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430 Ottawa Street, Almonte

Phase 2 – Proposed Residential Development Transportation Impact Study

Prepared for: 430 Ottawa Lands Ltd.

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430 Ottawa Street, Almonte
Phase 2 – Proposed Residential Development
Transportation Impact Study

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
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August 12, 2026

Novatech File: 119190
Ref: R-2026-064

August 12, 2026

Municipality of Mississippi Mills
Planning and Engineering Department
14 Bridge Street, PO Box 400
Almonte, ON K0A 1A0

Attention: Melanie Knight
Director of Development Services and Engineering

Dear Ms. Knight:

Reference: 430 Ottawa Street; Phase 2 – Proposed Residential Development
Transportation Impact Study
Novatech File No.: 119190

We are pleased to submit the following Transportation Impact Study (TIS) in support of a Site Plan Control (SPC) application for Phase 2 of the above noted property.

If you have any questions or comments regarding this report, please feel free to contact Jennifer Luong or the undersigned.

Yours truly,

NOVATECH



Mohammed Talha, M. Eng.
Engineering Intern | Transportation

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EXECUTIVE SUMMARY

This Transportation Impact Study (TIS) has been prepared in support of a Site Plan Control (SPC) application for Phase 2 Redevelopment of the property located at 430 Ottawa Street in Ward 1, Almonte, in the Municipality of Mississippi Mills. The property comprises an approximately 2.7 ha rectangular-shaped parcel of land occupied by an existing L-shaped mall situated central to the property with customer parking at the front. The subject site is currently surrounded by the following:

- Low density residential developments to the north.
- Ottawa Street followed by various commercial developments to the south.
- Commercial developments (Home Hardware Store & Hummingbird Chocolate Factory Café) to the east.
- Commercial development (Tim Hortons) followed by Sadler Drive to the west.

Existing access to the site is via one full-movement access to Ottawa Street, and shared connections to Sadler Drive via the adjacent Tim Hortons and Ottawa Street via the adjacent Home Hardware Store.

The overall redevelopment of the property will involve replacement of the existing mall with 2 smaller commercial buildings set closer to Ottawa Street, and an apartment building located at the rear, as envisioned in the concept plan submitted in support of the OPA and Zoning amendment approvals. The project is phased, in part to ensure continued operation of the Rexall during construction. The first phase is for the Commercial Building A, followed by the residential apartment building, and then finally Commercial Building B in a third phase.

This TIS deals with Phase 2 of the redevelopment, i.e., the residential apartment building. Based on the proposed site plan, a 4-storey residential apartment building consisting of 41 one-bedroom units, 75 two-bedroom units, and 11 three-bedroom units is proposed, making a total of 127 units. A total of 241 vehicle parking spaces and 68 bicycle parking spaces are proposed. The anticipated buildout year for Phase 2 redevelopment is 2029.

In addition to the existing one full-movement access to Ottawa Street, one shared connection with Tim Hortons to Sadler Drive, and one shared connection with Home Hardware to Ottawa Street, a new full-movement access to Ottawa Street is proposed.

The study area for this TIS includes the intersection at Ottawa Street/Sadler Drive/Industrial Drive.

The selected time period for the analysis are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. As the anticipated buildout year for Phase 2 redevelopment is 2029; analysis has been completed for the 2029 buildout year and 2034 five-year horizon, under background and total traffic conditions.

The timing of the Phase 3 redevelopment is not known, and it has not been considered for the purposes of this TIS. A subsequent study will be prepared as required for the Phase 3 development application.

The conclusions and recommendations of this TIS can be summarized as follows:

Trip Generation

- The proposed Phase 2 redevelopment is estimated to generate 46 two-way vehicle trips (10 IN and 36 OUT) during the AM peak hour and 49 two-way vehicle trips (31 IN and 18 OUT) during the PM peak hour.

