwich St S						East Approach Fort St						West Approach						Total Vehicl es
Start Time	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
08:00	11	99		0	0	110		107	9	0	0	116	1		5	0	2	6					0		232
08:15	7	120		0	0	127		73	21	0	0	94	6		5	0	1	11					0		232
08:30	1	103		0	0	104		80	6	0	0	86	5		2	0	0	7					0		197
08:45	1	132		0	1	133		75	10	0	0	85	0		3	0	2	3					0		221
Grand Total	20	454		0	1	474		335	46	0	0	381	12		15	0	5	27					0	0	882
Approach %	4.2	95.8		0		-		87.9	12.1	0		-	44.4		55.6	0		-					-		
Totals %	2.3	51.5		0		53.7		38	5.2	0		43.2	1.4		1.7	0		3.1					0		
PHF	0.45	0.86		0		0.89		0.78	0.55	0		0.82	0.5		0.75	0		0.61					0		0.95
Cars	20	435		0		455		324	45	0		369	11		15	0		26					0		850
% Cars	100	95.8		0		96		96.7	97.8	0		96.9	91.7		100	0		96.3					0		96.4
Trucks	0	12		0		12		8	1	0		9	1		0	0		1					0		22
% Trucks	0	2.6		0		2.5		2.4	2.2	0		2.4	8.3		0	0		3.7					0		2.5
Buses	0	7		0		7		3	0	0		3	0		0	0		0					0		10
% Buses	0	1.5		0		1.5		0.9	0	0		0.8	0		0	0		0					0		1.1
Bicycles	0	0		0		0		0	0	0		0	0		0	0		0					0		0
% Bicycles	0	0		0		0		0	0	0		0	0		0	0		0					0		0
Peds					1	-					0	-					5	-					0	-	6
% Peds					16.7	-					0	-					83.3	-					0	-	

## Peak Hour Diagram

### Specified Period

From: 16:00:00  
To: 18:00:00

### One Hour Peak

From: 16:15:00  
To: 17:15:00





**Intersection:** Sandwich St S & Fort St  
**Site Code:** 2204400001  
**Count Date:** Feb 24, 2022

**Weather conditions:** Clear





**\*\* Unsignalized Intersection \*\***

**Major Road:** Sandwich St S runs N/S

### North Approach

	Out	In	Total
	572	563	1135
	3	8	11
	0	0	0
	0	0	0
<b>Totals</b>	<b>575</b>	<b>571</b>	<b>1146</b>








### Sandwich St S

	0	0	0
	0	0	0
	3	0	0
	560	12	0
<b>Totals</b>	<b>563</b>	<b>12</b>	<b>0</b>

Peds: 0







Peds: 1








			
Totals	550	68	0
	542	68	0
	8	0	0
	0	0	0
	0	0	0

### Sandwich St S





### East Approach

	Out	In	Total
	57	80	137
	0	0	0
	0	0	0
	0	0	0
<b>Totals</b>	<b>57</b>	<b>80</b>	<b>137</b>


### Fort St


Totals				
	0	0	0	0
	21	0	0	0
	36	0	0	0

### South Approach

	Out	In	Total
	610	596	1206
	8	3	11
	0	0	0
	0	0	0
<b>Totals</b>	<b>618</b>	<b>599</b>	<b>1217</b>

 - Cars

 - Trucks

 - Buses






















 - Bicycles

## Comments

## Peak Hour Summary

Intersection: Sandwich St S & Fort St  
Site Code: 2204400001  
Count Date: Feb 24, 2022  
Period: 16:00 - 18:00

### Peak Hour Data (16:15 - 17:15)

	North Approach Sandwich St S						South Approach Sandwich St S						East Approach Fort St						West Approach						Total Vehicl es
Start Time					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:15	5	148		0	0	153		124	17	0	0	141	15		10	0	3	25		0		319			
16:30	1	147		0	0	148		140	17	0	1	157	1		5	0	1	6		0		311			
16:45	5	141		0	0	146		139	22	0	0	161	11		4	0	0	15		0		322			
17:00	1	127		0	0	128		147	12	0	0	159	9		2	0	1	11		0		298			
Grand Total	12	563		0	0	575		550	68	0	1	618	36		21	0	5	57		0	0	1250			
Approach %	2.1	97.9		0	-	-		89	11	0	-	-	63.2		36.8	0	-	-		-	-				
Totals %	1	45		0	-	46		44	5.4	0	-	49.4	2.9		1.7	0	-	4.6		0	-				
PHF	0.6	0.95		0	-	0.94		0.94	0.77	0	-	0.96	0.6		0.53	0	-	0.57		0	-	0.97			
Cars	12	560		0	-	572		542	68	0	-	610	36		21	0	-	57		0	-	1239			
% Cars	100	99.5		0	-	99.5		98.5	100	0	-	98.7	100		100	0	-	100		0	-	99.1			
Trucks	0	3		0	-	3		8	0	0	-	8	0		0	0	-	0		0	-	11			
% Trucks	0	0.5		0	-	0.5		1.5	0	0	-	1.3	0		0	0	-	0		0	-	0.9			
Buses	0	0		0	-	0		0	0	0	-	0	0		0	0	-	0		0	-	0			
% Buses	0	0		0	-	0		0	0	0	-	0	0		0	0	-	0		0	-	0			
Bicycles	0	0		0	-	0		0	0	0	-	0	0		0	0	-	0		0	-	0			
% Bicycles	0	0		0	-	0		0	0	0	-	0	0		0	0	-	0		0	-	0			
Peds	0					-	1					-	5					-	0					-	6
% Peds	0					-	16.7					-	83.3					-	0					-	

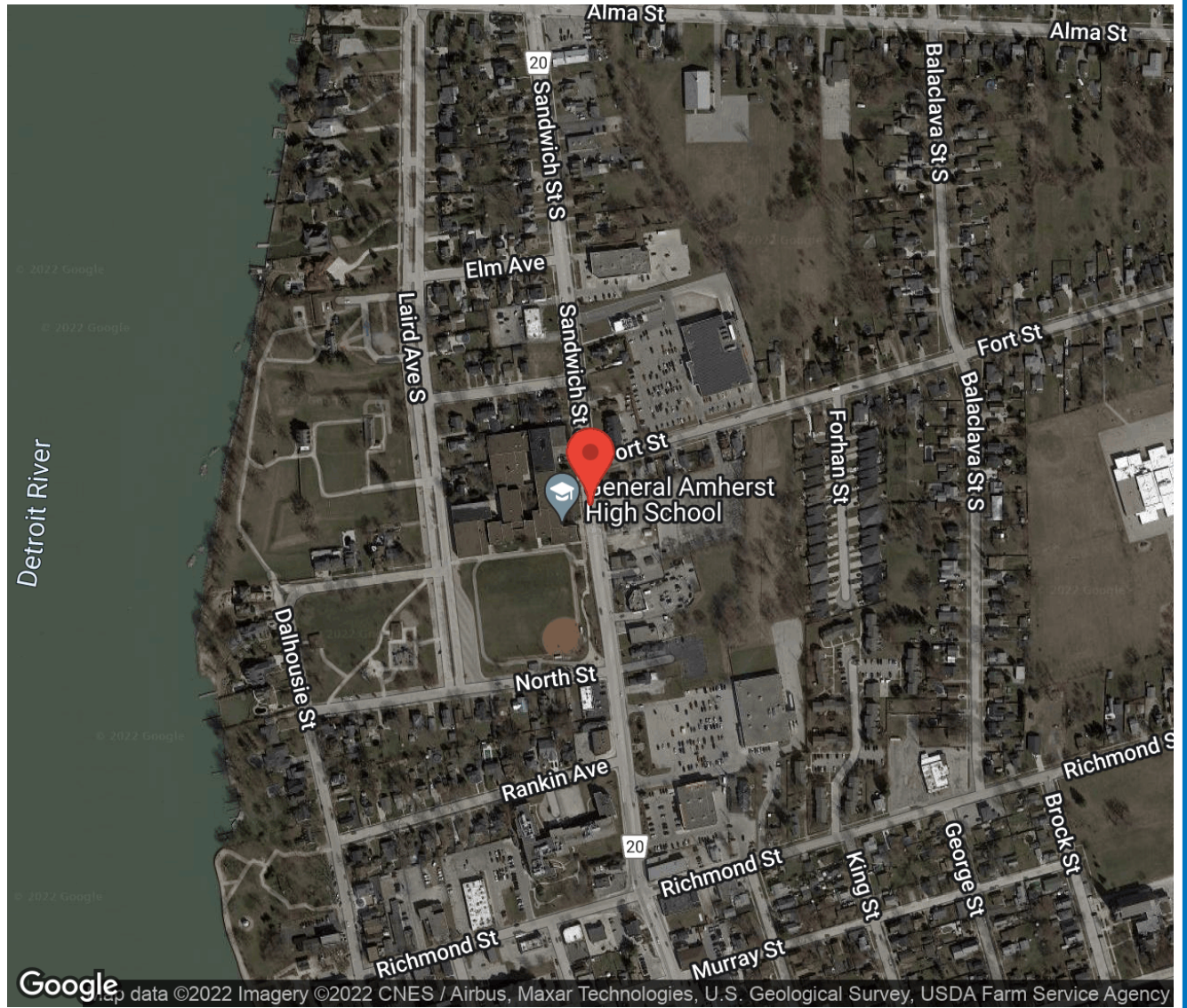
## Project #22-044 - CGH Transportation

### Intersection Count Report

<b>Intersection:</b>	Sandwich St S & Parking Lot Driveway
<b>Municipality:</b>	Amherstburg
<b>Count Date:</b>	Feb 24, 2022
<b>Site Code:</b>	2204400002
<b>Count Categories:</b>	Cars, Trucks, Buses, Bicycles, Pedestrians
<b>Count Period:</b>	07:00-09:00, 16:00-18:00
<b>Weather:</b>	Clear

## Traffic Count Map

Intersection:	Sandwich St S & Parking Lot Driveway
Site Code:	2204400002
Municipality:	Amherstburg
Count Date:	Feb 24, 2022





## Traffic Count Summary

Intersection: Sandwich St S & Parking Lot Driveway  
 Site Code: 2204400002  
 Municipality: Amherstburg  
 Count Date: Feb 24, 2022

### Sandwich St S - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Buses, Bicycles						Includes Cars, Trucks, Buses, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	8	243	0	0	251	0	0	325	5	0	330	36	581
08:00 - 09:00	13	453	0	0	466	0	0	362	27	0	389	137	855
BREAK													
16:00 - 17:00	2	618	0	0	620	0	0	589	5	0	594	9	1214
17:00 - 18:00	3	525	0	0	528	1	0	510	4	0	514	4	1042
GRAND TOTAL	26	1839	0	0	1865	1	0	1786	41	0	1827	186	3692

## Traffic Count Summary

Intersection: Sandwich St S & Parking Lot Driveway  
 Site Code: 2204400002  
 Municipality: Amherstburg  
 Count Date: Feb 24, 2022

### Parking Lot Driveway - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Buses, Bicycles						Includes Cars, Trucks, Buses, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	1	0	3	0	4	0	0	0	0	0	0	0	4
08:00 - 09:00	1	0	19	0	20	19	0	0	0	0	0	0	20
BREAK													
16:00 - 17:00	3	0	3	0	6	6	0	0	0	0	0	0	6
17:00 - 18:00	1	0	3	0	4	5	0	0	0	0	0	0	4
GRAND TOTAL	6	0	28	0	34	30	0	0	0	0	0	0	34

## Traffic Count Data

Intersection: Sandwich St S & Parking Lot Driveway  
Site Code: 2204400002  
Municipality: Amherstburg  
Count Date: Feb 24, 2022

### North Approach - Sandwich St S

Start Time	Cars					Trucks					Buses					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	0	37	0	0	37	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0
07:15	0	48	0	0	48	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	0
07:30	3	60	0	0	63	0	4	0	0	4	0	5	0	0	5	0	0	0	0	0	0
07:45	5	77	0	0	82	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	0
08:00	5	91	0	0	96	0	1	0	0	1	0	3	0	0	3	0	0	0	0	0	0
08:15	5	117	0	0	122	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	0
08:30	2	102	0	0	104	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
08:45	1	123	0	0	124	0	6	0	0	6	0	2	0	0	2	0	0	0	0	0	0
<b>SUBTOTAL</b>	21	655	0	0	676	0	23	0	0	23	0	18	0	0	18	0	0	0	0	0	0

## Traffic Count Data

Intersection: Sandwich St S & Parking Lot Driveway  
Site Code: 2204400002  
Municipality: Amherstburg  
Count Date: Feb 24, 2022

### North Approach - Sandwich St S

Start Time	Cars					Trucks					Buses					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	2	153	0	0	155	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
16:15	0	161	0	0	161	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
16:30	0	148	0	0	148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	151	0	0	151	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:00	0	136	0	0	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
17:15	0	137	0	0	137	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:30	1	125	0	0	126	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:45	2	124	0	0	126	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
<b>SUBTOTAL</b>	5	1135	0	0	1140	0	5	0	0	5	0	3	0	0	3	0	0	0	0	0	1
<b>GRAND TOTAL</b>	26	1790	0	0	1816	0	28	0	0	28	0	21	0	0	21	0	0	0	0	0	1

## Traffic Count Data

Intersection: Sandwich St S & Parking Lot Driveway  
Site Code: 2204400002  
Municipality: Amherstburg  
Count Date: Feb 24, 2022

### South Approach - Sandwich St S

Start Time	Cars					Trucks					Buses					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
07:00	0	67	0	0	67	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1
07:15	0	76	1	0	77	0	4	0	0	4	0	3	0	0	3	0	0	0	0	0	1
07:30	0	87	1	0	88	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	9
07:45	0	78	3	0	81	0	4	0	0	4	0	1	0	0	1	0	0	0	0	0	25
08:00	0	99	13	0	112	0	3	0	0	3	0	3	0	0	3	0	0	0	0	0	61
08:15	0	88	9	0	97	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	64
08:30	0	81	2	0	83	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	5
08:45	0	82	3	0	85	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	7
<b>SUBTOTAL</b>	0	658	32	0	690	0	20	0	0	20	0	9	0	0	9	0	0	0	0	0	173

## Traffic Count Data

Intersection: Sandwich St S & Parking Lot Driveway  
 Site Code: 2204400002  
 Municipality: Amherstburg  
 Count Date: Feb 24, 2022

### South Approach - Sandwich St S

Start Time	Cars					Trucks					Buses					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	0	131	2	0	133	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5
16:15	0	138	1	0	139	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
16:30	0	155	2	0	157	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
16:45	0	158	0	0	158	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
17:00	0	157	2	0	159	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
17:15	0	133	1	0	134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	111	0	0	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	106	1	0	107	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
SUBTOTAL	0	1089	9	0	1098	0	9	0	0	9	0	1	0	0	1	0	0	0	0	0	13
GRAND TOTAL	0	1747	41	0	1788	0	29	0	0	29	0	10	0	0	10	0	0	0	0	0	186

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## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 08:00:00  
To: 09:00:00





**Intersection:** Sandwich St S & Parking Lot Driveway  
**Site Code:** 2204400002  
**Count Date:** Feb 24, 2022

**Weather conditions:** Clear





**\*\* Unsignalized Intersection \*\***

**Major Road:** Sandwich St S runs N/S

### North Approach

	Out	In	Total
	446	369	815
	13	9	22
	7	3	10
	0	0	0
<b>Totals</b>	<b>466</b>	<b>381</b>	<b>847</b>





### Sandwich St S

	0	0	0
	7	0	0
	13	0	0
	433	13	0
<b>Totals</b>	<b>453</b>	<b>13</b>	<b>0</b>

Peds: 0







Peds: 137





<b>Totals</b>	<b>362</b>	<b>27</b>	<b>0</b>
	350	27	0
	9	0	0
	3	0	0
	0	0	0

### Sandwich St S





### East Approach

	Out	In	Total
	20	40	60
	0	0	0
	0	0	0
	0	0	0
<b>Totals</b>	<b>20</b>	<b>40</b>	<b>60</b>


### Parking Lot Driveway

Totals				
0	0	0	0	0
19	19	0	0	0
1	1	0	0	0

### South Approach

	Out	In	Total
	377	434	811
	9	13	22
	3	7	10
	0	0	0
<b>Totals</b>	<b>389</b>	<b>454</b>	<b>843</b>

 - Cars

 - Trucks

 - Buses























 - Bicycles

## Comments

## Peak Hour Summary

Intersection: Sandwich St S & Parking Lot Driveway  
Site Code: 2204400002  
Count Date: Feb 24, 2022  
Period: 07:00 - 09:00

### Peak Hour Data (08:00 - 09:00)

	North Approach Sandwich St S						South Approach Sandwich St S						East Approach Parking Lot Driveway						West Approach						Total Vehicl es				
Start Time					Peds	Total					Peds	Total					Peds	Total					Peds	Total					
08:00	5	95		0	0	100		105	13	0	61	118	0		11	0	9	11		0			229						
08:15	5	121		0	0	126		89	9	0	64	98	0		5	0	8	5		0			229						
08:30	2	106		0	0	108		83	2	0	5	85	0		3	0	2	3		0			196						
08:45	1	131		0	0	132		85	3	0	7	88	1		0	0	0	1		0			221						
Grand Total	13	453		0	0	466		362	27	0	137	389	1		19	0	19	20			0	0	875						
Approach %	2.8	97.2		0		-		93.1	6.9	0		-	5		95	0		-			-								
Totals %	1.5	51.8		0		53.3		41.4	3.1	0		44.5	0.1		2.2	0		2.3			0								
PHF	0.65	0.86		0		0.88		0.86	0.52	0		0.82	0.25		0.43	0		0.45			0		0.96						
Cars	13	433		0		446		350	27	0		377	1		19	0		20			0		843						
% Cars	100	95.6		0		95.7		96.7	100	0		96.9	100		100	0		100			0		96.3						
Trucks	0	13		0		13		9	0	0		9	0		0	0		0			0		22						
% Trucks	0	2.9		0		2.8		2.5	0	0		2.3	0		0	0		0			0		2.5						
Buses	0	7		0		7		3	0	0		3	0		0	0		0			0		10						
% Buses	0	1.5		0		1.5		0.8	0	0		0.8	0		0	0		0			0		1.1						
Bicycles	0	0		0		0		0	0	0		0	0		0	0		0			0		0						
% Bicycles	0	0		0		0		0	0	0		0	0		0	0		0			0		0						
Peds						0	-						137	-						19	-						0	-	156
% Peds						0	-						87.8	-						12.2	-						0	-	

## Peak Hour Diagram

### Specified Period

From: 16:00:00  
To: 18:00:00

### One Hour Peak

From: 16:15:00  
To: 17:15:00





**Intersection:** Sandwich St S & Parking Lot Driveway  
**Site Code:** 2204400002  
**Count Date:** Feb 24, 2022

**Weather conditions:** Clear





**\*\* Unsignalized Intersection \*\***

**Major Road:** Sandwich St S runs N/S

### North Approach

	Out	In	Total
	596	610	1206
	3	8	11
	0	0	0
	0	0	0
<b>Totals</b>	<b>599</b>	<b>618</b>	<b>1217</b>





### Sandwich St S

	0	0	0
	0	0	0
	3	0	0
	596	0	0
<b>Totals</b>	<b>599</b>	<b>0</b>	<b>0</b>

Peds: 1







Peds: 4





<b>Totals</b>	<b>616</b>	<b>5</b>	<b>0</b>
	608	5	0
	8	0	0
	0	0	0
	0	0	0

### Sandwich St S





### East Approach

	Out	In	Total
	5	5	10
	0	0	0
	0	0	0
	0	0	0
<b>Totals</b>	<b>5</b>	<b>5</b>	<b>10</b>


### Parking Lot Driveway


Totals				
<b>0</b>	0	0	0	0
<b>2</b>	2	0	0	0
<b>3</b>	3	0	0	0

### South Approach

	Out	In	Total
	613	599	1212
	8	3	11
	0	0	0
	0	0	0
<b>Totals</b>	<b>621</b>	<b>602</b>	<b>1223</b>

 - Cars

 - Trucks

 - Buses

 - Bicycles

## Comments

## Peak Hour Summary

Intersection: Sandwich St S & Parking Lot Driveway  
Site Code: 2204400002  
Count Date: Feb 24, 2022  
Period: 16:00 - 18:00

### Peak Hour Data (16:15 - 17:15)

Start Time	North Approach Sandwich St S						South Approach Sandwich St S						East Approach Parking Lot Driveway						West Approach						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
16:15	0	163		0	0	163		139	1	0	2	140	1		2	0	3	3					0		306
16:30	0	148		0	0	148		157	2	0	2	159	1		0	0	0	1					0		308
16:45	0	152		0	0	152		161	0	0	0	161	1		0	0	1	1					0		314
17:00	0	136		0	1	136		159	2	0	0	161	0		0	0	0	0					0		297
Grand Total	0	599		0	1	599		616	5	0	4	621	3		2	0	4	5					0	0	1225
Approach %	0	100		0	-	-		99.2	0.8	0	-	-	60		40	0	-	-					-	-	-
Totals %	0	48.9		0	-	48.9		50.3	0.4	0	-	50.7	0.2		0.2	0	-	0.4					0	-	-
PHF	0	0.92		0	-	0.92		0.96	0.63	0	-	0.96	0.75		0.25	0	-	0.42					0	-	0.98
Cars	0	596		0	-	596		608	5	0	-	613	3		2	0	-	5					0	-	1214
% Cars	0	99.5		0	-	99.5		98.7	100	0	-	98.7	100		100	0	-	100					0	-	99.1
Trucks	0	3		0	-	3		8	0	0	-	8	0		0	0	-	0					0	-	11
% Trucks	0	0.5		0	-	0.5		1.3	0	0	-	1.3	0		0	0	-	0					0	-	0.9
Buses	0	0		0	-	0		0	0	0	-	0	0		0	0	-	0					0	-	0
% Buses	0	0		0	-	0		0	0	0	-	0	0		0	0	-	0					0	-	0
Bicycles	0	0		0	-	0		0	0	0	-	0	0		0	0	-	0					0	-	0
% Bicycles	0	0		0	-	0		0	0	0	-	0	0		0	0	-	0					0	-	0
Peds					1	-					4	-					4	-					0	-	9
% Peds					11.1	-					44.4	-					44.4	-					0	-	-

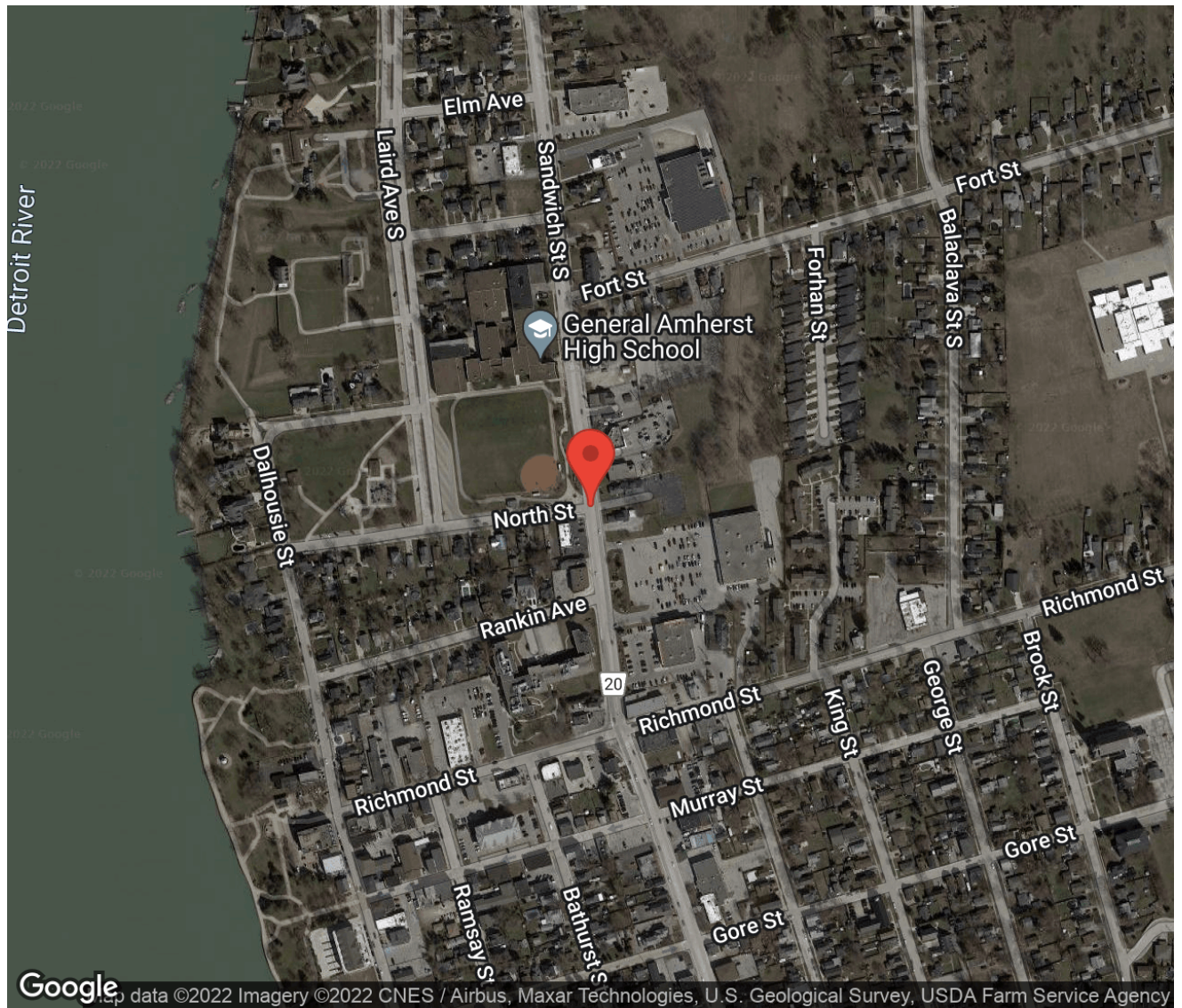
## Project #22-044 - CGH Transportation

### Intersection Count Report

<b>Intersection:</b>	Sandwich St S & North St-165 Sandwich St S Driveway
<b>Municipality:</b>	Amherstburg
<b>Count Date:</b>	Feb 24, 2022
<b>Site Code:</b>	2204400003
<b>Count Categories:</b>	Cars, Trucks, Buses, Bicycles, Pedestrians
<b>Count Period:</b>	07:00-09:00, 16:00-18:00
<b>Weather:</b>	Clear

## Traffic Count Map

Intersection:	Sandwich St S & North St-165 Sandwich St S Driveway
Site Code:	2204400003
Municipality:	Amherstburg
Count Date:	Feb 24, 2022



## Traffic Count Summary

Intersection: Sandwich St S & North St-165 Sandwich St S Driveway  
Site Code: 2204400003  
Municipality: Amherstburg  
Count Date: Feb 24, 2022

### Sandwich St S - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Buses, Bicycles						Includes Cars, Trucks, Buses, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	5	222	11	0	238	0	5	326	3	0	334	0	572
08:00 - 09:00	5	432	23	0	460	0	53	382	4	0	439	1	899
BREAK													
16:00 - 17:00	2	609	9	0	620	0	2	589	0	0	591	0	1211
17:00 - 18:00	0	525	4	0	529	0	3	515	0	0	518	1	1047
GRAND TOTAL	12	1788	47	0	1847	0	63	1812	7	0	1882	2	3729



## Traffic Count Summary

Intersection: Sandwich St S & North St-165 Sandwich St S Driveway  
 Site Code: 2204400003  
 Municipality: Amherstburg  
 Count Date: Feb 24, 2022

### 165 Sandwich St S Driveway - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Buses, Bicycles						Includes Cars, Trucks, Buses, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	0	0	0	0	0	4	6	0	1	0	7	1	7
08:00 - 09:00	1	0	0	0	1	26	2	0	15	0	17	9	18
BREAK													
16:00 - 17:00	3	0	3	0	6	1	2	0	3	0	5	6	11
17:00 - 18:00	2	0	1	0	3	1	1	0	4	0	5	4	8
GRAND TOTAL	6	0	4	0	10	32	11	0	23	0	34	20	44



## Traffic Count Data

Intersection: Sandwich St S & North St-165 Sandwich St S Driveway  
 Site Code: 2204400003  
 Municipality: Amherstburg  
 Count Date: Feb 24, 2022

### North Approach - Sandwich St S

Start Time	Cars					Trucks					Buses					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	0	37	2	0	39	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0
07:15	1	43	2	0	46	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	0
07:30	2	55	1	0	58	0	4	0	0	4	0	3	2	0	5	0	0	0	0	0	0
07:45	2	71	2	0	75	0	1	0	0	1	0	1	2	0	3	0	0	0	0	0	0
08:00	0	84	12	0	96	0	2	0	0	2	0	2	1	0	3	0	0	0	0	0	0
08:15	0	111	5	0	116	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	0
08:30	2	99	2	0	103	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
08:45	3	118	3	0	124	0	5	0	0	5	0	2	0	0	2	0	0	0	0	0	0
<b>SUBTOTAL</b>	10	618	29	0	657	0	23	0	0	23	0	13	5	0	18	0	0	0	0	0	0

## Traffic Count Data

Intersection: Sandwich St S & North St-165 Sandwich St S Driveway  
 Site Code: 2204400003  
 Municipality: Amherstburg  
 Count Date: Feb 24, 2022

### North Approach - Sandwich St S

Start Time	Cars					Trucks					Buses					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	0	148	3	0	151	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0
16:15	1	159	1	0	161	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16:30	1	147	2	0	150	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16:45	0	151	2	0	153	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:00	0	134	1	0	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	138	1	0	139	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
17:30	0	126	1	0	127	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:45	0	123	1	0	124	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	2	1126	12	0	1140	0	6	0	0	6	0	2	1	0	3	0	0	0	0	0	0
GRAND TOTAL	12	1744	41	0	1797	0	29	0	0	29	0	15	6	0	21	0	0	0	0	0	0

## Traffic Count Data

Intersection: Sandwich St S & North St-165 Sandwich St S Driveway  
 Site Code: 2204400003  
 Municipality: Amherstburg  
 Count Date: Feb 24, 2022

### South Approach - Sandwich St S

















Start Time	Cars					Trucks					Buses					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	2	68	0	0	70	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0
07:15	0	74	0	0	74	0	3	0	0	3	0	3	0	0	3	0	0	0	0	0	0
07:30	0	82	0	0	82	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
07:45	3	85	3	0	91	0	4	0	0	4	0	1	0	0	1	0	0	0	0	0	0
08:00	22	112	2	0	136	2	2	0	0	4	2	3	0	0	5	0	0	0	0	0	0
08:15	21	94	1	0	116	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1
08:30	5	83	1	0	89	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
08:45	1	82	0	0	83	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL</b>	54	680	7	0	741	2	19	0	0	21	2	9	0	0	11	0	0	0	0	0	1

## Traffic Count Data

















Intersection: Sandwich St S & North St-165 Sandwich St S Driveway  
 Site Code: 2204400003  
 Municipality: Amherstburg  
 Count Date: Feb 24, 2022

### South Approach - Sandwich St S

Start Time	Cars					Trucks					Buses					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
16:00	1	135	0	0	136	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
16:15	1	138	0	0	139	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
16:30	0	157	0	0	157	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16:45	0	152	0	0	152	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
17:00	2	160	0	0	162	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
17:15	0	132	0	0	132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	1	110	0	0	111	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
17:45	0	109	0	0	109	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	5	1093	0	0	1098	0	10	0	0	10	0	1	0	0	1	0	0	0	0	0	1
GRAND TOTAL	59	1773	7	0	1839	2	29	0	0	31	2	10	0	0	12	0	0	0	0	0	2

	Cars						Trucks						Buses						Bicycles						Total Peds
Start Time					Total					Total					Total					Total					
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3				
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15				
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8				
08:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2				
SUBTOTAL	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30				

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	Cars					Trucks					Buses					Bicycles					Total Peds
Start Time					Total					Total					Total					Total	
07:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	3	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00	2	0	8	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
08:15	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
08:30	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
SUBTOTAL	8	0	16	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10

[illegible]



## Peak Hour Diagram

### Specified Period

From: 07:00:00  
To: 09:00:00

### One Hour Peak

From: 08:00:00  
To: 09:00:00

**Intersection:** Sandwich St S & North St-165 Sandwich St S Driveway  
**Site Code:** 2204400003  
**Count Date:** Feb 24, 2022

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Sandwich St S runs N/S

### North Approach

	Out	In	Total
	439	373	812
	14	8	22
	7	3	10
	0	0	0
<b>Totals</b>	<b>460</b>	<b>384</b>	<b>844</b>

### Sandwich St S

	0	0	0	0
	1	6	0	0
	0	14	0	0
	22	412	5	0
<b>Totals</b>	<b>23</b>	<b>432</b>	<b>5</b>	<b>0</b>

### East Approach

	Out	In	Total
	1	9	10
	0	0	0
	0	0	0
	0	0	0
<b>Totals</b>	<b>1</b>	<b>9</b>	<b>10</b>

### North St

					Totals
	0	0	0	0	0
	0	0	0	2	2
	0	0	0	0	0
	0	0	0	15	15

Peds: 0



Peds: 9

Peds: 26

Peds: 1

### 165 Sandwich St S Driveway

Totals				
	0	0	0	0
	0	0	0	0
	0	0	0	0
	1	1	0	0

### West Approach

	Out	In	Total
	17	71	88
	0	2	2
	0	3	3
	0	0	0
<b>Totals</b>	<b>17</b>	<b>76</b>	<b>93</b>

<b>Totals</b>	<b>53</b>	<b>382</b>	<b>4</b>	<b>0</b>
	49	371	4	0
	2	8	0	0
	2	3	0	0
	0	0	0	0

### Sandwich St S

### South Approach

	Out	In	Total
	424	428	852
	10	14	24
	5	6	11
	0	0	0
<b>Totals</b>	<b>439</b>	<b>448</b>	<b>887</b>

- Cars

- Trucks

- Buses

- Bicycles

## Comments

## Peak Hour Summary

Intersection: Sandwich St S & North St-165 Sandwich St S Driveway  
Site Code: 2204400003  
Count Date: Feb 24, 2022  
Period: 07:00 - 09:00

### Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Sandwich St S						South Approach Sandwich St S						East Approach 165 Sandwich St S Driveway						West Approach North St						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
08:00	0	88	13	0	0	101	26	117	2	0	0	145	0	0	0	0	15	0	2	0	8	0	4	10	256
08:15	0	115	5	0	0	120	21	96	1	0	1	118	0	0	0	0	8	0	0	0	4	0	3	4	242
08:30	2	104	2	0	0	108	5	85	1	0	0	91	1	0	0	0	1	1	0	0	3	0	0	3	203
08:45	3	125	3	0	0	131	1	84	0	0	0	85	0	0	0	0	2	0	0	0	0	0	2	0	216
Grand Total	5	432	23	0	0	460	53	382	4	0	1	439	1	0	0	0	26	1	2	0	15	0	9	17	917
Approach %	1.1	93.9	5	0	-	-	12.1	87	0.9	0	-	-	100	0	0	0	-	-	11.8	0	88.2	0	-	-	-
Totals %	0.5	47.1	2.5	0	-	50.2	5.8	41.7	0.4	0	-	47.9	0.1	0	0	0	0.1	0.1	0.2	0	1.6	0	-	1.9	-
PHF	0.42	0.86	0.44	0	-	0.88	0.51	0.82	0.5	0	-	0.76	0.25	0	0	0	0.25	0.25	0.25	0	0.47	0	-	0.43	0.9
Cars	5	412	22	0	-	439	49	371	4	0	-	424	1	0	0	0	1	1	2	0	15	0	-	17	881
% Cars	100	95.4	95.7	0	-	95.4	92.5	97.1	100	0	-	96.6	100	0	0	0	100	100	100	0	100	0	-	100	96.1
Trucks	0	14	0	0	-	14	2	8	0	0	-	10	0	0	0	0	0	0	0	0	0	0	0	0	24
% Trucks	0	3.2	0	0	-	3	3.8	2.1	0	0	-	2.3	0	0	0	0	0	0	0	0	0	0	0	0	2.6
Buses	0	6	1	0	-	7	2	3	0	0	-	5	0	0	0	0	0	0	0	0	0	0	0	0	12
% Buses	0	1.4	4.3	0	-	1.5	3.8	0.8	0	0	-	1.1	0	0	0	0	0	0	0	0	0	0	0	0	1.3
Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peds	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	26	-	-	-	-	-	9	-	36
% Peds	-	-	-	-	0	-	-	-	-	-	2.8	-	-	-	-	-	72.2	-	-	-	-	-	25	-	-

## Peak Hour Diagram

### Specified Period

From: 16:00:00  
To: 18:00:00

### One Hour Peak

From: 16:15:00  
To: 17:15:00

**Intersection:** Sandwich St S & North St-165 Sandwich St S Driveway  
**Site Code:** 2204400003  
**Count Date:** Feb 24, 2022

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Sandwich St S runs N/S

### North Approach

	Out	In	Total
	599	613	1212
	3	8	11
	0	0	0
	0	0	0
<b>Totals</b>	<b>602</b>	<b>621</b>	<b>1223</b>

### Sandwich St S

	0	0	0	0
	0	0	0	0
	0	3	0	0
	6	591	2	0
<b>Totals</b>	<b>6</b>	<b>594</b>	<b>2</b>	<b>0</b>

### East Approach

	Out	In	Total
	6	2	8
	0	0	0
	0	0	0
	0	0	0
<b>Totals</b>	<b>6</b>	<b>2</b>	<b>8</b>

### North St

					Totals
	0	0	0	0	0
	0	0	0	3	3
	0	0	0	0	0
	0	0	0	4	4

Peds: 0



### 165 Sandwich St S Driveway

Totals				
0	0	0	0	0
3	3	0	0	0
0	0	0	0	0
3	3	0	0	0

### West Approach

	Out	In	Total
	7	9	16
	0	0	0
	0	0	0
	0	0	0
<b>Totals</b>	<b>7</b>	<b>9</b>	<b>16</b>

	3	615	0	0
	3	607	0	0
	0	8	0	0
	0	0	0	0
	0	0	0	0
<b>Totals</b>	<b>3</b>	<b>615</b>	<b>0</b>	<b>0</b>

### Sandwich St S

### South Approach

	Out	In	Total
	610	598	1208
	8	3	11
	0	0	0
	0	0	0
<b>Totals</b>	<b>618</b>	<b>601</b>	<b>1219</b>

- Cars

- Trucks

- Buses

- Bicycles

## Comments

## Peak Hour Summary

Intersection: Sandwich St S & North St-165 Sandwich St S Driveway  
Site Code: 2204400003  
Count Date: Feb 24, 2022  
Period: 16:00 - 18:00

### Peak Hour Data (16:15 - 17:15)

Start Time	North Approach Sandwich St S						South Approach Sandwich St S						East Approach 165 Sandwich St S Driveway						West Approach North St						Total Vehicles
	←	↑	→	↺	Peds	Total	←	↑	→	↺	Peds	Total	←	↑	→	↺	Peds	Total	←	↑	→	↺	Peds	Total	
16:15	1	160	1	0	0	162	1	140	0	0	0	141	1	0	1	0	0	2	0	0	1	0	2	1	306
16:30	1	148	2	0	0	151	0	158	0	0	0	158	0	0	1	0	1	1	1	0	0	0	1	1	311
16:45	0	152	2	0	0	154	0	155	0	0	0	155	1	0	1	0	0	2	1	0	1	0	3	2	313
17:00	0	134	1	0	0	135	2	162	0	0	0	164	1	0	0	0	0	1	1	0	2	0	2	3	303
Grand Total	2	594	6	0	0	602	3	615	0	0	0	618	3	0	3	0	1	6	3	0	4	0	8	7	1233
Approach %	0.3	98.7	1	0	-	-	0.5	99.5	0	0	-	-	50	0	50	0	-	-	42.9	0	57.1	0	-	-	-
Totals %	0.2	48.2	0.5	0	-	48.8	0.2	49.9	0	0	-	50.1	0.2	0	0.2	0	-	0.5	0.2	0	0.3	0	-	0.6	-
PHF	0.5	0.93	0.75	0	-	0.93	0.38	0.95	0	0	-	0.94	0.75	0	0.75	0	-	0.75	0.75	0	0.5	0	-	0.58	0.98
Cars	2	591	6	0	-	599	3	607	0	0	-	610	3	0	3	0	-	6	3	0	4	0	-	7	1222
% Cars	100	99.5	100	0	-	99.5	100	98.7	0	0	-	98.7	100	0	100	0	-	100	100	0	100	0	-	100	99.1
Trucks	0	3	0	0	-	3	0	8	0	0	-	8	0	0	0	0	-	0	0	0	0	0	-	0	11
% Trucks	0	0.5	0	0	-	0.5	0	1.3	0	0	-	1.3	0	0	0	0	-	0	0	0	0	0	-	0	0.9
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Peds	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	8	-	9
% Peds	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	11.1	-	-	-	-	-	88.9	-	-