Existing Traffic Operations

- All the movements at the study area intersections are operating within acceptable LOS under the existing traffic conditions, except for the northbound movement at the Ottawa Street/Existing Site Access/YIG Plaza Access intersection during the PM peak hour. There are multiple accesses to the YIG plaza. Majority of the traffic volumes (70% of total) generated by this plaza has been assigned to the access being analyzed. Therefore, vehicles can use the remaining two accesses which have lesser traffic volumes, and the delays can be reduced.

Background Traffic Operations

- All the movements at the study area intersections are anticipated to operate within acceptable LOS under the 2029 background traffic conditions.
- All the movements at the study area intersections are anticipated to operate within acceptable LOS under the 2034 background traffic conditions, except for the northbound movement at the Ottawa Street/Existing Site Access/YIG Plaza Access intersection during the PM peak hour. As identified under existing conditions operations, there are multiple accesses to the YIG plaza. Majority of the traffic volumes (70% of total) generated by this plaza has been assigned to the access being analyzed. Therefore, vehicles can use the remaining two accesses which have lesser traffic volumes, and the delays can be reduced.

Total Traffic Operations

- All the movements at the study area intersections are anticipated to operate within acceptable LOS under the 2029 and 2034 total traffic conditions.
- The northbound movement at the Ottawa Street/Existing Site Access/YIG Plaza Access intersection which was anticipated to operate under failing LOS in the 2034 background conditions is anticipated to operate within acceptable LOS in 2034 total conditions as there is a net reduction in site generated traffic volumes during the PM peak hour because of redevelopment.
- The Ministry of Transportation Ontario (MTO) Left Turn Lane Warrants have been reviewed at the existing site access and the new east site access off Ottawa Street for the 2034 total traffic conditions. Based on the warrants, a left turn lane is not required at either of the accesses.

Development Design

- Concrete walking paths are proposed along the periphery of the building. These walking paths connect to the property's Phase 1 walking paths and provide pedestrian connectivity to Ottawa Street. There are no pedestrian pathway connections on the Tim Hortons property, as such, no connections have been provided to Tim Hortons or Sadler Drive.
- A total of 68 bicycle parking spaces are proposed, of which 18 spaces are located outdoor and the remaining 50 spaces are located indoor.

Access Design

- The design of the proposed new east access meets all the relevant requirements of the municipality's *ZBL*.
- The minimum required clear throat length of 25 m (based on *TAC GDG*) is available at the proposed new east access.
- The proposed New East Site Access is west of the midblock pedestrian signal to reduce the conflicts between turning traffic from the site (to Almonte) and pedestrians at the crossing. With the addition of the access, this pedestrian crossing will function more like an Intersection Pedestrian Signal.

Circulation

- Moving/Loading area and the garbage room are located beside each other and are provided at the northeast corner of the building.
- Deliveries for the Phase 1 retail units will happen with WB-20 Tractor-Semitrailers. In the interim until Phase 2 is redeveloped, WB-20 will use the existing mall parking lot. Once Phase 2 is redeveloped, it will loop Phase 1 building through Phase 2.
- Fire route includes the New East Site Access, runs along the main drive aisle and includes the Existing Site Access. It has a minimum clear width of 6.0 m and a centerline radius of 12.0 m meeting the minimum requirements of Section 3.2.5.7 of the *Ontario Building Code (OBC)*.
- Underground parking garage ramp is provided along the eastern property line.

Parking

- A total of 241 vehicle parking spaces and 68 bicycle parking spaces are proposed. The minimum vehicle and bicycle parking requirements per the municipality's *ZBL* are met.
- Though not required by the municipality's *ZBL*, a total of 8 accessible parking spaces are proposed, of which 6 parking spaces are located on the surface level and the remaining 2 parking spaces are located within the parking garage.

The proposed development is recommended from a transportation perspective.

1.0 INTRODUCTION

This Transportation Impact Study (TIS) has been prepared in support of a Site Plan Control (SPC) application for Phase 2 Redevelopment of the property located at 430 Ottawa Street in Ward 1, Almonte, in the Municipality of Mississippi Mills. The property comprises an approximately 2.7 ha rectangular-shaped parcel of land occupied by an existing L-shaped mall situated central to the property with customer parking at the front. The subject site is currently surrounded by the following:

- Low density residential developments to the north.
- Ottawa Street followed by various commercial developments to the south.
- Commercial developments (Home Hardware Store & Hummingbird Chocolate Factory Café) to the east.
- Commercial development (Tim Hortons) followed by Sadler Drive to the west.