## Project #21-078 - Golder Associates

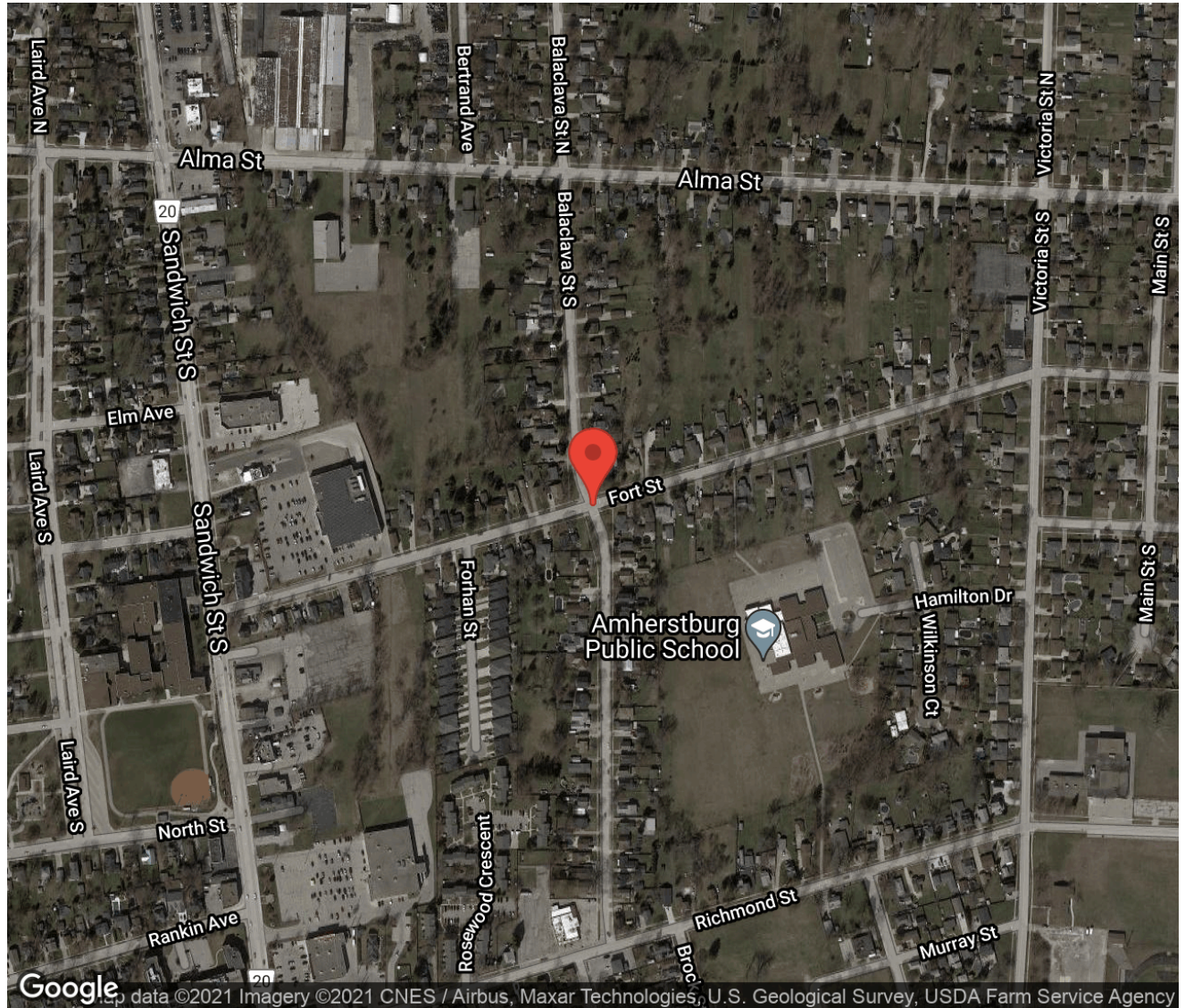
### Intersection Count Report

<b>Intersection:</b>	Balaclava St S & Fort St
<b>Municipality:</b>	Amherstburg
<b>Count Date:</b>	Jun 16, 2021
<b>Site Code:</b>	2107800021
<b>Count Categories:</b>	Cars, Trucks, Bicycles, Pedestrians
<b>Count Period:</b>	07:00-09:00, 11:00-14:00, 15:00-18:00
<b>Weather:</b>	Clear



## Traffic Count Map

Intersection:	Balaclava St S & Fort St
Site Code:	2107800021
Municipality:	Amherstburg
Count Date:	Jun 16, 2021



## Traffic Count Summary

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Municipality: Amherstburg  
Count Date: Jun 16, 2021

### Balaclava St S - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	2	9	1	0	12	1	1	14	0	0	15	3	27
08:00 - 09:00	3	11	6	0	20	0	2	16	3	0	21	3	41
BREAK													
11:00 - 12:00	5	11	11	0	27	1	6	22	8	0	36	2	63
12:00 - 13:00	0	25	10	0	35	0	6	12	3	0	21	3	56
13:00 - 14:00	3	20	12	0	35	1	7	20	6	0	33	3	68
BREAK													
15:00 - 16:00	7	37	8	0	52	1	4	26	6	0	36	3	88
16:00 - 17:00	3	36	13	1	53	1	12	20	2	0	34	0	87
17:00 - 18:00	2	13	21	0	36	0	14	14	4	0	32	2	68
GRAND TOTAL	25	162	82	1	270	5	52	144	32	0	228	19	498

## Traffic Count Summary

Intersection: Balaclava St S & Fort St  
 Site Code: 2107800021  
 Municipality: Amherstburg  
 Count Date: Jun 16, 2021

### Fort St - Traffic Summary

East Approach Totals							West Approach Totals						
Hour	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	3	11	4	0	18	1	4	4	4	0	12	0	30
08:00 - 09:00	5	17	2	0	24	0	6	18	7	0	31	2	55
BREAK													
11:00 - 12:00	6	24	0	0	30	3	6	38	16	0	60	1	90
12:00 - 13:00	5	29	1	0	35	3	13	43	19	0	75	0	110
13:00 - 14:00	6	19	2	0	27	3	14	38	19	0	71	1	98
BREAK													
15:00 - 16:00	5	33	4	0	42	1	17	51	20	0	88	2	130
16:00 - 17:00	8	36	5	0	49	2	9	53	23	0	85	3	134
17:00 - 18:00	4	21	7	0	32	0	11	52	24	0	87	0	119
GRAND TOTAL	42	190	25	0	257	13	80	297	132	0	509	9	766



	Cars						Trucks						Bicycles							
Start Time					Total						Total						Total	Total Peds		
07:00	1	1	0	0	2		0	0	0	0	0		0	0	0	0	0	0		
07:15	0	4	0	0	4		0	0	0	0	0		0	0	0	0	0	1		
07:30	1	2	0	0	3		0	0	0	0	0		0	0	0	0	0	0		
07:45	0	2	1	0	3		0	0	0	0	0		0	0	0	0	0	0		
08:00	0	1	2	0	3		0	0	0	0	0		0	0	0	0	0	0		
08:15	2	6	2	0	10		0	0	0	0	0		0	0	0	0	0	0		
08:30	1	1	1	0	3		0	0	0	0	0		0	0	0	0	0	0		
08:45	0	3	1	0	4		0	0	0	0	0		0	0	0	0	0	0		
SUBTOTAL	5	20	7	0	32		0	0	0	0	0		0	0	0	0	0	1		

## Traffic Count Data

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Municipality: Amherstburg  
Count Date: Jun 16, 2021

### North Approach - Balaclava St S

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	2	1	4	0	7	0	0	0	0	0	0	0	0	0	0	0
11:15	1	4	4	0	9	0	0	0	0	0	1	0	0	0	1	0
11:30	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	1
11:45	1	3	3	0	7	0	0	0	0	0	0	0	0	0	0	0
12:00	0	5	2	0	7	0	0	0	0	0	0	0	0	0	0	0
12:15	0	4	1	0	5	0	0	0	0	0	0	2	0	0	2	0
12:30	0	8	3	0	11	0	0	0	0	0	0	0	0	0	0	0
12:45	0	6	4	0	10	0	0	0	0	0	0	0	0	0	0	0
13:00	2	5	4	0	11	0	0	0	0	0	0	0	0	0	0	0
13:15	1	3	3	0	7	0	1	0	0	1	0	0	0	0	0	0
13:30	0	4	1	0	5	0	0	0	0	0	0	0	2	0	2	0
13:45	0	7	1	0	8	0	0	0	0	0	0	0	1	0	1	1
<b>SUBTOTAL</b>	7	53	30	0	90	0	1	0	0	1	1	2	3	0	6	2

## Traffic Count Data

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Municipality: Amherstburg  
Count Date: Jun 16, 2021

### North Approach - Balaclava St S

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	2	12	0	0	14	0	0	0	0	0	0	0	1	0	1	0
15:15	1	9	3	0	13	0	0	0	0	0	0	1	1	0	2	0
15:30	4	7	1	0	12	0	0	0	0	0	0	0	0	0	0	0
15:45	0	8	2	0	10	0	0	0	0	0	0	0	0	0	0	1
16:00	1	8	3	0	12	0	0	0	0	0	0	0	0	0	0	0
16:15	0	13	3	0	16	0	0	0	0	0	0	0	0	0	0	0
16:30	1	8	2	0	11	1	0	0	0	1	0	0	0	0	0	0
16:45	0	7	5	0	12	0	0	0	0	0	0	0	0	1	1	1
17:00	0	5	9	0	14	0	0	0	0	0	0	0	0	0	0	0
17:15	0	3	6	0	9	0	0	0	0	0	0	0	0	0	0	0
17:30	2	3	4	0	9	0	0	0	0	0	0	0	0	0	0	0
17:45	0	2	2	0	4	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	11	85	40	0	136	1	0	0	0	1	0	1	2	1	4	2
GRAND TOTAL	23	158	77	0	258	1	1	0	0	2	1	3	5	1	10	5

## Traffic Count Data

Intersection: Balaclava St S & Fort St  
 Site Code: 2107800021  
 Municipality: Amherstburg  
 Count Date: Jun 16, 2021

### South Approach - Balaclava St S

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
07:00	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	1
07:15	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
07:30	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0
07:45	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
08:00	1	8	0	0	9	0	0	0	0	0	0	0	0	0	0	1
08:15	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	2
08:30	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
08:45	0	4	0	0	4	0	0	0	0	0	1	0	0	0	1	0
<b>SUBTOTAL</b>	2	30	3	0	35	0	0	0	0	0	1	0	0	0	1	6

## Traffic Count Data

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Municipality: Amherstburg  
Count Date: Jun 16, 2021

### South Approach - Balaclava St S

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	1	4	2	0	7	0	0	0	0	0	0	1	0	0	1	1
11:15	1	2	2	0	5	1	0	0	0	1	0	0	0	0	0	0
11:30	1	5	0	0	6	0	0	0	0	0	0	0	0	0	0	1
11:45	2	9	4	0	15	0	1	0	0	1	0	0	0	0	0	0
12:00	5	3	2	0	10	0	0	0	0	0	0	0	0	0	0	0
12:15	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	0
12:30	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	1
12:45	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	2
13:00	0	7	4	0	11	0	0	0	0	0	0	0	0	0	0	2
13:15	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	0
13:30	1	7	2	0	10	0	0	0	0	0	0	0	0	0	0	0
13:45	5	3	0	0	8	0	0	0	0	0	0	0	0	0	0	1
<b>SUBTOTAL</b>	18	52	17	0	87	1	1	0	0	2	0	1	0	0	1	8

## Traffic Count Data

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Municipality: Amherstburg  
Count Date: Jun 16, 2021

### South Approach - Balaclava St S

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	1	6	0	0	7	0	0	0	0	0	0	0	0	0	0	0
15:15	1	10	2	0	13	0	1	0	0	1	0	0	0	0	0	1
15:30	0	3	2	0	5	0	1	0	0	1	0	0	0	0	0	2
15:45	2	5	2	0	9	0	0	0	0	0	0	0	0	0	0	0
16:00	4	5	1	0	10	1	0	0	0	1	2	0	0	0	2	0
16:15	2	6	1	0	9	0	0	0	0	0	0	0	0	0	0	0
16:30	1	4	0	0	5	0	0	0	0	0	0	0	0	0	0	0
16:45	2	5	0	0	7	0	0	0	0	0	0	0	0	0	0	0
17:00	4	8	2	0	14	0	0	0	0	0	0	0	0	0	0	1
17:15	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0
17:30	3	2	1	0	6	0	0	0	0	0	0	0	0	0	0	1
17:45	5	3	1	0	9	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	27	58	12	0	97	1	2	0	0	3	2	0	0	0	2	5
GRAND TOTAL	47	140	32	0	219	2	3	0	0	5	3	1	0	0	4	19

## Traffic Count Data

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Municipality: Amherstburg  
Count Date: Jun 16, 2021

### East Approach - Fort St

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
07:00	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0
07:15	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0
07:30	1	1	1	0	3	0	0	1	0	1	0	0	0	0	0	1
07:45	1	5	1	0	7	0	0	0	0	0	0	0	0	0	0	0
08:00	1	7	0	0	8	0	0	0	0	0	0	0	0	0	0	0
08:15	2	7	0	0	9	0	1	0	0	1	0	0	0	0	0	0
08:30	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0
08:45	2	1	1	0	4	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL</b>	8	27	5	0	40	0	1	1	0	2	0	0	0	0	0	1

## Traffic Count Data

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Municipality: Amherstburg  
Count Date: Jun 16, 2021

### East Approach - Fort St

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	1	7	0	0	8	0	0	0	0	0	0	0	0	0	0	3
11:15	2	7	0	0	9	0	0	0	0	0	0	0	0	0	0	0
11:30	2	6	0	0	8	0	0	0	0	0	0	0	0	0	0	0
11:45	1	4	0	0	5	0	0	0	0	0	0	0	0	0	0	0
12:00	1	5	0	0	6	0	0	0	0	0	0	0	0	0	0	0
12:15	1	9	0	0	10	0	0	0	0	0	0	0	0	0	0	0
12:30	1	9	1	0	11	0	0	0	0	0	0	0	0	0	0	1
12:45	2	5	0	0	7	0	0	0	0	0	0	1	0	0	1	2
13:00	0	3	0	0	3	0	1	0	0	1	0	0	0	0	0	0
13:15	2	7	0	0	9	0	0	0	0	0	0	0	0	0	0	2
13:30	1	2	2	0	5	0	0	0	0	0	0	0	0	0	0	0
13:45	3	6	0	0	9	0	0	0	0	0	0	0	0	0	0	1
<b>SUBTOTAL</b>	17	70	3	0	90	0	1	0	0	1	0	1	0	0	1	9



## Traffic Count Data

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Municipality: Amherstburg  
Count Date: Jun 16, 2021

### East Approach - Fort St

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	2	8	1	0	11	0	0	0	0	0	0	4	0	0	4	0
15:15	0	6	1	0	7	1	0	0	0	1	0	0	1	0	1	1
15:30	1	3	0	0	4	0	0	0	0	0	0	4	0	0	4	0
15:45	1	8	1	0	10	0	0	0	0	0	0	0	0	0	0	0
16:00	2	11	1	0	14	0	0	0	0	0	1	0	0	0	1	0
16:15	1	9	2	0	12	0	0	0	0	0	0	0	0	0	0	1
16:30	3	12	2	0	17	0	0	0	0	0	0	0	0	0	0	0
16:45	1	4	0	0	5	0	0	0	0	0	0	0	0	0	0	1
17:00	1	5	2	0	8	0	0	0	0	0	0	0	0	0	0	0
17:15	1	4	0	0	5	0	0	0	0	0	0	0	1	0	1	0
17:30	1	5	1	0	7	0	0	0	0	0	0	0	0	0	0	0
17:45	1	7	2	0	10	0	0	0	0	0	0	0	1	0	1	0
<b>SUBTOTAL</b>	15	82	13	0	110	1	0	0	0	1	1	8	3	0	12	3
<b>GRAND TOTAL</b>	40	179	21	0	240	1	2	1	0	4	1	9	3	0	13	13

## Traffic Count Data

Intersection: Balaclava St S & Fort St  
 Site Code: 2107800021  
 Municipality: Amherstburg  
 Count Date: Jun 16, 2021

### West Approach - Fort St

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
07:00	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0
07:15	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
07:30	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0
07:45	0	1	4	0	5	0	0	0	0	0	0	0	0	0	0	0
08:00	1	5	2	0	8	0	0	0	0	0	0	0	0	0	0	0
08:15	1	4	3	0	8	0	0	0	0	0	0	0	0	0	0	2
08:30	0	3	1	0	4	0	1	0	0	1	0	0	0	0	0	0
08:45	4	5	1	0	10	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL</b>	10	21	11	0	42	0	1	0	0	1	0	0	0	0	0	2

## Traffic Count Data

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Municipality: Amherstburg  
Count Date: Jun 16, 2021

### West Approach - Fort St

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	0	12	8	0	20	0	0	0	0	0	0	0	0	0	0	0
11:15	2	4	1	0	7	0	0	0	0	0	0	0	0	0	0	0
11:30	1	11	3	0	15	0	0	0	0	0	0	0	0	0	0	1
11:45	3	11	4	0	18	0	0	0	0	0	0	0	0	0	0	0
12:00	3	12	5	0	20	0	0	0	0	0	0	1	0	0	1	0
12:15	3	11	5	0	19	0	0	0	0	0	0	0	0	0	0	0
12:30	5	8	3	0	16	0	0	0	0	0	0	0	0	0	0	0
12:45	2	11	6	0	19	0	0	0	0	0	0	0	0	0	0	0
13:00	7	9	7	0	23	0	1	0	0	1	0	0	0	0	0	0
13:15	3	8	5	0	16	0	0	0	0	0	0	0	0	0	0	1
13:30	4	11	2	0	17	0	0	0	0	0	0	0	0	0	0	0
13:45	0	9	5	0	14	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL</b>	33	117	54	0	204	0	1	0	0	1	0	1	0	0	1	2

## Traffic Count Data

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Municipality: Amherstburg  
Count Date: Jun 16, 2021

### West Approach - Fort St

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	4	16	6	0	26	0	0	0	0	0	0	0	0	0	0	0
15:15	8	11	0	0	19	0	0	0	0	0	0	0	0	0	0	0
15:30	0	11	9	0	20	0	0	0	0	0	0	2	0	0	2	0
15:45	5	11	5	0	21	0	0	0	0	0	0	0	0	0	0	2
16:00	2	16	3	0	21	0	0	0	0	0	0	0	1	0	1	1
16:15	4	8	9	0	21	0	0	0	0	0	0	1	0	0	1	2
16:30	2	16	2	0	20	0	0	0	0	0	0	0	0	0	0	0
16:45	1	12	8	0	21	0	0	0	0	0	0	0	0	0	0	0
17:00	4	12	6	0	22	0	0	0	0	0	0	0	1	0	1	0
17:15	2	14	5	0	21	0	0	0	0	0	0	3	0	0	3	0
17:30	5	11	6	0	22	0	0	0	0	0	0	0	0	0	0	0
17:45	0	12	6	0	18	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	37	150	65	0	252	0	0	0	0	0	0	6	2	0	8	5
GRAND TOTAL	80	288	130	0	498	0	2	0	0	2	0	7	2	0	9	9

## Peak Hour Diagram

### Specified Period

From: 07:00:00

To: 09:00:00

### One Hour Peak

From: 08:00:00

To: 09:00:00

**Intersection:** Balaclava St S & Fort St

**Site Code:** 2107800021




**Count Date:** Jun 16, 2021

**Weather conditions:** Clear




### \*\* Unsignalized Intersection \*\*





**Major Road:** Fort St runs E/W

#### North Approach




	Out	In	Total
	20	24	44
	0	0	0
	0	0	0
<b>Totals</b>	<b>20</b>	<b>24</b>	<b>44</b>

#### Balaclava St S








	0	0	0	0
	0	0	0	0
	6	11	3	0
<b>Totals</b>	<b>6</b>	<b>11</b>	<b>3</b>	<b>0</b>

#### East Approach

	Out	In	Total
	23	23	46
	1	1	2
	0	0	0
<b>Totals</b>	<b>24</b>	<b>24</b>	<b>48</b>

#### Fort St

				Totals
	0	0	0	<b>0</b>
	0	0	6	<b>6</b>
	0	1	17	<b>18</b>
	0	0	7	<b>7</b>

Peds: 0










Peds: 2




Peds: 0








Peds: 3

#### Fort St

Totals			
	<b>0</b>	0	0
	<b>2</b>	2	0
	<b>17</b>	16	1
	<b>5</b>	5	0




#### West Approach

	Out	In	Total
	30	23	53
	1	1	2
	0	1	1
<b>Totals</b>	<b>31</b>	<b>25</b>	<b>56</b>


Totals				
	2	16	3	0
	0	0	0	0
	1	0	0	0

#### Balaclava St S

#### South Approach

	Out	In	Total
	20	23	43
	0	0	0
	1	0	1
<b>Totals</b>	<b>21</b>	<b>23</b>	<b>44</b>

 - Cars

 - Trucks

 - Bicycles

### Comments

## Peak Hour Summary

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Count Date: Jun 16, 2021  
Period: 07:00 - 09:00

### Peak Hour Data (08:00 - 09:00)

	North Approach Balaclava St S						South Approach Balaclava St S						East Approach Fort St						West Approach Fort St						Total Vehicl es				
Start Time	↶	↑	↷	↻	Peds	Total	↶	↑	↷	↻	Peds	Total	↶	↑	↷	↻	Peds	Total	↶	↑	↷	↻	Peds	Total					
08:00	0	1	2	0	0	3	1	8	0	0	1	9	1	7	0	0	0	8	1	5	2	0	0	8	28				
08:15	2	6	2	0	0	10	0	4	1	0	2	5	2	8	0	0	0	10	1	4	3	0	2	8	33				
08:30	1	1	1	0	0	3	0	0	2	0	0	2	0	1	1	0	0	2	0	4	1	0	0	5	12				
08:45	0	3	1	0	0	4	1	4	0	0	0	5	2	1	1	0	0	4	4	5	1	0	0	10	23				
Grand Total	3	11	6	0	0	20	2	16	3	0	3	21	5	17	2	0	0	24	6	18	7	0	2	31	96				
Approach %	15	55	30	0	-	-	9.5	76.2	14.3	0	-	-	20.8	70.8	8.3	0	-	-	19.4	58.1	22.6	0	-	-					
Totals %	3.1	11.5	6.3	0	-	20.8	2.1	16.7	3.1	0	-	21.9	5.2	17.7	2.1	0	-	25	6.3	18.8	7.3	0	-	32.3					
PHF	0.38	0.46	0.75	0	-	0.5	0.5	0.5	0.38	0	-	0.58	0.63	0.53	0.5	0	-	0.6	0.38	0.9	0.58	0	-	0.78	0.73				
Cars	3	11	6	0	-	20	1	16	3	0	-	20	5	16	2	0	-	23	6	17	7	0	-	30	93				
% Cars	100	100	100	0	-	100	50	100	100	0	-	95.2	100	94.1	100	0	-	95.8	100	94.4	100	0	-	96.8	96.9				
Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	1	0	0	-	1	2				
% Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	5.9	0	0	-	4.2	0	5.6	0	0	-	3.2	2.1				
Bicycles	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1				
% Bicycles	0	0	0	0	-	0	50	0	0	0	-	4.8	0	0	0	0	-	0	0	0	0	0	-	0	1				
Peds						0	-						3	-						0	-						2	-	5
% Peds						0	-						60	-						0	-						40	-	

## Peak Hour Diagram

### Specified Period

From: 11:00:00

To: 14:00:00

### One Hour Peak

From: 11:45:00

To: 12:45:00

**Intersection:** Balaclava St S & Fort St

**Site Code:** 2107800021

**Count Date:** Jun 16, 2021

**Weather conditions:** Clear

**\*\* Unsignalized Intersection \*\***

**Major Road:** Fort St runs E/W

### North Approach

	Out	In	Total
	30	33	63
	0	1	1
	2	0	2
<b>Totals</b>	<b>32</b>	<b>34</b>	<b>66</b>

### Balaclava St S

	0	2	0	0
	0	0	0	0
	9	20	1	0
<b>Totals</b>	<b>9</b>	<b>22</b>	<b>1</b>	<b>0</b>

### East Approach

	Out	In	Total
	32	50	82
	0	0	0
	0	1	1
<b>Totals</b>	<b>32</b>	<b>51</b>	<b>83</b>

### Fort St

				Totals
	0	0	0	<b>0</b>
	0	0	14	<b>14</b>
	1	0	42	<b>43</b>
	0	0	17	<b>17</b>

Peds: 0



Peds: 1

Peds: 1

### Fort St

Totals			
<b>0</b>	0	0	0
<b>1</b>	1	0	0
<b>27</b>	27	0	0
<b>4</b>	4	0	0

### West Approach

	Out	In	Total
	73	44	117
	0	0	0
	1	0	1
<b>Totals</b>	<b>74</b>	<b>44</b>	<b>118</b>

	<b>8</b>	<b>19</b>	<b>7</b>	<b>0</b>
	8	18	7	0
	0	1	0	0
	0	0	0	0

### Balaclava St S

### South Approach

	Out	In	Total
	33	41	74
	1	0	1
	0	2	2
<b>Totals</b>	<b>34</b>	<b>43</b>	<b>77</b>

- Cars

- Trucks

- Bicycles

## Comments

## Peak Hour Summary

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Count Date: Jun 16, 2021  
Period: 11:00 - 14:00

### Peak Hour Data (11:45 - 12:45)

Start Time	North Approach Balaclava St S						South Approach Balaclava St S						East Approach Fort St						West Approach Fort St						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
11:45	1	3	3	0	0	7	2	10	4	0	0	16	1	4	0	0	0	5	3	11	4	0	0	18	46
12:00	0	5	2	0	0	7	5	3	2	0	0	10	1	5	0	0	0	6	3	13	5	0	0	21	44
12:15	0	6	1	0	0	7	0	4	1	0	0	5	1	9	0	0	0	10	3	11	5	0	0	19	41
12:30	0	8	3	0	0	11	1	2	0	0	1	3	1	9	1	0	1	11	5	8	3	0	0	16	41
Grand Total	1	22	9	0	0	32	8	19	7	0	1	34	4	27	1	0	1	32	14	43	17	0	0	74	172
Approach %	3.1	68.8	28.1	0	-	-	23.5	55.9	20.6	0	-	-	12.5	84.4	3.1	0	-	-	18.9	58.1	23	0	-	-	-
Totals %	0.6	12.8	5.2	0	-	18.6	4.7	11	4.1	0	-	19.8	2.3	15.7	0.6	0	-	18.6	8.1	25	9.9	0	-	43	-
PHF	0.25	0.69	0.75	0	-	0.73	0.4	0.48	0.44	0	-	0.53	1	0.75	0.25	0	-	0.73	0.7	0.83	0.85	0	-	0.88	0.93
Cars	1	20	9	0	-	30	8	18	7	0	-	33	4	27	1	0	-	32	14	42	17	0	-	73	168
% Cars	100	90.9	100	0	-	93.8	100	94.7	100	0	-	97.1	100	100	100	0	-	100	100	97.7	100	0	-	98.6	97.7
Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	0	0	1
% Trucks	0	0	0	0	-	0	0	5.3	0	0	-	2.9	0	0	0	0	-	0	0	0	0	0	0	0	0.6
Bicycles	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	0	1	3
% Bicycles	0	9.1	0	0	-	6.3	0	0	0	0	-	0	0	0	0	0	-	0	0	2.3	0	0	0	1.4	1.7
Peds	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	2
% Peds	-	-	-	-	0	-	-	-	-	-	50	-	-	-	-	-	50	-	-	-	-	-	0	-	-



## Peak Hour Diagram

### Specified Period

From: 15:00:00

To: 18:00:00

### One Hour Peak

From: 15:45:00

To: 16:45:00

**Intersection:** Balaclava St S & Fort St

**Site Code:** 2107800021




**Count Date:** Jun 16, 2021

**Weather conditions:** Clear




**\*\* Unsignalized Intersection \*\***





**Major Road:** Fort St runs E/W

### North Approach




	Out	In	Total
	49	39	88
	1	0	1
	0	0	0
<b>Totals</b>	<b>50</b>	<b>39</b>	<b>89</b>

### Balaclava St S








	0	0	0	0
	0	0	1	0
	10	37	2	0
<b>Totals</b>	<b>10</b>	<b>37</b>	<b>3</b>	<b>0</b>

### East Approach

	Out	In	Total
	53	57	110
	0	1	1
	1	1	2
<b>Totals</b>	<b>54</b>	<b>59</b>	<b>113</b>

### Fort St

				Totals
	0	0	0	<b>0</b>
	0	0	13	<b>13</b>
	1	0	51	<b>52</b>
	1	0	19	<b>20</b>

Peds: 5








Peds: 1






Peds: 0








Peds: 1

### Fort St

Totals			
	<b>0</b>	0	0
	<b>6</b>	6	0
	<b>40</b>	40	0
	<b>8</b>	7	0




### West Approach

	Out	In	Total
	83	59	142
	0	1	1
	2	2	4
<b>Totals</b>	<b>85</b>	<b>62</b>	<b>147</b>


Totals				
	12	20	4	0
	1	0	0	0
	2	0	0	0

### Balaclava St S

### South Approach

	Out	In	Total
	33	63	96
	1	0	1
	2	2	4
<b>Totals</b>	<b>36</b>	<b>65</b>	<b>101</b>

 - Cars

 - Trucks

 - Bicycles

## Comments

## Peak Hour Summary

Intersection: Balaclava St S & Fort St  
Site Code: 2107800021  
Count Date: Jun 16, 2021  
Period: 15:00 - 18:00

### Peak Hour Data (15:45 - 16:45)

Start Time	North Approach Balaclava St S						South Approach Balaclava St S						East Approach Fort St						West Approach Fort St						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
15:45	0	8	2	0	1	10	2	5	2	0	0	9	1	8	1	0	0	10	5	11	5	0	2	21	50
16:00	1	8	3	0	0	12	7	5	1	0	0	13	3	11	1	0	0	15	2	16	4	0	1	22	62
16:15	0	13	3	0	0	16	2	6	1	0	0	9	1	9	2	0	1	12	4	9	9	0	2	22	59
16:30	2	8	2	0	0	12	1	4	0	0	0	5	3	12	2	0	0	17	2	16	2	0	0	20	54
Grand Total	3	37	10	0	1	50	12	20	4	0	0	36	8	40	6	0	1	54	13	52	20	0	5	85	225
Approach %	6	74	20	0	-	-	33.3	55.6	11.1	0	-	-	14.8	74.1	11.1	0	-	-	15.3	61.2	23.5	0	-	-	-
Totals %	1.3	16.4	4.4	0	-	22.2	5.3	8.9	1.8	0	-	16	3.6	17.8	2.7	0	-	24	5.8	23.1	8.9	0	-	-	37.8
PHF	0.38	0.71	0.83	0	-	0.78	0.43	0.83	0.5	0	-	0.69	0.67	0.83	0.75	0	-	0.79	0.65	0.81	0.56	0	-	0.97	0.91
Cars	2	37	10	0	-	49	9	20	4	0	-	33	7	40	6	0	-	53	13	51	19	0	-	83	218
% Cars	66.7	100	100	0	-	98	75	100	100	0	-	91.7	87.5	100	100	0	-	98.1	100	98.1	95	0	-	97.6	96.9
Trucks	1	0	0	0	-	1	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	2
% Trucks	33.3	0	0	0	-	2	8.3	0	0	0	-	2.8	0	0	0	0	-	0	0	0	0	0	-	0	0.9
Bicycles	0	0	0	0	-	0	2	0	0	0	-	2	1	0	0	0	-	1	0	1	1	0	-	2	5
% Bicycles	0	0	0	0	-	0	16.7	0	0	0	-	5.6	12.5	0	0	0	-	1.9	0	1.9	5	0	-	2.4	2.2
Peds	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	5	-	7
% Peds	-	-	-	-	14.3	-	-	-	-	-	0	-	-	-	-	-	14.3	-	-	-	-	-	71.4	-	-



P: 437-242-5183  
E: [robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)

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**From:** Robin Marinac  
**Sent:** January 13, 2022 11:49 AM  
**To:** [fgarardo@amherstburg.ca](mailto:fgarardo@amherstburg.ca)  
**Subject:** Traffic Data Request - Sandwich Street TIS and Parking Study

Hi Frank,

I am a traffic consultant looking to obtain traffic and transportation data for use in a TIS for 131 Sandwich Street – a site I believe you are familiar with. I apologize if you are not the correct person to contact for this information and ask that you please forward my request to the appropriate individual.

Could you please provide the following data if available:

- TMC at Sandwich Street South and Fort Street **We do not track this**
- TMC at North Street and Sandwich Street South **We do not track this**
- TMC at Sandwich Street South and the parking lot access shown in the figure below **We do not track this**
- STP for the Signalized Pedestrian Crossing on Sandwich Street, approximately 75 metres south of Fort Street **Unfamiliar with STP terminology**
- Any ATR/AADT counts along Sandwich Street between Maple Avenue and Rankin Avenue **Refer to County of Essex mapping data for Sandwich Street information (if any)**
- Any ATR/AADT counts along Fort Street between Sandwich Street and Balaclava Street **1400 – 2016 (2021 counts skewed by pandemic)**
- Any ATR/AADT counts along North Street between Sandwich Street and Dalhousie Street **700 – 2016 (2021 counts skewed by pandemic)**
- Any collision data (preferably over the past 5 years) at the intersections of Sandwich Street at Fort Street and Sandwich Street and North Street. **Do not track**
- Any collision data (preferably over the past 5 years) along Sandwich Street between Maple Avenue and Rankin Avenue **Do not track**
- Any collision data (preferably over the past 5 years) along Fort Street between Sandwich Street and Balaclava Street **Do not track**
- Any collision data (preferably over the past 5 years) along North Street between Sandwich Street and Dalhousie Street **Do not track**

Thank you very much in advance for your help.

Kind regards,  
Robin Marinac



Robin Marinac, EIT  
**CGH Transportation Inc.**  
P: 437-242-5183  
E: [robin.marinac@cghtransportation.com](mailto:robin.marinac@cghtransportation.com)

# Appendix D

Heavy Vehicle Percentage Calculations

[1] Sandwich Street S & Fort Street												
AM												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
HV Volume	0	11	1	0	19	0	0	0	0	1	0	0
Total Volume	0	335	46	20	454	0	0	0	0	12	0	15
HV%	-	3%	2%	0%	4%	-	-	-	-	8%	-	0%
PM												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
HV Volume	0	8	0	0	3	0	0	0	0	0	0	0
Total Volume	0	550	68	12	563	0	0	0	0	36	0	21
HV%	-	1%	0%	0%	1%	-	-	-	-	0%	-	0%

[2] Sandwich Street S & Parking Lot Driveway												
AM												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
HV Volume	0	12	0	0	20	0	0	0	0	0	0	0
Total Volume	0	362	27	13	453	0	0	0	0	1	0	19
HV%	-	3%	0%	0%	4%	-	-	-	-	0%	-	0%
PM												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
HV Volume	0	8	0	0	3	0	0	0	0	0	0	0
Total Volume	0	616	5	0	599	0	0	0	0	3	0	2
HV%	-	1%	0%	#DIV/0!	1%	-	-	-	-	0%	-	0%












[3] Sandwich Street S & North Street / 165 Sandwich Street S												
AM												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
HV Volume	4	11	0	0	20	1	0	0	0	0	0	0
Total Volume	53	382	4	5	432	23	2	0	15	1	0	0
HV%	8%	3%	0%	0%	5%	4%	0%	-	0%	0%	-	-
PM												
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
HV Volume	0	8	0	0	3	0	0	0	0	0	0	0
Total Volume	3	615	0	2	594	6	3	0	4	3	0	3
HV%	0%	1%	-	0%	1%	0%	0%	-	0%	0%	-	0%






# Appendix E

2022 Existing Synchro & SimTraffic Worksheets

Lanes, Volumes, Timings  
1: Sandwich Street South & Fort Street

2022 AM Existing  
131 & 135 Sandwich Street South











						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	18	386	53	23	523
Future Volume (vph)	14	18	386	53	23	523
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0	0.0		0.0	30.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.984			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1653	1566	1797	0	1750	1807
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1653	1566	1797	0	1750	1807
Link Speed (k/h)	40		50			50
Link Distance (m)	238.1		44.2			71.5
Travel Time (s)	21.4		3.2			5.1
Confl. Peds. (#/hr)		1		5	5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	8%	2%	3%	2%	2%	4%
Adj. Flow (vph)	15	19	406	56	24	551
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	19	462	0	24	551
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.9%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	18	386	53	23	523
Future Vol, veh/h	14	18	386	53	23	523
Conflicting Peds, #/hr	0	1	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	-	-	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	8	2	3	2	2	4
Mvmt Flow	15	19	406	56	24	551
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1038	440	0	0	467	0
Stage 1	439	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Critical Hdwy	6.48	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	249	617	-	-	1094	-
Stage 1	637	-	-	-	-	-
Stage 2	537	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	242	614	-	-	1089	-
Mov Cap-2 Maneuver	371	-	-	-	-	-
Stage 1	634	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	12.8	0	0.4			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 371 614	1089	-		
HCM Lane V/C Ratio	-	- 0.04 0.031	0.022	-		
HCM Control Delay (s)	-	- 15.1 11.1	8.4	-		
HCM Lane LOS	-	- C B	A	-		
HCM 95th %tile Q(veh)	-	- 0.1 0.1	0.1	-		







Lanes, Volumes, Timings  
2: Sandwich Street South & Parking Lot Driveway

2022 AM Existing  
131 & 135 Sandwich Street South

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	22	417	32	15	521
Future Volume (vph)	2	22	417	32	15	521
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.876		0.990			
Flt Protected	0.996				0.950	
Satd. Flow (prot)	1607	0	1807	0	1750	1807
Flt Permitted	0.996				0.950	
Satd. Flow (perm)	1607	0	1807	0	1750	1807
Link Speed (k/h)	30		50			50
Link Distance (m)	133.6		37.5			44.2
Travel Time (s)	16.0		2.7			3.2
Confl. Peds. (#/hr)				19	19	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	2%	2%	4%
Adj. Flow (vph)	2	23	434	33	16	543
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	0	467	0	16	543
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.4%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 2010 TWSC  
2: Sandwich Street South & Parking Lot Driveway



















2022 AM Existing  
131 & 135 Sandwich Street South

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	22	417	32	15	521
Future Vol, veh/h	2	22	417	32	15	521
Conflicting Peds, #/hr	0	0	0	19	19	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	3	2	2	4
Mvmt Flow	2	23	434	33	16	543
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1045	470	0	0	486	0
Stage 1	470	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	253	594	-	-	1077	-
Stage 1	629	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	245	583	-	-	1058	-
Mov Cap-2 Maneuver	378	-	-	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.8	0		0.2		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	558	1058	-	
HCM Lane V/C Ratio	-	-	0.045	0.015	-	
HCM Control Delay (s)	-	-	11.8	8.5	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	







# Lanes, Volumes, Timings

2022 AM Existing

## 3: Sandwich Street South & North Street/165 Sandwich Street South Drive















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	18	2	0	0	61	440	5	6	497	27
Future Volume (vph)	3	0	18	2	0	0	61	440	5	6	497	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	10.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.883						0.998			0.992	
Flt Protected		0.994			0.950		0.950			0.950		
Satd. Flow (prot)	0	1455	0	0	1750	0	1653	1821	0	1750	1776	0
Flt Permitted		0.994			0.950		0.950			0.950		
Satd. Flow (perm)	0	1455	0	0	1750	0	1653	1821	0	1750	1776	0
Link Speed (k/h)		50			30			50			50	
Link Distance (m)		127.1			58.9			86.3			121.9	
Travel Time (s)		9.2			7.1			6.2			8.8	
Confl. Peds. (#/hr)			1	1			9		26	26		9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	8%	3%	2%	2%	5%	4%
Parking (#/hr)		0										
Adj. Flow (vph)	3	0	20	2	0	0	68	489	6	7	552	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	0	2	0	68	495	0	7	582	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.01	1.16	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	44.9%											
Analysis Period (min)	15											
	ICU Level of Service A											

## 3: Sandwich Street South &amp; North Street/165 Sandwich Street South Drive

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	18	2	0	0	61	440	5	6	497	27
Future Vol, veh/h	3	0	18	2	0	0	61	440	5	6	497	27
Conflicting Peds, #/hr	0	0	1	1	0	0	9	0	26	26	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	8	3	2	2	5	4
Mvmt Flow	3	0	20	2	0	0	68	489	6	7	552	30
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1218	1247	577	1246	1259	518	591	0	0	521	0	0
Stage 1	590	590	-	654	654	-	-	-	-	-	-	-
Stage 2	628	657	-	592	605	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.272	-	-	2.218	-	-
Pot Cap-1 Maneuver	157	173	516	151	171	558	956	-	-	1045	-	-
Stage 1	494	495	-	456	463	-	-	-	-	-	-	-
Stage 2	471	462	-	493	487	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	146	154	511	133	153	544	948	-	-	1020	-	-
Mov Cap-2 Maneuver	146	154	-	133	153	-	-	-	-	-	-	-
Stage 1	454	488	-	413	419	-	-	-	-	-	-	-
Stage 2	437	419	-	470	480	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	15.2		32.5		1.1		0.1					
HCM LOS	C		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	948	-	-	377	133	1020	-	-				
HCM Lane V/C Ratio	0.071	-	-	0.062	0.017	0.007	-	-				
HCM Control Delay (s)	9.1	-	-	15.2	32.5	8.6	-	-				
HCM Lane LOS	A	-	-	C	D	A	-	-				
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0.1	0	-	-				

Lanes, Volumes, Timings  
4: Sandwich Street South & Pedestrian Crossing

2022 AM Existing  
131 & 135 Sandwich Street South

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	449	0	0	523	0
Future Volume (vph)	0	0	0	0	0	0	0	449	0	0	523	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr t												
Flt Protected												
Satd. Flow (prot)	0	0	0	0	0	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	0	0	0	1842	0	0	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		27.0			26.6			121.9			37.5	
Travel Time (s)		1.9			1.9			8.8			2.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	0	0	0	0	468	0	0	545	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	468	0	0	545	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors								2			2	
Detector Template								Thru			Thru	
Leading Detector (m)								10.0			10.0	
Trailing Detector (m)								0.0			0.0	
Detector 1 Position(m)								0.0			0.0	
Detector 1 Size(m)								0.6			0.6	
Detector 1 Type								Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)								0.0			0.0	
Detector 1 Queue (s)								0.0			0.0	
Detector 1 Delay (s)								0.0			0.0	
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type								NA			NA	
Protected Phases								2			6	
Permitted Phases												
Detector Phase								2			6	
Switch Phase												
Minimum Initial (s)								10.0			10.0	