Existing access to the site is via one full-movement access to Ottawa Street, and shared connections to Sadler Drive via the adjacent Tim Hortons and Ottawa Street via the adjacent Home Hardware Store.

An aerial of the subject site and its vicinity is shown in **Figure 1**.

Figure 1: An aerial showing the subject site and its vicinity



Source: Background aerial snapshotted from Google Earth.

1.1 Proposed Redevelopment

The subject lands are designated as Highway Commercial in the current *Community Official Plan (COP)* and are subject to the site-specific policies in Section 3.7.3.5 that were introduced by Official Plan Amendment (OPA) No. 26. The lands are zoned Shopping Centre Commercial (C4-4-h), as amended by By-law No. 20-113.

The overall redevelopment of the property will involve replacement of the existing mall with 2 smaller commercial buildings set closer to Ottawa Street, and an apartment building located at the rear, as envisioned in the concept plan submitted in support of the OPA and Zoning amendment approvals. The project is phased, in part to ensure continued operation of the Rexall during construction. The first phase is for the Commercial Building A, followed by the residential apartment building, and then finally Commercial Building B in a third phase.

This TIS deals with Phase 2 of the redevelopment, i.e., the residential apartment building. Based on the proposed site plan, a 4-storey residential apartment building consisting of 41 one-bedroom units, 75 two-bedroom units, and 11 three-bedroom units is proposed, making a total of 127 units. The anticipated buildout year for Phase 2 redevelopment is 2029.

In addition to the existing one full-movement access to Ottawa Street, one shared connection with Tim Hortons to Sadler Drive, and one shared connection with Home Hardware to Ottawa Street, a new full-movement access to Ottawa Street is proposed.

A total of 241 vehicle parking spaces and 68 bicycle parking spaces are proposed.

A copy of the proposed site plan is included in **Appendix A**.

1.2 Analysis Parameters

The study area for this TIS includes the following intersection:

- Ottawa Street/Sadler Drive/Industrial Drive.

The selected time period for the analysis are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. As the anticipated buildout year for Phase 2 redevelopment is 2029; analysis has been completed for the 2029 buildout year and 2034 five-year horizon, under background and total traffic conditions.

The timing of the Phase 3 redevelopment is not known, and it has not been considered for the purposes of this TIS. A subsequent study will be prepared as required for the Phase 3 development application.

2.0 STUDY AREA

2.1 Existing Conditions

2.1.1 Roadways

Ottawa Street extends from Main Street E to the west and Appleton Side Road to the east. Based on Schedule 15 of the municipality's *2024 Transportation Master Plan (TMP)*, it is classified as an arterial road. It has a four-lane cross section and with posted speed limit of 50 kmph within the study area.

Sadler Drive extends from Leishman Drive to the north and Ottawa Street to the south. Based on Schedule 15 of the municipality's *2024 TMP*, it is classified as a local road. It has a two-lane cross section with a 50 kmph regulatory speed limit.

Industrial Drive extends from Ottawa Street to the north and Appleton Sideroad to the south. Based on Schedule 15 of the municipality's *2024 TMP*, it is classified as a local road. It has a two-lane cross section with a 50 kmph regulatory speed limit.

2.1.2 Intersections

Ottawa Street/Sadler Drive/Industrial Drive

- Signalized four-legged intersection.
- Northbound Approach (Industrial Drive): One shared through/left turn lane and a right turn channelized taper.
- Southbound Approach (Sadler Drive): One left turn lane and one shared through/right turn lane.
- Eastbound & Westbound Approaches (Ottawa Street): One left turn lane, one through lane and one shared through/right turn lane.
- Standard crosswalk markings are provided on all the approaches.