# Lanes, Volumes, Timings













## 4: Sandwich Street South & Pedestrian Crossing

2022 AM Existing  
131 & 135 Sandwich Street South

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	10.0

Lanes, Volumes, Timings  
4: Sandwich Street South & Pedestrian Crossing

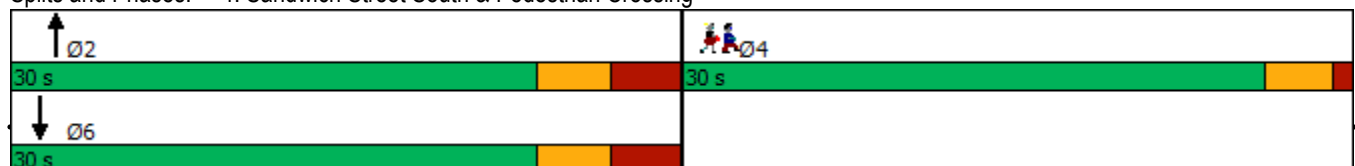
2022 AM Existing  
131 & 135 Sandwich Street South

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)								24.5			24.5	
Total Split (s)								30.0			30.0	
Total Split (%)								50.0%			50.0%	
Maximum Green (s)								23.5			23.5	
Yellow Time (s)								3.3			3.3	
All-Red Time (s)								3.2			3.2	
Lost Time Adjust (s)								0.0			0.0	
Total Lost Time (s)								6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0			3.0	
Recall Mode								Max			Max	
Walk Time (s)								7.0			7.0	
Flash Dont Walk (s)								11.0			11.0	
Pedestrian Calls (#/hr)								0			0	
Act Effct Green (s)								42.1			42.1	
Actuated g/C Ratio								0.61			0.61	
v/c Ratio								0.42			0.48	
Control Delay								12.5			13.5	
Queue Delay								0.0			0.0	
Total Delay								12.5			13.5	
LOS								B			B	
Approach Delay								12.5			13.5	
Approach LOS								B			B	
Queue Length 50th (m)								40.5			49.9	
Queue Length 95th (m)								63.8			77.9	
Internal Link Dist (m)		3.0			2.6			97.9			13.5	
Turn Bay Length (m)												
Base Capacity (vph)								1124			1124	
Starvation Cap Reductn								0			0	
Spillback Cap Reductn								0			0	
Storage Cap Reductn								0			0	
Reduced v/c Ratio								0.42			0.48	

Intersection Summary

Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 69	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 13.1	Intersection LOS: B
Intersection Capacity Utilization 32.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Sandwich Street South & Pedestrian Crossing



Lanes, Volumes, Timings  
4: Sandwich Street South & Pedestrian Crossing












2022 AM Existing  
131 & 135 Sandwich Street South






Lane Group	Ø4
Minimum Split (s)	30.0
Total Split (s)	30.0
Total Split (%)	50%
Maximum Green (s)	26.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	137
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	



Lanes, Volumes, Timings  
1: Sandwich Street South & Fort Street











2022 PM Existing  
131 & 135 Sandwich Street South

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	42	25	633	79	14	648
Future Volume (vph)	42	25	633	79	14	648
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0	0.0		0.0	30.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.985			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1814	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1814	0	1750	1842
Link Speed (k/h)	40		50			50
Link Distance (m)	238.1		44.2			71.5
Travel Time (s)	21.4		3.2			5.1
Confl. Peds. (#/hr)	1			5	5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	43	26	653	81	14	668
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	26	734	0	14	668
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	48.2%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	42	25	633	79	14	648
Future Vol, veh/h	42	25	633	79	14	648
Conflicting Peds, #/hr	1	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	-	-	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	26	653	81	14	668
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1396	699	0	0	739	0
Stage 1	699	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	156	440	-	-	867	-
Stage 1	493	-	-	-	-	-
Stage 2	494	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	153	438	-	-	863	-
Mov Cap-2 Maneuver	293	-	-	-	-	-
Stage 1	491	-	-	-	-	-
Stage 2	486	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	17.3	0	0.2			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 293 438	863	-		
HCM Lane V/C Ratio	-	- 0.148 0.059	0.017	-		
HCM Control Delay (s)	-	- 19.4 13.7	9.2	-		
HCM Lane LOS	-	- C B	A	-		
HCM 95th %tile Q(veh)	-	- 0.5 0.2	0.1	-		





Lanes, Volumes, Timings  
2: Sandwich Street South & Parking Lot Driveway

2022 PM Existing  
131 & 135 Sandwich Street South

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	3	709	6	0	689
Future Volume (vph)	4	3	709	6	0	689
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.942		0.999			
Flt Protected	0.972					
Satd. Flow (prot)	1687	0	1840	0	1842	1842
Flt Permitted	0.972					
Satd. Flow (perm)	1687	0	1840	0	1842	1842
Link Speed (k/h)	30		50			50
Link Distance (m)	133.6		35.2			44.2
Travel Time (s)	16.0		2.5			3.2
Confl. Peds. (#/hr)	4	1		4	4	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	4	3	723	6	0	703
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	729	0	0	703
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	48.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 2010 TWSC  
2: Sandwich Street South & Parking Lot Driveway



















2022 PM Existing  
131 & 135 Sandwich Street South

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	3	709	6	0	689
Future Vol, veh/h	4	3	709	6	0	689
Conflicting Peds, #/hr	4	1	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	3	723	6	0	703
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1437	731	0	0	733	0
Stage 1	730	-	-	-	-	-
Stage 2	707	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	147	422	-	-	872	-
Stage 1	477	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	146	420	-	-	869	-
Mov Cap-2 Maneuver	286	-	-	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	16.1	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	331	869	-	
HCM Lane V/C Ratio	-	-	0.022	-	-	
HCM Control Delay (s)	-	-	16.1	0	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

# Lanes, Volumes, Timings

2022 PM Existing















## 3: Sandwich Street South & North Street/165 Sandwich Street South Drive

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	5	4	0	4	4	708	0	3	684	7
Future Volume (vph)	4	0	5	4	0	4	4	708	0	3	684	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	10.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.925			0.932						0.999	
Flt Protected		0.978			0.976		0.950			0.950		
Satd. Flow (prot)	0	1500	0	0	1676	0	1750	1842	0	1750	1840	0
Flt Permitted		0.978			0.976		0.950			0.950		
Satd. Flow (perm)	0	1500	0	0	1676	0	1750	1842	0	1750	1840	0
Link Speed (k/h)		50			30			50			50	
Link Distance (m)		127.1			58.9			86.3			124.2	
Travel Time (s)		9.2			7.1			6.2			8.9	
Confl. Peds. (#/hr)							8		1	1		8
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Parking (#/hr)		0										
Adj. Flow (vph)	4	0	5	4	0	4	4	722	0	3	698	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	9	0	0	8	0	4	722	0	3	705	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.01	1.16	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	47.3%											
Analysis Period (min)	15											
	ICU Level of Service A											

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖		↗	↖	
Traffic Vol, veh/h	4	0	5	4	0	4	4	708	0	3	684	7
Future Vol, veh/h	4	0	5	4	0	4	4	708	0	3	684	7
Conflicting Peds, #/hr	0	0	0	0	0	0	8	0	1	1	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	5	4	0	4	4	722	0	3	698	7
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1448	1447	710	1441	1450	723	713	0	0	723	0	0
Stage 1	716	716	-	731	731	-	-	-	-	-	-	-
Stage 2	732	731	-	710	719	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	109	131	434	110	131	426	887	-	-	879	-	-
Stage 1	421	434	-	413	427	-	-	-	-	-	-	-
Stage 2	413	427	-	424	433	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	106	129	431	108	129	426	880	-	-	878	-	-
Mov Cap-2 Maneuver	106	129	-	108	129	-	-	-	-	-	-	-
Stage 1	416	430	-	411	424	-	-	-	-	-	-	-
Stage 2	407	424	-	418	429	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	25.8		27		0.1		0					
HCM LOS	D		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	880	-	-	182	172	878	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.05	0.047	0.003	-	-				
HCM Control Delay (s)	9.1	-	-	25.8	27	9.1	-	-				
HCM Lane LOS	A	-	-	D	D	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-				

Lanes, Volumes, Timings  
4: Sandwich Street South & Pedestrian Crossing

2022 PM Existing  
131 & 135 Sandwich Street South

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	715	0	0	693	0
Future Volume (vph)	0	0	0	0	0	0	0	715	0	0	693	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr t												
Flt Protected												
Satd. Flow (prot)	0	0	0	0	0	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	0	0	0	1842	0	0	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		31.3			34.9			124.2			35.2	
Travel Time (s)		2.3			2.5			8.9			2.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	0	0	0	0	730	0	0	707	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	730	0	0	707	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors								2			2	
Detector Template								Thru			Thru	
Leading Detector (m)								10.0			10.0	
Trailing Detector (m)								0.0			0.0	
Detector 1 Position(m)								0.0			0.0	
Detector 1 Size(m)								0.6			0.6	
Detector 1 Type								Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)								0.0			0.0	
Detector 1 Queue (s)								0.0			0.0	
Detector 1 Delay (s)								0.0			0.0	
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type								NA			NA	
Protected Phases								2			6	
Permitted Phases												
Detector Phase								2			6	
Switch Phase												
Minimum Initial (s)								10.0			10.0	

# Lanes, Volumes, Timings

## 4: Sandwich Street South & Pedestrian Crossing













2022 PM Existing  
131 & 135 Sandwich Street South

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	10.0



Lanes, Volumes, Timings  
4: Sandwich Street South & Pedestrian Crossing




2022 PM Existing  
131 & 135 Sandwich Street South

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)								32.5			24.5	
Total Split (s)								35.0			35.0	
Total Split (%)								53.8%			53.8%	
Maximum Green (s)								28.5			28.5	
Yellow Time (s)								3.3			3.3	
All-Red Time (s)								3.2			3.2	
Lost Time Adjust (s)								0.0			0.0	
Total Lost Time (s)								6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0			3.0	
Recall Mode								Max			Max	
Walk Time (s)								7.0			7.0	
Flash Dont Walk (s)								11.0			11.0	
Pedestrian Calls (#/hr)								0			0	
Act Effct Green (s)								50.9			50.9	
Actuated g/C Ratio								0.91			0.91	
v/c Ratio								0.44			0.42	
Control Delay								5.5			5.3	
Queue Delay								0.0			0.0	
Total Delay								5.5			5.3	
LOS								A			A	
Approach Delay								5.5			5.3	
Approach LOS								A			A	
Queue Length 50th (m)								0.0			0.0	
Queue Length 95th (m)								119.8			113.5	
Internal Link Dist (m)		7.3			10.9			100.2			11.2	
Turn Bay Length (m)												
Base Capacity (vph)								1674			1674	
Starvation Cap Reductn								0			0	
Spillback Cap Reductn								0			0	
Storage Cap Reductn								0			0	
Reduced v/c Ratio								0.44			0.42	

Intersection Summary

Area Type:	Other
Cycle Length: 65	
Actuated Cycle Length: 56	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.44	
Intersection Signal Delay: 5.4	Intersection LOS: A
Intersection Capacity Utilization 43.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Sandwich Street South & Pedestrian Crossing

 Ø2	 Ø4
35 s	30 s
 Ø6	
35 s	

Lanes, Volumes, Timings  
4: Sandwich Street South & Pedestrian Crossing

2022 PM Existing  
131 & 135 Sandwich Street South

Lane Group	Ø4
Minimum Split (s)	30.0
Total Split (s)	30.0
Total Split (%)	46%
Maximum Green (s)	26.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Intersection: 1: Sandwich Street South & Fort Street

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (m)	16.6	11.5	2.7	12.8	39.2
Average Queue (m)	3.1	4.1	0.1	2.8	2.4
95th Queue (m)	10.8	11.7	1.7	10.1	17.5
Link Distance (m)		228.3	30.4		61.8
Upstream Blk Time (%)					0
Queuing Penalty (veh)					0
Storage Bay Dist (m)	20.0			30.0	
Storage Blk Time (%)	1	0			0
Queuing Penalty (veh)	0	0			0

Intersection: 2: Sandwich Street South & Parking Lot Driveway

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (m)	12.7	1.8	17.4	54.6
Average Queue (m)	4.9	0.1	1.3	14.2
95th Queue (m)	12.4	1.3	8.3	42.4
Link Distance (m)	124.3	25.9		30.4
Upstream Blk Time (%)			0	4
Queuing Penalty (veh)			0	19
Storage Bay Dist (m)			15.0	
Storage Blk Time (%)			0	7
Queuing Penalty (veh)			0	1

Intersection: 3: Sandwich Street South & North Street/165 Sandwich Street South Driveway

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	12.8	7.3	18.8	10.2	8.9	2.9
Average Queue (m)	4.3	0.5	6.2	0.3	0.6	0.1
95th Queue (m)	12.0	3.8	15.9	4.7	4.4	1.5
Link Distance (m)	118.7	50.2		79.6		111.9
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			10.0		30.0	
Storage Blk Time (%)			6	0		
Queuing Penalty (veh)			24	0		

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Intersection: 4: Sandwich Street South & Pedestrian Crossing

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Movement	NB	SB
Directions Served	T	T
Maximum Queue (m)	80.1	50.0
Average Queue (m)	40.5	38.7
95th Queue (m)	67.0	54.3
Link Distance (m)	111.9	25.9
Upstream Blk Time (%)		22
Queuing Penalty (veh)		117
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Network Summary

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Network wide Queuing Penalty: 162

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Intersection: 1: Sandwich Street South & Fort Street

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (m)	18.7	14.3	7.9	10.3	3.3
Average Queue (m)	7.3	5.4	0.4	2.6	0.1
95th Queue (m)	15.9	13.8	3.9	9.4	1.7
Link Distance (m)		228.3	30.4		61.8
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	20.0			30.0	
Storage Blk Time (%)	1	0			
Queuing Penalty (veh)	0	0			

Intersection: 2: Sandwich Street South & Parking Lot Driveway

Movement	WB	NB	SB
Directions Served	LR	TR	T
Maximum Queue (m)	10.0	10.3	19.8
Average Queue (m)	1.7	0.5	2.3
95th Queue (m)	7.3	5.1	13.9
Link Distance (m)	124.3	24.5	30.4
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	1
Storage Bay Dist (m)			
Storage Blk Time (%)			1
Queuing Penalty (veh)			0

Intersection: 3: Sandwich Street South & North Street/165 Sandwich Street South Driveway

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (m)	9.2	13.1	9.0	3.5
Average Queue (m)	2.8	2.7	0.7	0.2
95th Queue (m)	9.5	10.2	4.5	2.5
Link Distance (m)	118.7	50.2		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			10.0	30.0
Storage Blk Time (%)			0	
Queuing Penalty (veh)			2	

---

Intersection: 4: Sandwich Street South & Pedestrian Crossing

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Movement	NB	SB
Directions Served	T	T
Maximum Queue (m)	66.5	39.4
Average Queue (m)	5.2	3.6
95th Queue (m)	31.8	22.1
Link Distance (m)	114.0	24.5
Upstream Blk Time (%)		1
Queuing Penalty (veh)		8
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Network Summary

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Network wide Queuing Penalty: 12

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# Appendix F

Signal Warrants

Sandwich St S & Fort St  
2023 FB

**Justification #7**

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	627	87%	22%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	38	22%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	602	84%	19%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	14	19%		

**Notes**

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes,  $AHV = PM/2$  or  $(AM + PM) / 4$ , including amplification factors
4. T-intersection factor corrected, applies only to 1B



Sandwich St S & Parking Lot Driveway  
2023 FB

**Justification #7**

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	617	86%	7%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	12	7%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	609	85%	2%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	2	2%		

**Notes**

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes,  $AHV = PM/2$  or  $(AM + PM) / 4$ , including amplification factors
4. T-intersection factor corrected, applies only to 1B

Sandwich St S & North St  
2023 FB

**Justification #7**

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	633	88%	6%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	10	6%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	623	86%	4%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	3	4%		

**Notes**

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes,  $AHV = PM/2$  or  $(AM + PM) / 4$ , including amplification factors
4. T-intersection factor corrected, applies only to 1B

Sandwich St S & Fort St  
2023 FT

**Justification #7**

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	635	88%	23%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	39	23%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	609	85%	20%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	15	20%		

**Notes**

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes,  $AHV = PM/2$  or  $(AM + PM) / 4$ , including amplification factors
4. T-intersection factor corrected, applies only to 1B

Sandwich St S & Parking Lot Driveway  
2023 FT

**Justification #7**

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	629	87%	11%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	18	11%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	617	86%	5%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	4	5%		

**Notes**

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes,  $AHV = PM/2$  or  $(AM + PM) / 4$ , including amplification factors
4. T-intersection factor corrected, applies only to 1B

Sandwich St S & North St  
2023 FT

**Justification #7**

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		Entire %
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	643	89%	6%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	11	6%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	632	88%	5%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	4	5%		

**Notes**

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes,  $AHV = PM/2$  or  $(AM + PM) / 4$ , including amplification factors
4. T-intersection factor corrected, applies only to 1B

Sandwich St S & Access #1  
2023 FT

**Justification #7**

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	617	86%	3%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	6	3%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	613	85%	3%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	2	3%		

**Notes**

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes,  $AHV = PM/2$  or  $(AM + PM) / 4$ , including amplification factors
4. T-intersection factor corrected, applies only to 1B

Sandwich St S & Access #2  
2023 FT

**Justification #7**

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	621	86%	3%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	5	3%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	618	86%	2%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	2	2%		

**Notes**

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes,  $AHV = PM/2$  or  $(AM + PM) / 4$ , including amplification factors
4. T-intersection factor corrected, applies only to 1B












# Appendix G






2023 Future Background Synchro & SimTraffic Worksheets



Lanes, Volumes, Timings  
1: Sandwich Street South & Fort Street

2023 FB AM  
131 & 135 Sandwich Street South

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	18	394	54	23	533
Future Volume (vph)	14	18	394	54	23	533
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0	0.0		0.0	30.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.984			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1653	1566	1797	0	1750	1807
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1653	1566	1797	0	1750	1807
Link Speed (k/h)	40		50			50
Link Distance (m)	238.1		44.2			71.5
Travel Time (s)	21.4		3.2			5.1
Confl. Peds. (#/hr)		1		5	5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	8%	2%	3%	2%	2%	4%
Adj. Flow (vph)	15	19	415	57	24	561
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	19	472	0	24	561
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	38.4%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	18	394	54	23	533
Future Vol, veh/h	14	18	394	54	23	533
Conflicting Peds, #/hr	0	1	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	-	-	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	8	2	3	2	2	4
Mvmt Flow	15	19	415	57	24	561
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1058	450	0	0	477	0
Stage 1	449	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Critical Hdwy	6.48	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	242	609	-	-	1085	-
Stage 1	631	-	-	-	-	-
Stage 2	531	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	235	606	-	-	1080	-
Mov Cap-2 Maneuver	365	-	-	-	-	-
Stage 1	628	-	-	-	-	-
Stage 2	519	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	12.9	0	0.3			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 365 606	1080	-		
HCM Lane V/C Ratio	-	- 0.04 0.031	0.022	-		
HCM Control Delay (s)	-	- 15.3 11.1	8.4	-		
HCM Lane LOS	-	- C B	A	-		
HCM 95th %tile Q(veh)	-	- 0.1 0.1	0.1	-		

# Lanes, Volumes, Timings

## 2: Sandwich Street South & Parking Lot Driveway

2023 FB AM  
131 & 135 Sandwich Street South



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	L	R
Traffic Volume (vph)	2	22	425	33	15	531
Future Volume (vph)	2	22	425	33	15	531
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.876		0.990			
Flt Protected	0.996				0.950	
Satd. Flow (prot)	1607	0	1807	0	1750	1807
Flt Permitted	0.996				0.950	
Satd. Flow (perm)	1607	0	1807	0	1750	1807
Link Speed (k/h)	30		50			50
Link Distance (m)	133.6		37.5			44.2
Travel Time (s)	16.0		2.7			3.2
Confl. Peds. (#/hr)				19	19	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	2%	2%	4%
Adj. Flow (vph)	2	23	443	34	16	553
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	0	477	0	16	553
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

### Intersection Summary

Area Type: Other





Control Type: Unsignalized



















Intersection Capacity Utilization 37.9% ICU Level of Service A

Analysis Period (min) 15

HCM 2010 TWSC  
2: Sandwich Street South & Parking Lot Driveway

2023 FB AM  
131 & 135 Sandwich Street South

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	22	425	33	15	531
Future Vol, veh/h	2	22	425	33	15	531
Conflicting Peds, #/hr	0	0	0	19	19	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	3	2	2	4
Mvmt Flow	2	23	443	34	16	553
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1064	479	0	0	496	0
Stage 1	479	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	247	587	-	-	1068	-
Stage 1	623	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	239	577	-	-	1049	-
Mov Cap-2 Maneuver	373	-	-	-	-	-
Stage 1	612	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	11.8	0	0.2			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	552	1049	-	
HCM Lane V/C Ratio	-	-	0.045	0.015	-	
HCM Control Delay (s)	-	-	11.8	8.5	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	18	2	0	0	62	449	5	6	507	28
Future Volume (vph)	3	0	18	2	0	0	62	449	5	6	507	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	10.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.883						0.998			0.992	
Flt Protected		0.994			0.950		0.950			0.950		
Satd. Flow (prot)	0	1455	0	0	1750	0	1653	1821	0	1750	1776	0
Flt Permitted		0.994			0.950		0.950			0.950		
Satd. Flow (perm)	0	1455	0	0	1750	0	1653	1821	0	1750	1776	0
Link Speed (k/h)		50			30			50			50	
Link Distance (m)		127.1			58.9			86.3			121.9	
Travel Time (s)		9.2			7.1			6.2			8.8	
Confl. Peds. (#/hr)			1	1			9		26	26		9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	8%	3%	2%	2%	5%	4%
Parking (#/hr)		0										
Adj. Flow (vph)	3	0	20	2	0	0	69	499	6	7	563	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	0	2	0	69	505	0	7	594	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.01	1.16	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	45.5%											
Analysis Period (min)	15											
ICU Level of Service A												

## Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	3	0	18	2	0	0	62	449	5	6	507	28
Future Vol, veh/h	3	0	18	2	0	0	62	449	5	6	507	28
Conflicting Peds, #/hr	0	0	1	1	0	0	9	0	26	26	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	8	3	2	2	5	4
Mvmt Flow	3	0	20	2	0	0	69	499	6	7	563	31















Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1242	1271	589	1270	1283	528	603	0	0	531	0	0
Stage 1	602	602	-	666	666	-	-	-	-	-	-	-
Stage 2	640	669	-	604	617	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.272	-	-	2.218	-	-
Pot Cap-1 Maneuver	152	168	508	145	165	550	946	-	-	1036	-	-
Stage 1	486	489	-	449	457	-	-	-	-	-	-	-
Stage 2	464	456	-	485	481	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	142	150	503	127	147	537	938	-	-	1011	-	-
Mov Cap-2 Maneuver	142	150	-	127	147	-	-	-	-	-	-	-
Stage 1	447	482	-	406	413	-	-	-	-	-	-	-
Stage 2	430	412	-	462	474	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.4		33.9		1.1		0.1	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	938	-	-	369	127	1011	-
HCM Lane V/C Ratio	0.073	-	-	0.063	0.017	0.007	-
HCM Control Delay (s)	9.1	-	-	15.4	33.9	8.6	-
HCM Lane LOS	A	-	-	C	D	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0.1	0	-

## 4: Sandwich Street South &amp; Pedestrian Crossing

131 &amp; 135 Sandwich Street South

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	458	0	0	533	0
Future Volume (vph)	0	0	0	0	0	0	0	458	0	0	533	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr t												
Flt Protected												
Satd. Flow (prot)	0	0	0	0	0	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	0	0	0	1842	0	0	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		27.0			26.6			121.9			37.5	
Travel Time (s)		1.9			1.9			8.8			2.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	0	0	0	0	477	0	0	555	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	477	0	0	555	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors								2			2	
Detector Template								Thru			Thru	
Leading Detector (m)								10.0			10.0	
Trailing Detector (m)								0.0			0.0	
Detector 1 Position(m)								0.0			0.0	
Detector 1 Size(m)								0.6			0.6	
Detector 1 Type								Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)								0.0			0.0	
Detector 1 Queue (s)								0.0			0.0	
Detector 1 Delay (s)								0.0			0.0	
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type								NA			NA	
Protected Phases								2			6	
Permitted Phases												
Detector Phase								2			6	
Switch Phase												
Minimum Initial (s)								10.0			10.0	

# Lanes, Volumes, Timings

## 4: Sandwich Street South & Pedestrian Crossing













2023 FB AM  
131 & 135 Sandwich Street South

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	10.0



## 4: Sandwich Street South &amp; Pedestrian Crossing

131 &amp; 135 Sandwich Street South

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)								24.5			24.5	
Total Split (s)								30.0			30.0	
Total Split (%)								50.0%			50.0%	
Maximum Green (s)								23.5			23.5	
Yellow Time (s)								3.3			3.3	
All-Red Time (s)								3.2			3.2	
Lost Time Adjust (s)								0.0			0.0	
Total Lost Time (s)								6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0			3.0	
Recall Mode								Max			Max	
Walk Time (s)								7.0			7.0	
Flash Dont Walk (s)								11.0			11.0	
Pedestrian Calls (#/hr)								0			0	
Act Effect Green (s)								42.1			42.1	
Actuated g/C Ratio								0.61			0.61	
v/c Ratio								0.42			0.49	
Control Delay								12.6			13.7	
Queue Delay								0.0			0.0	
Total Delay								12.6			13.7	
LOS								B			B	
Approach Delay								12.6			13.7	
Approach LOS								B			B	
Queue Length 50th (m)								41.5			51.3	
Queue Length 95th (m)								65.1			79.9	
Internal Link Dist (m)		3.0			2.6			97.9			13.5	
Turn Bay Length (m)												
Base Capacity (vph)								1124			1124	
Starvation Cap Reductn								0			0	
Spillback Cap Reductn								0			0	
Storage Cap Reductn								0			0	
Reduced v/c Ratio								0.42			0.49	

## Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 69

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 13.2

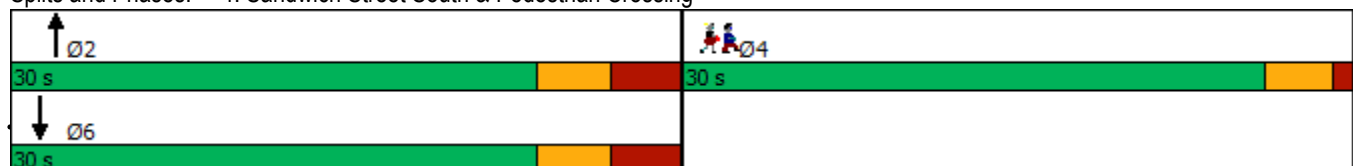
Intersection LOS: B

Intersection Capacity Utilization 33.5%

ICU Level of Service A

Analysis Period (min) 15

## Splits and Phases: 4: Sandwich Street South &amp; Pedestrian Crossing














Lanes, Volumes, Timings  
4: Sandwich Street South & Pedestrian Crossing






2023 FB AM  
131 & 135 Sandwich Street South

Lane Group	Ø4
Minimum Split (s)	30.0
Total Split (s)	30.0
Total Split (%)	50%
Maximum Green (s)	26.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	137
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings  
1: Sandwich Street South & Fort Street

2023 FB PM  
131 & 135 Sandwich Street South

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	26	646	81	14	661
Future Volume (vph)	43	26	646	81	14	661
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0	0.0		0.0	30.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.985			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1814	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1814	0	1750	1842
Link Speed (k/h)	40		50			50
Link Distance (m)	238.1		44.2			71.5
Travel Time (s)	21.4		3.2			5.1
Confl. Peds. (#/hr)	1			5	5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	44	27	666	84	14	681
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	27	750	0	14	681
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.0%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	26	646	81	14	661
Future Vol, veh/h	43	26	646	81	14	661
Conflicting Peds, #/hr	1	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	-	-	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	27	666	84	14	681
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1423	713	0	0	755	0
Stage 1	713	-	-	-	-	-
Stage 2	710	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	150	432	-	-	855	-
Stage 1	486	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	147	430	-	-	851	-
Mov Cap-2 Maneuver	287	-	-	-	-	-
Stage 1	484	-	-	-	-	-
Stage 2	479	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	17.6	0	0.2			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 287 430	851	-		
HCM Lane V/C Ratio	-	- 0.154 0.062	0.017	-		
HCM Control Delay (s)	-	- 19.8 13.9	9.3	-		
HCM Lane LOS	-	- C B	A	-		
HCM 95th %tile Q(veh)	-	- 0.5 0.2	0.1	-		

# Lanes, Volumes, Timings

## 2: Sandwich Street South & Parking Lot Driveway

2023 FB PM  
131 & 135 Sandwich Street South







Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	3	723	6	0	703
Future Volume (vph)	4	3	723	6	0	703
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.942		0.999			
Flt Protected	0.972					
Satd. Flow (prot)	1687	0	1840	0	1842	1842
Flt Permitted	0.972					
Satd. Flow (perm)	1687	0	1840	0	1842	1842
Link Speed (k/h)	30		50			50
Link Distance (m)	133.6		35.2			44.2
Travel Time (s)	16.0		2.5			3.2
Confl. Peds. (#/hr)	4	1		4	4	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	4	3	738	6	0	717
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	744	0	0	717
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free



















### Intersection Summary

Area Type: Other  
Control Type: Unsignalized  
Intersection Capacity Utilization 48.7% ICU Level of Service A  
Analysis Period (min) 15

HCM 2010 TWSC  
2: Sandwich Street South & Parking Lot Driveway

2023 FB PM  
131 & 135 Sandwich Street South

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	3	723	6	0	703
Future Vol, veh/h	4	3	723	6	0	703
Conflicting Peds, #/hr	4	1	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	3	738	6	0	717
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1466	746	0	0	748	0
Stage 1	745	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	141	413	-	-	861	-
Stage 1	469	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	140	411	-	-	858	-
Mov Cap-2 Maneuver	280	-	-	-	-	-
Stage 1	467	-	-	-	-	-
Stage 2	480	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	16.4	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	324	858	-	
HCM Lane V/C Ratio	-	-	0.022	-	-	
HCM Control Delay (s)	-	-	16.4	0	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	5	4	0	4	4	722	0	3	698	7
Future Volume (vph)	4	0	5	4	0	4	4	722	0	3	698	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	10.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.925			0.932						0.999	
Flt Protected		0.978			0.976		0.950			0.950		
Satd. Flow (prot)	0	1500	0	0	1676	0	1750	1842	0	1750	1840	0
Flt Permitted		0.978			0.976		0.950			0.950		
Satd. Flow (perm)	0	1500	0	0	1676	0	1750	1842	0	1750	1840	0
Link Speed (k/h)		50			30			50			50	
Link Distance (m)		127.1			58.9			86.3			124.2	
Travel Time (s)		9.2			7.1			6.2			8.9	
Confl. Peds. (#/hr)							8		1	1		8
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Parking (#/hr)		0										
Adj. Flow (vph)	4	0	5	4	0	4	4	737	0	3	712	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	9	0	0	8	0	4	737	0	3	719	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.01	1.16	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	48.0%											
Analysis Period (min)	15											
	ICU Level of Service A											

## Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	4	0	5	4	0	4	4	722	0	3	698	7
Future Vol, veh/h	4	0	5	4	0	4	4	722	0	3	698	7
Conflicting Peds, #/hr	0	0	0	0	0	0	8	0	1	1	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	5	4	0	4	4	737	0	3	712	7

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1477	1476	724	1470	1479	738	727	0	0	738	0	0
Stage 1	730	730	-	746	746	-	-	-	-	-	-	-
Stage 2	747	746	-	724	733	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	104	126	426	105	126	418	876	-	-	868	-	-
Stage 1	414	428	-	405	421	-	-	-	-	-	-	-
Stage 2	405	421	-	417	426	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	102	124	423	103	124	418	869	-	-	867	-	-
Mov Cap-2 Maneuver	102	124	-	103	124	-	-	-	-	-	-	-
Stage 1	409	424	-	403	418	-	-	-	-	-	-	-
Stage 2	399	418	-	411	422	-	-	-	-	-	-	-















Approach	EB		WB		NB		SB	
HCM Control Delay, s	26.6		28		0.1		0	
HCM LOS	D		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	869	-	-	176	165	867	-
HCM Lane V/C Ratio	0.005	-	-	0.052	0.049	0.004	-
HCM Control Delay (s)	9.2	-	-	26.6	28	9.2	-
HCM Lane LOS	A	-	-	D	D	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-



## 4: Sandwich Street South &amp; Pedestrian Crossing

131 &amp; 135 Sandwich Street South

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	729	0	0	707	0
Future Volume (vph)	0	0	0	0	0	0	0	729	0	0	707	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr t												
Flt Protected												
Satd. Flow (prot)	0	0	0	0	0	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	0	0	0	1842	0	0	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		31.3			34.9			124.2			35.2	
Travel Time (s)		2.3			2.5			8.9			2.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	0	0	0	0	744	0	0	721	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	744	0	0	721	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors								2			2	
Detector Template								Thru			Thru	
Leading Detector (m)								10.0			10.0	
Trailing Detector (m)								0.0			0.0	
Detector 1 Position(m)								0.0			0.0	
Detector 1 Size(m)								0.6			0.6	
Detector 1 Type								Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)								0.0			0.0	
Detector 1 Queue (s)								0.0			0.0	
Detector 1 Delay (s)								0.0			0.0	
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type								NA			NA	
Protected Phases								2			6	
Permitted Phases												
Detector Phase								2			6	
Switch Phase												
Minimum Initial (s)								10.0			10.0	

# Lanes, Volumes, Timings













## 4: Sandwich Street South & Pedestrian Crossing

2023 FB PM  
131 & 135 Sandwich Street South

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	10.0

## 4: Sandwich Street South &amp; Pedestrian Crossing

131 &amp; 135 Sandwich Street South

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)								32.5			24.5	
Total Split (s)								35.0			35.0	
Total Split (%)								53.8%			53.8%	
Maximum Green (s)								28.5			28.5	
Yellow Time (s)								3.3			3.3	
All-Red Time (s)								3.2			3.2	
Lost Time Adjust (s)								0.0			0.0	
Total Lost Time (s)								6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0			3.0	
Recall Mode								Max			Max	
Walk Time (s)								7.0			7.0	
Flash Dont Walk (s)								11.0			11.0	
Pedestrian Calls (#/hr)								0			0	
Act Effct Green (s)								50.9			50.9	
Actuated g/C Ratio								0.91			0.91	
v/c Ratio								0.44			0.43	
Control Delay								5.6			5.4	
Queue Delay								0.0			0.0	
Total Delay								5.6			5.4	
LOS								A			A	
Approach Delay								5.6			5.4	
Approach LOS								A			A	
Queue Length 50th (m)								0.0			0.0	
Queue Length 95th (m)								124.1			117.2	
Internal Link Dist (m)		7.3			10.9			100.2			11.2	
Turn Bay Length (m)												
Base Capacity (vph)								1674			1674	
Starvation Cap Reductn								0			0	
Spillback Cap Reductn								0			0	
Storage Cap Reductn								0			0	
Reduced v/c Ratio								0.44			0.43	

## Intersection Summary

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 56

Natural Cycle: 65

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 5.5

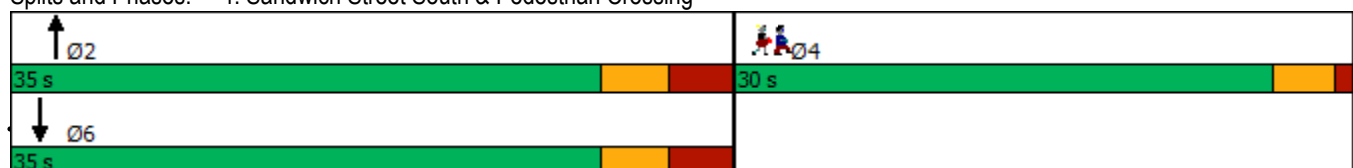
Intersection LOS: A

Intersection Capacity Utilization 43.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Sandwich Street South &amp; Pedestrian Crossing



Lanes, Volumes, Timings  
4: Sandwich Street South & Pedestrian Crossing

2023 FB PM  
131 & 135 Sandwich Street South

Lane Group	Ø4
Minimum Split (s)	30.0
Total Split (s)	30.0
Total Split (%)	46%
Maximum Green (s)	26.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Intersection: 1: Sandwich Street South & Fort Street

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (m)	14.8	10.0	3.2	11.5	16.5
Average Queue (m)	2.7	3.9	0.2	2.4	0.9
95th Queue (m)	9.5	11.2	1.9	9.2	8.9
Link Distance (m)		228.3	30.4		61.8
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	20.0			30.0	
Storage Blk Time (%)	0				0
Queuing Penalty (veh)	0				0

Intersection: 2: Sandwich Street South & Parking Lot Driveway

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (m)	15.5	2.0	25.6	48.0
Average Queue (m)	5.3	0.1	2.9	12.3
95th Queue (m)	13.0	1.4	13.0	38.1
Link Distance (m)	124.3	25.9		30.4
Upstream Blk Time (%)			0	3
Queuing Penalty (veh)			0	14
Storage Bay Dist (m)			15.0	
Storage Blk Time (%)			0	5
Queuing Penalty (veh)			0	1

Intersection: 3: Sandwich Street South & North Street/165 Sandwich Street South

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	11.7	7.2	19.0	16.3	5.4	7.2
Average Queue (m)	4.6	0.6	6.8	0.7	0.6	0.2
95th Queue (m)	12.0	4.3	16.7	9.1	4.1	3.4
Link Distance (m)	118.7	50.2		79.6		111.9
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			10.0		30.0	
Storage Blk Time (%)			7	0		
Queuing Penalty (veh)			31	0		

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Intersection: 4: Sandwich Street South & Pedestrian Crossing

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Movement	NB	SB
Directions Served	T	T
Maximum Queue (m)	80.8	49.8
Average Queue (m)	39.3	38.0
95th Queue (m)	68.2	55.5
Link Distance (m)	111.9	25.9
Upstream Blk Time (%)		21
Queuing Penalty (veh)		112
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Network Summary

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Network wide Queuing Penalty: 157

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Intersection: 1: Sandwich Street South & Fort Street

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (m)	21.6	20.4	5.0	9.2	13.1
Average Queue (m)	8.6	6.6	0.2	2.4	0.6
95th Queue (m)	17.6	15.4	2.1	9.1	7.4
Link Distance (m)		228.3	30.4		61.8
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	20.0			30.0	
Storage Blk Time (%)	2	0			0
Queuing Penalty (veh)	0	0			0

Intersection: 2: Sandwich Street South & Parking Lot Driveway

Movement	WB	NB	SB
Directions Served	LR	TR	T
Maximum Queue (m)	10.1	8.0	28.2
Average Queue (m)	1.7	0.5	2.4
95th Queue (m)	7.4	5.5	14.4
Link Distance (m)	124.3	24.5	30.4
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	1
Storage Bay Dist (m)			
Storage Blk Time (%)			1
Queuing Penalty (veh)			0

Intersection: 3: Sandwich Street South & North Street/165 Sandwich Street South

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (m)	10.5	10.4	7.2	5.3
Average Queue (m)	2.5	3.2	0.7	0.2
95th Queue (m)	9.2	10.3	4.7	2.6
Link Distance (m)	118.7	50.2		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			10.0	30.0
Storage Blk Time (%)			0	
Queuing Penalty (veh)			2	

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Intersection: 4: Sandwich Street South & Pedestrian Crossing

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Movement	NB	SB
Directions Served	T	T
Maximum Queue (m)	68.5	44.0
Average Queue (m)	8.0	6.0
95th Queue (m)	40.5	29.5
Link Distance (m)	114.0	24.5
Upstream Blk Time (%)		2
Queuing Penalty (veh)		15
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Network Summary

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Network wide Queuing Penalty: 19

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# Appendix H

2023 Future Total Synchro & SimTraffic Worksheets

Lanes, Volumes, Timings  
1: Sandwich Street South & Fort Street

2023 FT AM  
131 & 135 Sandwich Street South

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	18	395	55	23	534
Future Volume (vph)	15	18	395	55	23	534
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0	0.0		0.0	30.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.983			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1653	1566	1795	0	1750	1807
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1653	1566	1795	0	1750	1807
Link Speed (k/h)	40		50			50
Link Distance (m)	238.1		44.2			71.5
Travel Time (s)	21.4		3.2			5.1
Confl. Peds. (#/hr)		1		5	5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	8%	2%	3%	2%	2%	4%
Adj. Flow (vph)	16	19	416	58	24	562
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	19	474	0	24	562
Enter Blocked Intersection	No	No	Yes	No	No	Yes
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	38.4%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	18	395	55	23	534
Future Vol, veh/h	15	18	395	55	23	534
Conflicting Peds, #/hr	0	1	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	-	-	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	8	2	3	2	2	4
Mvmt Flow	16	19	416	58	24	562
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1060	451	0	0	479	0
Stage 1	450	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Critical Hdwy	6.48	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	242	608	-	-	1083	-
Stage 1	630	-	-	-	-	-
Stage 2	531	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	235	605	-	-	1078	-
Mov Cap-2 Maneuver	365	-	-	-	-	-
Stage 1	627	-	-	-	-	-
Stage 2	519	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	13	0	0.3			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 365 605	1078	-		
HCM Lane V/C Ratio	-	- 0.043 0.031	0.022	-		
HCM Control Delay (s)	-	- 15.3 11.1	8.4	-		
HCM Lane LOS	-	- C B	A	-		
HCM 95th %tile Q(veh)	-	- 0.1 0.1	0.1	-		

# Lanes, Volumes, Timings

## 2: Sandwich Street South & Parking Lot Driveway





2023 FT AM  
131 & 135 Sandwich Street South





















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	3	23	426	34	16	532
Future Volume (vph)	3	23	426	34	16	532
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.880		0.990			
Flt Protected	0.994				0.950	
Satd. Flow (prot)	1611	0	1807	0	1750	1807
Flt Permitted	0.994				0.950	
Satd. Flow (perm)	1611	0	1807	0	1750	1807
Link Speed (k/h)	30		50			50
Link Distance (m)	133.6		15.2			44.2
Travel Time (s)	16.0		1.1			3.2
Confl. Peds. (#/hr)				19	19	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	3%	2%	2%	4%
Adj. Flow (vph)	3	24	444	35	17	554
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	0	479	0	17	554
Enter Blocked Intersection	No	No	Yes	No	No	Yes
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

### Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.0%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	23	426	34	16	532
Future Vol, veh/h	3	23	426	34	16	532
Conflicting Peds, #/hr	0	0	0	19	19	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	3	2	2	4
Mvmt Flow	3	24	444	35	17	554
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1069	481	0	0	498	0
Stage 1	481	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	245	585	-	-	1066	-
Stage 1	622	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	237	575	-	-	1047	-
Mov Cap-2 Maneuver	371	-	-	-	-	-
Stage 1	611	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12	0		0.2		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 541		1047	-	
HCM Lane V/C Ratio	-	- 0.05		0.016	-	
HCM Control Delay (s)	-	- 12		8.5	-	
HCM Lane LOS	-	- B		A	-	
HCM 95th %tile Q(veh)	-	- 0.2		0	-	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	18	2	0	0	62	451	5	7	508	29
Future Volume (vph)	4	0	18	2	0	0	62	451	5	7	508	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	10.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.887						0.998			0.992	
Flt Protected		0.992			0.950		0.950			0.950		
Satd. Flow (prot)	0	1459	0	0	1750	0	1653	1821	0	1750	1776	0
Flt Permitted		0.992			0.950		0.950			0.950		
Satd. Flow (perm)	0	1459	0	0	1750	0	1653	1821	0	1750	1776	0
Link Speed (k/h)		50			30			50			50	
Link Distance (m)		127.1			58.9			86.3			107.9	
Travel Time (s)		9.2			7.1			6.2			7.8	
Confl. Peds. (#/hr)			1	1			9		26	26		9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	8%	3%	2%	2%	5%	4%
Parking (#/hr)		0										
Adj. Flow (vph)	4	0	20	2	0	0	69	501	6	8	564	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	0	0	2	0	69	507	0	8	596	0
Enter Blocked Intersection	No	No	No	No	No	No	No	Yes	No	No	Yes	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.01	1.16	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	45.6%						ICU Level of Service A					
Analysis Period (min)	15											

## Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	4	0	18	2	0	0	62	451	5	7	508	29
Future Vol, veh/h	4	0	18	2	0	0	62	451	5	7	508	29
Conflicting Peds, #/hr	0	0	1	1	0	0	9	0	26	26	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	8	3	2	2	5	4
Mvmt Flow	4	0	20	2	0	0	69	501	6	8	564	32















Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1247	1276	590	1275	1289	530	605	0	0	533	0	0
Stage 1	605	605	-	668	668	-	-	-	-	-	-	-
Stage 2	642	671	-	607	621	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.272	-	-	2.218	-	-
Pot Cap-1 Maneuver	150	167	508	144	164	549	944	-	-	1035	-	-
Stage 1	485	487	-	448	456	-	-	-	-	-	-	-
Stage 2	463	455	-	483	479	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	140	148	503	126	146	536	936	-	-	1010	-	-
Mov Cap-2 Maneuver	140	148	-	126	146	-	-	-	-	-	-	-
Stage 1	446	479	-	405	412	-	-	-	-	-	-	-
Stage 2	429	411	-	460	471	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.3		34.1		1.1		0.1	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	936	-	-	342	126	1010	-
HCM Lane V/C Ratio	0.074	-	-	0.071	0.018	0.008	-
HCM Control Delay (s)	9.2	-	-	16.3	34.1	8.6	-
HCM Lane LOS	A	-	-	C	D	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0.1	0	-

## 4: Sandwich Street South &amp; Pedestrian Crossing

131 &amp; 135 Sandwich Street South

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	460	0	0	535	0
Future Volume (vph)	0	0	0	0	0	0	0	460	0	0	535	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr t												
Flt Protected												
Satd. Flow (prot)	0	0	0	0	0	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	0	0	0	1842	0	0	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		27.0			26.6			14.0			22.4	
Travel Time (s)		1.9			1.9			1.0			1.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	0	0	0	0	479	0	0	557	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	479	0	0	557	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors								2			2	
Detector Template								Thru			Thru	
Leading Detector (m)								10.0			10.0	
Trailing Detector (m)								0.0			0.0	
Detector 1 Position(m)								0.0			0.0	
Detector 1 Size(m)								0.6			0.6	
Detector 1 Type								Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)								0.0			0.0	
Detector 1 Queue (s)								0.0			0.0	
Detector 1 Delay (s)								0.0			0.0	
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type								NA			NA	
Protected Phases								2			6	
Permitted Phases												
Detector Phase								2			6	
Switch Phase												
Minimum Initial (s)								10.0			10.0	



# Lanes, Volumes, Timings













## 4: Sandwich Street South & Pedestrian Crossing

2023 FT AM  
131 & 135 Sandwich Street South

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	10.0

## 4: Sandwich Street South &amp; Pedestrian Crossing

131 &amp; 135 Sandwich Street South

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)								24.5			24.5	
Total Split (s)								30.0			30.0	
Total Split (%)								50.0%			50.0%	
Maximum Green (s)								23.5			23.5	
Yellow Time (s)								3.3			3.3	
All-Red Time (s)								3.2			3.2	
Lost Time Adjust (s)								0.0			0.0	
Total Lost Time (s)								6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0			3.0	
Recall Mode								Max			Max	
Walk Time (s)								7.0			7.0	
Flash Dont Walk (s)								11.0			11.0	
Pedestrian Calls (#/hr)								0			0	
Act Effct Green (s)								42.1			42.1	
Actuated g/C Ratio								0.61			0.61	
v/c Ratio								0.43			0.50	
Control Delay								12.6			13.7	
Queue Delay								0.0			0.0	
Total Delay								12.6			13.7	
LOS								B			B	
Approach Delay								12.6			13.7	
Approach LOS								B			B	
Queue Length 50th (m)								41.7			51.4	
Queue Length 95th (m)								65.5			80.2	
Internal Link Dist (m)		3.0			2.6			0.1			0.1	
Turn Bay Length (m)												
Base Capacity (vph)								1124			1124	
Starvation Cap Reductn								0			0	
Spillback Cap Reductn								0			0	
Storage Cap Reductn								0			0	
Reduced v/c Ratio								0.43			0.50	

## Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 69

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 13.2

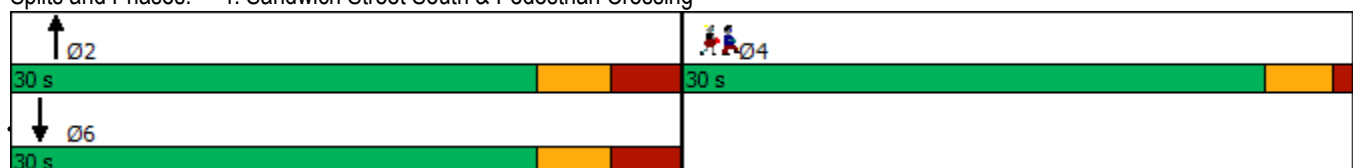
Intersection LOS: B

Intersection Capacity Utilization 38.2%

ICU Level of Service A

Analysis Period (min) 15

## Splits and Phases: 4: Sandwich Street South &amp; Pedestrian Crossing












Lanes, Volumes, Timings  
4: Sandwich Street South & Pedestrian Crossing




2023 FT AM  
131 & 135 Sandwich Street South

Lane Group	Ø4
Minimum Split (s)	30.0
Total Split (s)	30.0
Total Split (%)	50%
Maximum Green (s)	26.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	137
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings  
5: Sandwich Street South & Access #1

2023 FT AM  
131 & 135 Sandwich Street South

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	460	0	0	535
Future Volume (vph)	0	0	460	0	0	535
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1842	0	1842	0	0	1842
Flt Permitted						
Satd. Flow (perm)	1842	0	1842	0	0	1842
Link Speed (k/h)	30		50			50
Link Distance (m)	44.7		22.4			15.2
Travel Time (s)	5.4		1.6			1.1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	479	0	0	557
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	479	0	0	557
Enter Blocked Intersection	No	No	Yes	No	No	Yes
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 38.2%			ICU Level of Service A			
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	460	0	0	535
Future Vol, veh/h	0	0	460	0	0	535
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	479	0	0	557











Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1036	479	0	-	-	-
Stage 1	479	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	256	587	-	0	0	-
Stage 1	623	-	-	0	0	-
Stage 2	574	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	256	587	-	-	-	-
Mov Cap-2 Maneuver	389	-	-	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	574	-	-	-	-	-





Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	-	-
HCM Lane V/C Ratio	-	-
HCM Control Delay (s)	-	0
HCM Lane LOS	-	A
HCM 95th %tile Q(veh)	-	-

Lanes, Volumes, Timings  
6: Sandwich Street South & Site Access #2

2023 FT AM  
131 & 135 Sandwich Street South

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	1	459	1	1	534
Future Volume (vph)	1	1	459	1	1	534
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	5.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.932					
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1676	0	1842	0	1750	1842
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1676	0	1842	0	1750	1842
Link Speed (k/h)	30		50			50
Link Distance (m)	35.1		107.9			14.0
Travel Time (s)	4.2		7.8			1.0
Confl. Peds. (#/hr)				5	5	
Confl. Bikes (#/hr)				5		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1	1	478	1	1	556
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	0	479	0	1	556
Enter Blocked Intersection	No	No	Yes	No	No	Yes
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	38.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	459	1	1	534
Future Vol, veh/h	1	1	459	1	1	534
Conflicting Peds, #/hr	0	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	478	1	1	556












Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1042	484	0
Stage 1	484	-	-
Stage 2	558	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	254	583	-
Stage 1	620	-	-
Stage 2	573	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	252	580	-
Mov Cap-2 Maneuver	386	-	-
Stage 1	617	-	-
Stage 2	572	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	0
HCM LOS	B		






Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	464	1074
HCM Lane V/C Ratio	-	-	0.004	0.001
HCM Control Delay (s)	-	-	12.8	8.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

Lanes, Volumes, Timings  
1: Sandwich Street South & Fort Street

2023 FT PM  
131 & 135 Sandwich Street South











						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	44	26	658	83	14	675
Future Volume (vph)	44	26	658	83	14	675
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0	0.0		0.0	30.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.985			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1750	1566	1814	0	1750	1842
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1750	1566	1814	0	1750	1842
Link Speed (k/h)	40		50			50
Link Distance (m)	238.1		44.2			71.5
Travel Time (s)	21.4		3.2			5.1
Confl. Peds. (#/hr)	1			5	5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	45	27	678	86	14	696
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	27	764	0	14	696
Enter Blocked Intersection	No	No	Yes	No	No	Yes
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.7%			ICU Level of Service A		
Analysis Period (min)	15					

























Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	44	26	658	83	14	675
Future Vol, veh/h	44	26	658	83	14	675
Conflicting Peds, #/hr	1	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	-	-	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	27	678	86	14	696
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1451	726	0	0	769	0
Stage 1	726	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	144	425	-	-	845	-
Stage 1	479	-	-	-	-	-
Stage 2	479	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	141	423	-	-	841	-
Mov Cap-2 Maneuver	280	-	-	-	-	-
Stage 1	477	-	-	-	-	-
Stage 2	470	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	18	0	0.2			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 280 423	841	-		
HCM Lane V/C Ratio	-	- 0.162 0.063	0.017	-		
HCM Control Delay (s)	-	- 20.3 14.1	9.4	-		
HCM Lane LOS	-	- C B	A	-		
HCM 95th %tile Q(veh)	-	- 0.6 0.2	0.1	-		

Lanes, Volumes, Timings  
2: Sandwich Street South & Parking Lot Driveway

2023 FT PM  
131 & 135 Sandwich Street South

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	12	11	728	16	7	709
Future Volume (vph)	12	11	728	16	7	709
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.935		0.997			
Flt Protected	0.975				0.950	
Satd. Flow (prot)	1679	0	1837	0	1750	1842
Flt Permitted	0.975				0.950	
Satd. Flow (perm)	1679	0	1837	0	1750	1842
Link Speed (k/h)	30		50			50
Link Distance (m)	133.6		15.0			44.2
Travel Time (s)	16.0		1.1			3.2
Confl. Peds. (#/hr)	4	1		4	4	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	12	11	743	16	7	723
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	0	759	0	7	723
Enter Blocked Intersection	No	No	Yes	No	No	Yes
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.6%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	11	728	16	7	709
Future Vol, veh/h	12	11	728	16	7	709
Conflicting Peds, #/hr	4	1	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	11	743	16	7	723
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1496	756	0	0	763	0
Stage 1	755	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	135	408	-	-	850	-
Stage 1	464	-	-	-	-	-
Stage 2	471	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	133	406	-	-	847	-
Mov Cap-2 Maneuver	272	-	-	-	-	-
Stage 1	462	-	-	-	-	-
Stage 2	465	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	17	0	0.1			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	323	847	-	
HCM Lane V/C Ratio	-	-	0.073	0.008	-	
HCM Control Delay (s)	-	-	17	9.3	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	5	4	0	4	4	738	0	4	712	8
Future Volume (vph)	5	0	5	4	0	4	4	738	0	4	712	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	10.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	15.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.932			0.932						0.998	
Flt Protected		0.976			0.976		0.950			0.950		
Satd. Flow (prot)	0	1508	0	0	1676	0	1750	1842	0	1750	1838	0
Flt Permitted		0.976			0.976		0.950			0.950		
Satd. Flow (perm)	0	1508	0	0	1676	0	1750	1842	0	1750	1838	0
Link Speed (k/h)		50			30			50			50	
Link Distance (m)		127.1			58.9			86.3			107.9	
Travel Time (s)		9.2			7.1			6.2			7.8	
Confl. Peds. (#/hr)							8		1	1		8
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Parking (#/hr)		0										
Adj. Flow (vph)	5	0	5	4	0	4	4	753	0	4	727	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	8	0	4	753	0	4	735	0
Enter Blocked Intersection	No	No	No	No	No	No	No	Yes	No	No	Yes	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.01	1.16	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	48.8%											
Analysis Period (min)	15											
ICU Level of Service A												

## Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	5	0	5	4	0	4	4	738	0	4	712	8
Future Vol, veh/h	5	0	5	4	0	4	4	738	0	4	712	8
Conflicting Peds, #/hr	0	0	0	0	0	0	8	0	1	1	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	5	4	0	4	4	753	0	4	727	8















Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1510	1509	739	1504	1513	754	743	0	0	754	0	0
Stage 1	747	747	-	762	762	-	-	-	-	-	-	-
Stage 2	763	762	-	742	751	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	99	120	417	100	120	409	864	-	-	856	-	-
Stage 1	405	420	-	397	414	-	-	-	-	-	-	-
Stage 2	397	414	-	408	418	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	97	118	414	98	118	409	858	-	-	855	-	-
Mov Cap-2 Maneuver	97	118	-	98	118	-	-	-	-	-	-	-
Stage 1	400	415	-	395	412	-	-	-	-	-	-	-
Stage 2	391	412	-	401	413	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	29.5		29		0		0.1	
HCM LOS	D		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	858	-	-	157 158	855	-	-
HCM Lane V/C Ratio	0.005	-	-	0.065 0.052	0.005	-	-
HCM Control Delay (s)	9.2	-	-	29.5 29	9.2	-	-
HCM Lane LOS	A	-	-	D D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2 0.2	0	-	-

## 4: Sandwich Street South &amp; Pedestrian Crossing

131 &amp; 135 Sandwich Street South

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	744	0	0	721	0
Future Volume (vph)	0	0	0	0	0	0	0	744	0	0	721	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr t												
Flt Protected												
Satd. Flow (prot)	0	0	0	0	0	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	0	0	0	1842	0	0	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		31.3			34.9			16.4			20.2	
Travel Time (s)		2.3			2.5			1.2			1.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	0	0	0	0	759	0	0	736	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	759	0	0	736	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors								2			2	
Detector Template								Thru			Thru	
Leading Detector (m)								10.0			10.0	
Trailing Detector (m)								0.0			0.0	
Detector 1 Position(m)								0.0			0.0	
Detector 1 Size(m)								0.6			0.6	
Detector 1 Type								Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)								0.0			0.0	
Detector 1 Queue (s)								0.0			0.0	
Detector 1 Delay (s)								0.0			0.0	
Detector 2 Position(m)								9.4			9.4	
Detector 2 Size(m)								0.6			0.6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type								NA			NA	
Protected Phases								2			6	
Permitted Phases												
Detector Phase								2			6	
Switch Phase												
Minimum Initial (s)								10.0			10.0	













Lanes, Volumes, Timings  
4: Sandwich Street South & Pedestrian Crossing

2023 FT PM  
131 & 135 Sandwich Street South

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(m)	
Link Offset(m)	
Crosswalk Width(m)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (k/h)	
Number of Detectors	
Detector Template	
Leading Detector (m)	
Trailing Detector (m)	
Detector 1 Position(m)	
Detector 1 Size(m)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(m)	
Detector 2 Size(m)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	10.0

## 4: Sandwich Street South &amp; Pedestrian Crossing

131 &amp; 135 Sandwich Street South

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)								32.5			24.5	
Total Split (s)								35.0			35.0	
Total Split (%)								53.8%			53.8%	
Maximum Green (s)								28.5			28.5	
Yellow Time (s)								3.3			3.3	
All-Red Time (s)								3.2			3.2	
Lost Time Adjust (s)								0.0			0.0	
Total Lost Time (s)								6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)								3.0			3.0	
Recall Mode								Max			Max	
Walk Time (s)								7.0			7.0	
Flash Dont Walk (s)								11.0			11.0	
Pedestrian Calls (#/hr)								0			0	
Act Effct Green (s)								50.9			50.9	
Actuated g/C Ratio								0.91			0.91	
v/c Ratio								0.45			0.44	
Control Delay								5.7			5.5	
Queue Delay								0.0			0.0	
Total Delay								5.7			5.5	
LOS								A			A	
Approach Delay								5.7			5.5	
Approach LOS								A			A	
Queue Length 50th (m)								0.0			0.0	
Queue Length 95th (m)								128.4			121.5	
Internal Link Dist (m)		7.3			10.9			0.1			0.1	
Turn Bay Length (m)												
Base Capacity (vph)								1674			1674	
Starvation Cap Reductn								0			0	
Spillback Cap Reductn								0			0	
Storage Cap Reductn								0			0	
Reduced v/c Ratio								0.45			0.44	

## Intersection Summary

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 56

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 5.6

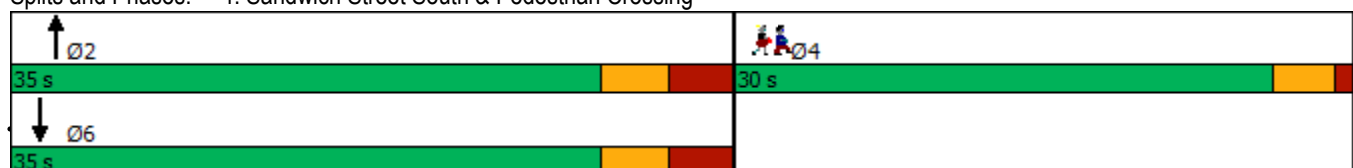
Intersection LOS: A

Intersection Capacity Utilization 48.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Sandwich Street South &amp; Pedestrian Crossing














Lanes, Volumes, Timings  
4: Sandwich Street South & Pedestrian Crossing




2023 FT PM  
131 & 135 Sandwich Street South

Lane Group	Ø4
Minimum Split (s)	30.0
Total Split (s)	30.0
Total Split (%)	46%
Maximum Green (s)	26.0
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings  
5: Sandwich Street South & Access #1











2023 FT PM  
131 & 135 Sandwich Street South





						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	7	737	0	0	721
Future Volume (vph)	8	7	737	0	0	721
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.937					
Flt Protected	0.974					
Satd. Flow (prot)	1681	0	1842	0	0	1842
Flt Permitted	0.974					
Satd. Flow (perm)	1681	0	1842	0	0	1842
Link Speed (k/h)	30		50			50
Link Distance (m)	45.8		20.2			15.0
Travel Time (s)	5.5		1.5			1.1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	8	7	752	0	0	736
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	752	0	0	736
Enter Blocked Intersection	No	No	Yes	No	No	Yes
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	48.8%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	7	737	0	0	721
Future Vol, veh/h	8	7	737	0	0	721
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	7	752	0	0	736
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1488	752	0	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	137	410	-	0	0	-
Stage 1	466	-	-	0	0	-
Stage 2	474	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	137	410	-	-	-	-
Mov Cap-2 Maneuver	277	-	-	-	-	-
Stage 1	466	-	-	-	-	-
Stage 2	474	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	16.6	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	-		326			
HCM Lane V/C Ratio	-		0.047			
HCM Control Delay (s)	-		16.6			
HCM Lane LOS	-		C			
HCM 95th %tile Q(veh)	-		0.1			