2.1.3 Driveways

A review of adjacent driveways along Ottawa Street is provided as follows:

North side: one driveway for 430 Ottawa Street (site), two driveways for the Home Hardware at 476 Ottawa Street. The driveways are approximately 90m, 225m, and 325m east of the Ottawa Street/Sadler Drive/Industrial Drive signalized intersection.

South side: two driveways for the retail centre at 401 Ottawa Street, one driveway for retail plaza at 453 Ottawa Street. The driveways are approximately 90m, 145m, and 200m east of the Sadler Drive / Industrial Drive signalized intersection.

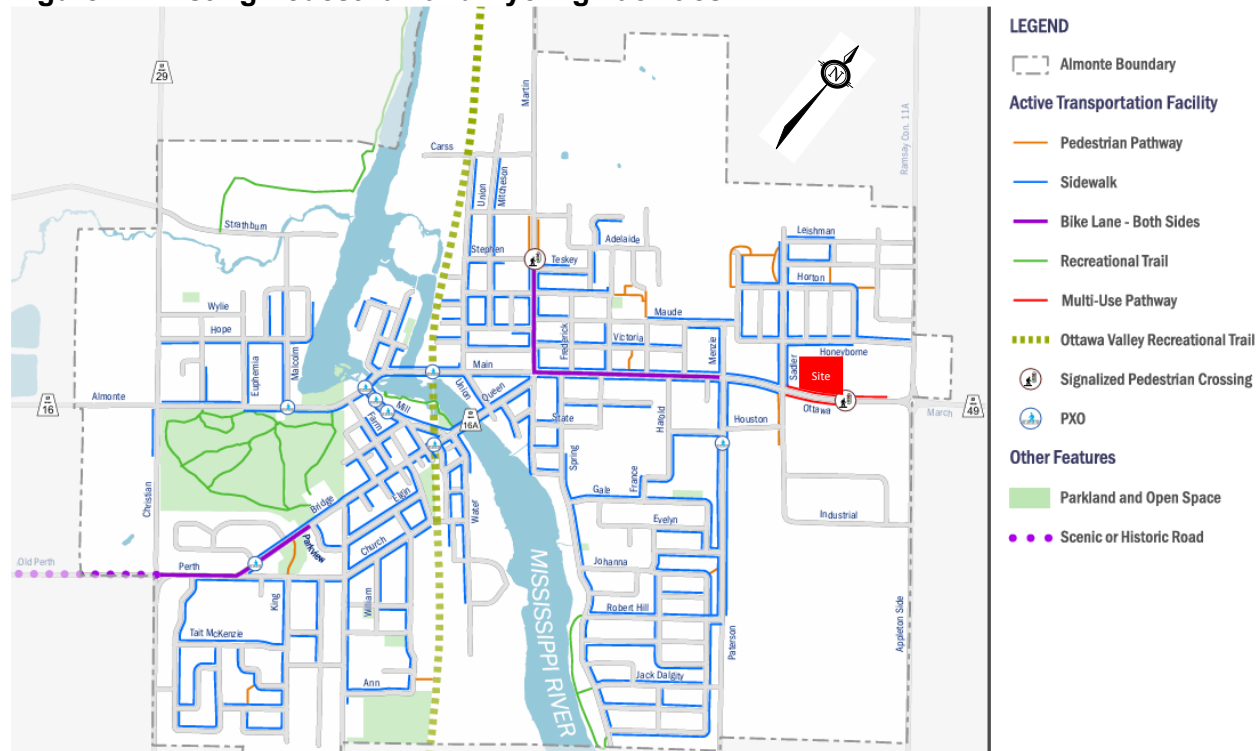
2.1.4 Pedestrian and Cycling Facilities

There are paved asphalt Multi-Use Pathways (MUP) along both sides of Ottawa Street east of Sadler Drive/Industrial Drive, concrete sidewalks on both sides of Sadler Drive and asphalt sidewalk on the west side of Industrial Drive in this area.