Lanes, Volumes, Timings  
6: Sandwich Street South & Access #2

2023 FT PM  
131 & 135 Sandwich Street South

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	5	732	14	13	716
Future Volume (vph)	5	5	732	14	13	716
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	5.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	15.0				15.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.932		0.998			
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1676	0	1838	0	1750	1842
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1676	0	1838	0	1750	1842
Link Speed (k/h)	30		50			50
Link Distance (m)	52.1		107.9			16.4
Travel Time (s)	6.3		7.8			1.2
Confl. Peds. (#/hr)				5	5	
Confl. Bikes (#/hr)				5		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	5	5	747	14	13	731
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	761	0	13	731
Enter Blocked Intersection	No	No	Yes	No	No	Yes
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		3.5			3.5
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	3.0		3.0			3.0
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.4%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	732	14	13	716
Future Vol, veh/h	5	5	732	14	13	716
Conflicting Peds, #/hr	0	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	5	747	14	13	731
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1516	759	0	0	766	0
Stage 1	759	-	-	-	-	-
Stage 2	757	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	131	406	-	-	847	-
Stage 1	462	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	128	404	-	-	843	-
Mov Cap-2 Maneuver	267	-	-	-	-	-
Stage 1	460	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	16.5	0		0.2		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	322	843	-	
HCM Lane V/C Ratio	-	-	0.032	0.016	-	
HCM Control Delay (s)	-	-	16.5	9.3	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

Intersection: 1: Sandwich Street South & Fort Street

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (m)	18.4	9.0	13.0	12.0	12.6
Average Queue (m)	4.5	3.8	0.4	2.3	1.0
95th Queue (m)	13.5	11.0	7.2	9.3	8.0
Link Distance (m)		228.3	30.4		61.8
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			0		
Storage Bay Dist (m)	20.0			30.0	
Storage Blk Time (%)	1				0
Queuing Penalty (veh)	0				0

Intersection: 2: Sandwich Street South & Parking Lot Driveway

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (m)	12.9	6.8	18.8	48.8
Average Queue (m)	4.9	0.4	2.0	13.8
95th Queue (m)	12.4	4.6	10.0	40.5
Link Distance (m)	124.3	1.9		30.4
Upstream Blk Time (%)		0	0	3
Queuing Penalty (veh)		0	0	17
Storage Bay Dist (m)			15.0	
Storage Blk Time (%)			0	7
Queuing Penalty (veh)			1	1

Intersection: 3: Sandwich Street South & North Street/165 Sandwich Street South

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	10.5	5.4	16.7	4.8	7.2	4.2
Average Queue (m)	3.9	0.3	5.8	0.2	0.8	0.2
95th Queue (m)	11.2	3.0	15.1	2.5	4.9	2.0
Link Distance (m)	118.7	50.2		79.6		93.0
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			10.0		30.0	
Storage Blk Time (%)			5	0		
Queuing Penalty (veh)			24	0		

Intersection: 4: Sandwich Street South & Pedestrian Crossing

Movement	NB	SB
Directions Served	T	T
Maximum Queue (m)	28.1	39.2
Average Queue (m)	22.7	28.6
95th Queue (m)	28.7	35.7
Link Distance (m)	5.6	14.1
Upstream Blk Time (%)	40	39
Queuing Penalty (veh)	182	210
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Sandwich Street South & Access #1

Movement	SB
Directions Served	T
Maximum Queue (m)	26.8
Average Queue (m)	16.4
95th Queue (m)	28.1
Link Distance (m)	1.9
Upstream Blk Time (%)	12
Queuing Penalty (veh)	62
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Sandwich Street South & Site Access #2

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (m)	8.9	52.1	2.2	21.8
Average Queue (m)	0.4	19.6	0.1	16.5
95th Queue (m)	3.5	42.4	1.1	20.4
Link Distance (m)	26.3	93.0		5.6
Upstream Blk Time (%)			0	0
Queuing Penalty (veh)			0	1
Storage Bay Dist (m)			5.0	
Storage Blk Time (%)			0	0
Queuing Penalty (veh)			0	0

Network Summary

Network wide Queuing Penalty: 499

Intersection: 1: Sandwich Street South & Fort Street

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (m)	21.7	19.7	9.6	10.6	6.4
Average Queue (m)	7.9	6.9	0.4	2.6	0.2
95th Queue (m)	16.6	16.0	4.2	9.4	4.5
Link Distance (m)		228.3	30.4		61.8
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	20.0			30.0	
Storage Blk Time (%)	1	0			0
Queuing Penalty (veh)	0	0			0

Intersection: 2: Sandwich Street South & Parking Lot Driveway

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (m)	14.2	14.5	9.3	23.1
Average Queue (m)	4.7	2.8	1.1	2.2
95th Queue (m)	12.6	11.9	6.0	14.5
Link Distance (m)	124.3	1.4		30.4
Upstream Blk Time (%)		0		0
Queuing Penalty (veh)		1		2
Storage Bay Dist (m)			15.0	
Storage Blk Time (%)			0	1
Queuing Penalty (veh)			0	0

Intersection: 3: Sandwich Street South & North Street/165 Sandwich Street South

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (m)	14.2	10.2	8.9	8.8
Average Queue (m)	3.1	2.1	0.6	0.6
95th Queue (m)	10.7	8.5	4.3	4.2
Link Distance (m)	118.7	50.2		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			10.0	30.0
Storage Blk Time (%)			0	
Queuing Penalty (veh)			2	



Intersection: 4: Sandwich Street South & Pedestrian Crossing

Movement	NB	SB
Directions Served	T	T
Maximum Queue (m)	20.4	24.2
Average Queue (m)	2.0	3.2
95th Queue (m)	12.7	16.3
Link Distance (m)	7.2	12.9
Upstream Blk Time (%)	1	2
Queuing Penalty (veh)	10	13
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Sandwich Street South & Access #1

Movement	WB	NB	SB
Directions Served	LR	T	T
Maximum Queue (m)	15.1	10.0	15.8
Average Queue (m)	4.2	0.3	1.6
95th Queue (m)	13.1	4.2	9.9
Link Distance (m)	36.4	12.9	1.4
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	1
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Sandwich Street South & Access #2

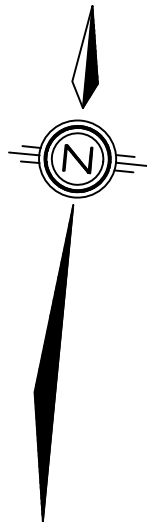
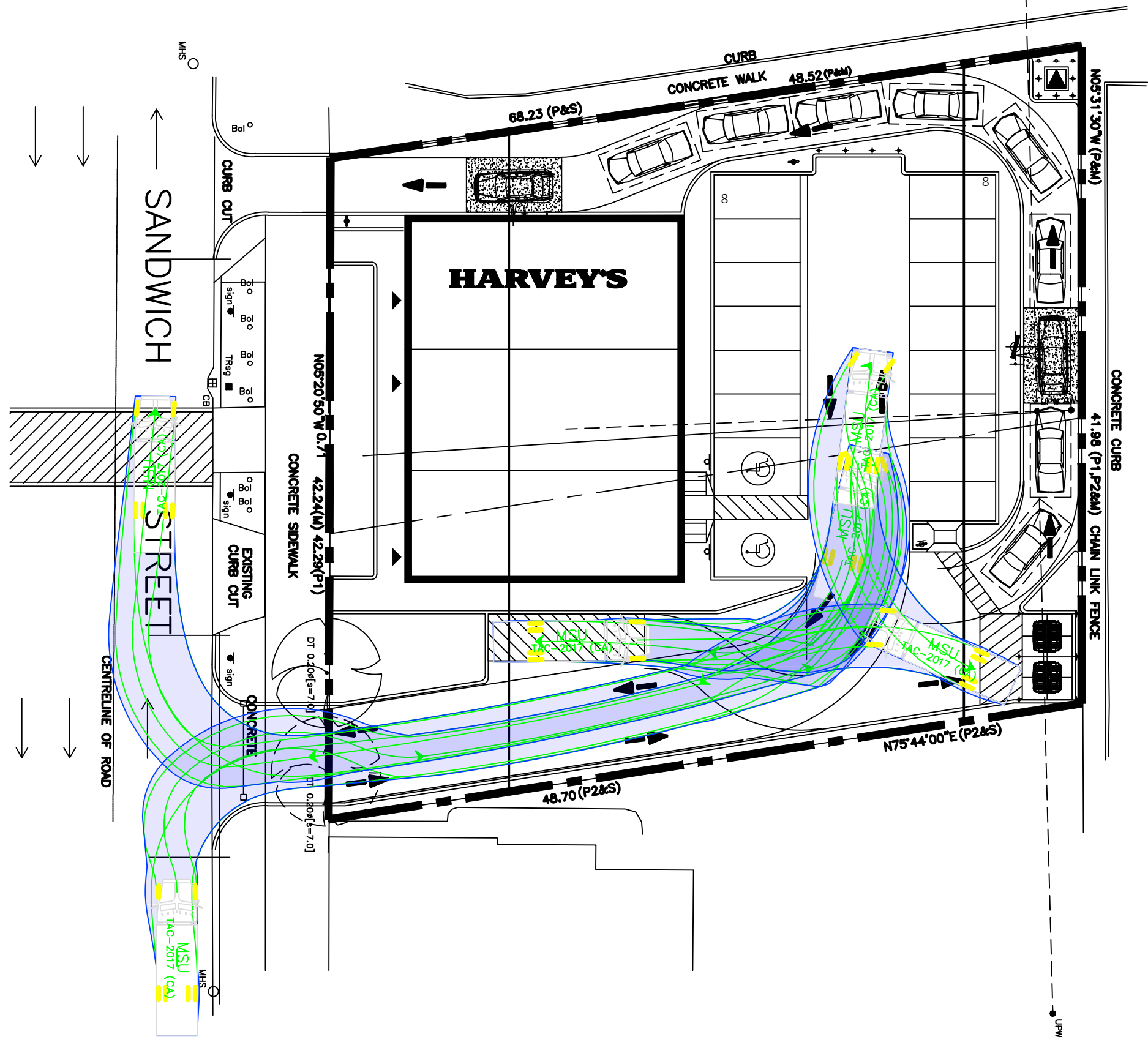
Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (m)	10.3	29.7	7.0	13.6
Average Queue (m)	2.6	2.6	1.6	2.3
95th Queue (m)	9.4	17.5	6.3	9.4
Link Distance (m)	43.0	93.1		7.2
Upstream Blk Time (%)			1	0
Queuing Penalty (veh)			0	3
Storage Bay Dist (m)			5.0	
Storage Blk Time (%)			1	0
Queuing Penalty (veh)			7	0

Network Summary

Network wide Queuing Penalty: 40

# Appendix I

Turning Templates



Notes:

A	description	by	xx/xx/xx
REV:	DESCRIPTION:	BY:	DATE:
STATUS:	status		



CGH Transportation  
 628 Haines Road  
 Newmarket, ON  
 L3Y 6V5  
 (905) 251-4070

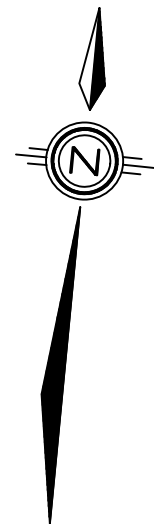
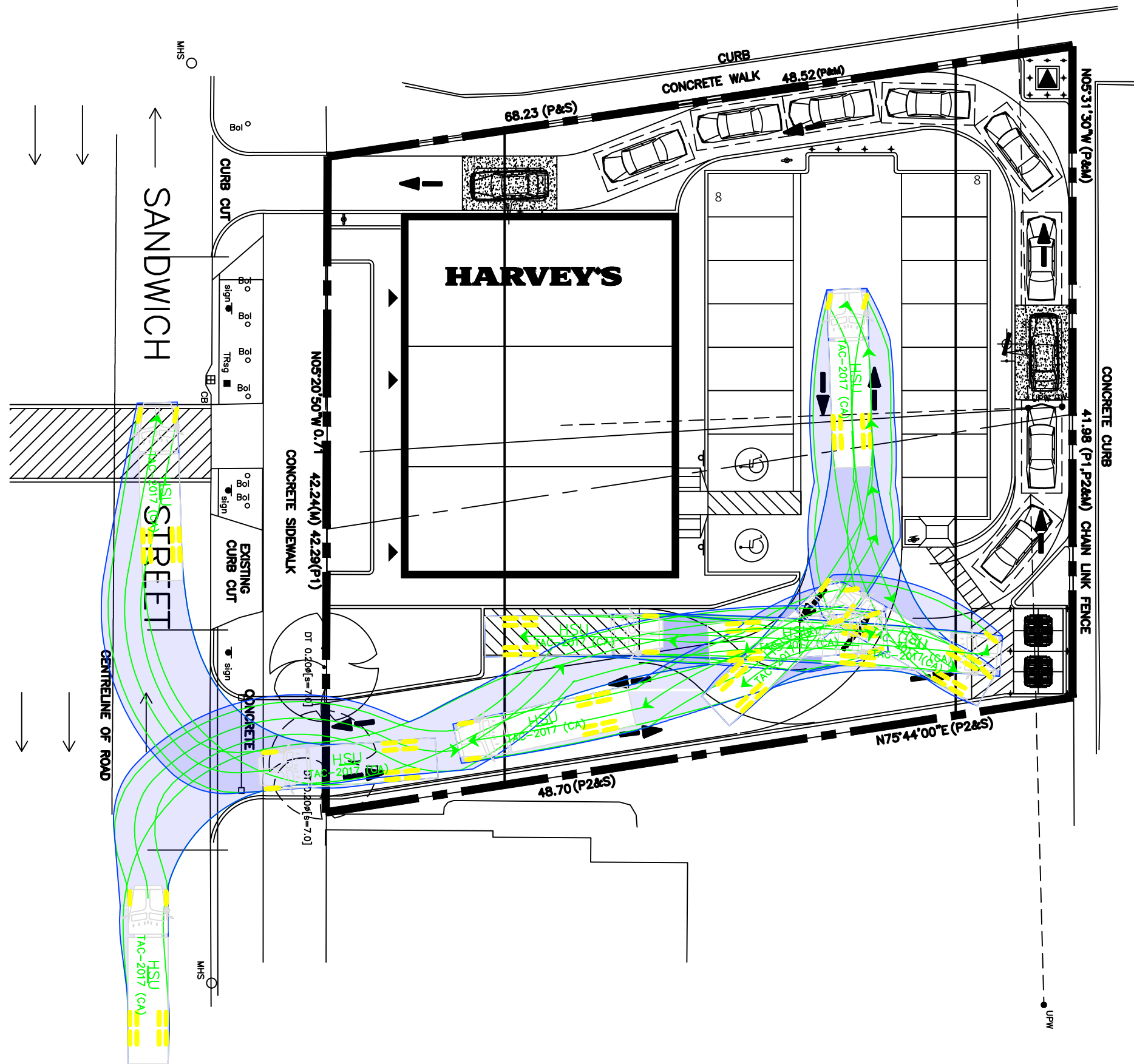
CLIENT: Dino Soltani  
 131 & 135 Sandwich Street  
 Amherstburg, ON  
 N9V 1Z9

ARCHITECT: NCA  
 137 Pamela Street  
 Ottawa, ON  
 K1S 3K9

SITE: 131 Sandwich Street

TITLE: Medium Single Unit (MSU)

SCALE AT A3: NTS	DATE: 2022-02-04	DRAWN: MC	CHECKED: checked
PROJECT NO: 2021-139	DRAWING NO: 001	REVISION:	



Notes:

A	description	by	xx/xx/xx
REV:	DESCRIPTION:	BY:	DATE:
STATUS:	status		



CGH Transportation  
628 Haines Road  
Newmarket, ON  
L3Y 6V5  
(905) 251-4070

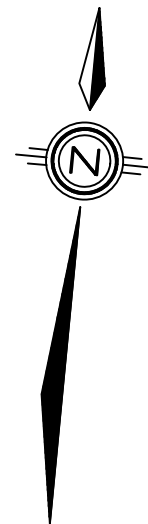
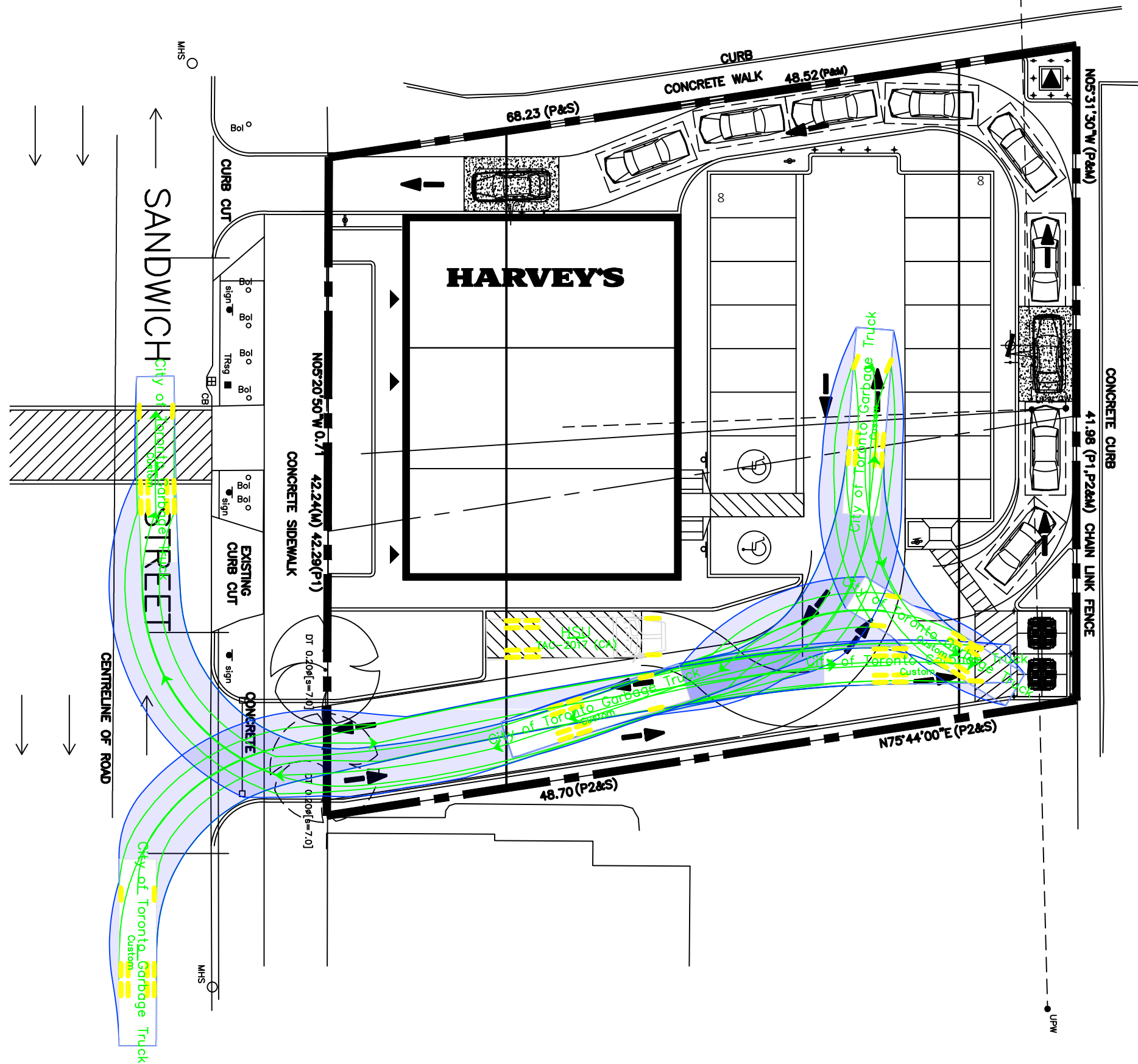
CLIENT: Dino Soltani  
131 & 135 Sandwich Street  
Amherstburg, ON  
N9V 1Z9

ARCHITECT: NCA  
137 Pamela Street  
Ottawa, ON  
K1S 3K9

SITE:  
131 Sandwich Street

TITLE: Heavy Single Unit  
HSU

SCALE AT A3: NTS	DATE: 2022-02-04	DRAWN: MC	CHECKED: checked
PROJECT NO: 2021-139	DRAWING NO: 002	REVISION:	



Notes:

A	description	by	xx/xx/xx
REV:	DESCRIPTION:	BY:	DATE:
STATUS:	status		

**CGH Transportation**  
 628 Haines Road  
 Newmarket, ON  
 L3Y 6V5  
 (905) 251-4070

**CLIENT:** Dino Soltani  
 131 & 135 Sandwich Street  
 Amherstburg, ON  
 N9V 1Z9

**ARCHITECT:** NCA  
 137 Pamela Street  
 Ottawa, ON  
 K1S 3K9

**SITE:** 131 Sandwich Street

**TITLE:** Garbage

SCALE AT A3: NTS	DATE: 2022-02-04	DRAWN: MC	CHECKED: checked
PROJECT NO: 2021-139	DRAWING NO: 003	REVISION:	

# Appendix J

Parking Count Survey

## Ontario Traffic Inc - Parking Counts

**Location:** Sandwich Street S

**Date:** Thursday, February 24, 2022

Time			Parked Vehicles
11:30	to	12:00	54
12:00	to	12:30	55
12:30	to	13:00	56
13:00	to	13:30	55

16:00	to	16:30	6
16:30	to	17:00	4
17:00	to	17:30	3
17:30	to	18:00	2
Available Spaces =			153