There is a Midblock Pedestrian Signal (MPS) crosswalk crossing Ottawa Street about 185m east of the Ottawa Street/Sadler Drive/Industrial Drive intersection.

Schedule 3 the municipality's 2024 TMP identifies these pedestrian and cycling facilities. A snapshot of the schedule is shown in **Figure 2**.

Figure 2: Existing Pedestrian and Cycling Facilities



2.1.5 Transit

Prior to COVID-19 pandemic, Classic Alliance Motorcoach operated route #502/503 between Perth/Carleton Place/Almonte and Ottawa/Gatineau with peak period service to Ottawa in the morning and from Ottawa in the afternoon. However, based on the operator's website, this service has been suspended post pandemic with no return to service date.

Currently, transit services in Almonte are provided by Lanark Transportation (known as Ride the Mississippi Mills LT). Shuttle services are provided on two errand routes, viz. Almonte Route and Carleton Place Route. Almonte route is serviced on first and third Thursday of the month and Carleton Place route is serviced on second and fourth Thursday of the month. Pick ups are either at the doorstep or at the Mississippi Mills Public Library Almonte Branch. A copy of the Ride the LT route map is included in **Appendix B**.

2.1.6 Existing Traffic Volumes

Existing traffic volumes at the Ottawa Street/Sadler Drive/Industrial Drive intersection were adopted from the municipality's 2024 TMP. Appendix E of the TMP contains traffic volumes at key intersections of Almonte and were collected in May 2023. A copy of these traffic volumes is included in **Appendix C**.

Vehicular traffic volumes at the existing site and adjacent driveways have been estimated using trip generation rates from the *Institute of Transportation Engineers (ITE) Trip Generation Manual 12th Edition* and is summarized in **Table 1**.

Two types of trips are included in the trips that are generated by the nearby development sites, viz., pass-by trips and primary trips. Pass-by trips are those which are made as 'intervening opportunity' stops to commercial and retail land uses by vehicle trips already passing by the site. Although these trips will be included in the driveway volumes to the site, they will not increase the overall traffic volumes on study area roads. Whereas primary trips for this study include all external site generated trips that are not considered pass-by trips.

The number of pass-by trips have been estimated using the *ITE Trip Generation Manual 3rd Edition*. The manual identifies a PM peak hour pass-by rate of 36% for a supermarket, 26% for a hardware/paint store, and 34% for a shopping center. All the trips during the AM peak hour are assumed to be primary trips.

Table 1: Estimation of Vehicle Trips Generated by Existing Site and Adjacent Driveways

Land Use	Units	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOT	IN	OUT	TOT
Existing Subject Site							
Retail (ITE 820)	60,000 ft²	33	20	53	96	100	196
Pass-by Retail Trips (-34%)		0	0	0	-33	-33	-66
Primary Trips		33	20	53	63	67	130
Existing Your Independent Grocer (YIG) Site – Stoneridge Plaza							
Retail (ITE 820)	23,900 ft²	13	8	21	38	40	78
Supermarket (ITE 850)	37,200 ft²	65	45	110	163	164	327
Total YIG Site Trips		78	53	131	201	204	405
Pass-by Retail Trips (-34%)		0	0	0	-13	-13	-26
Pass-by Supermarket Trips (-36%)		0	0	0	-59	-59	-118
Primary Trips		78	53	131	129	132	261
Existing Civic 453 – Harmony Court Plaza							
Retail (ITE 820)	26,100 ft²	14	9	23	42	43	85
Pass-by Retail Trips (-34%)		0	0	0	-14	-14	-28
Primary Trips		14	9	23	28	29	57
Existing Home Hardware Site							
Building Materials & Lumber Store (ITE 812)	40,500 ft²	29	22	51	29	35	64
Pass-by Retail Trips (-26%)		0	0	0	-8	-8	-16
Primary Trips		29	22	51	21	27	48

Estimated traffic volumes generated by the subject site and adjacent sites have been distributed to the driveway intersections to obtain the existing AM and PM peak hour traffic volumes. The following trip distribution pattern has been assumed for the retail trips based on the expected directional distribution:

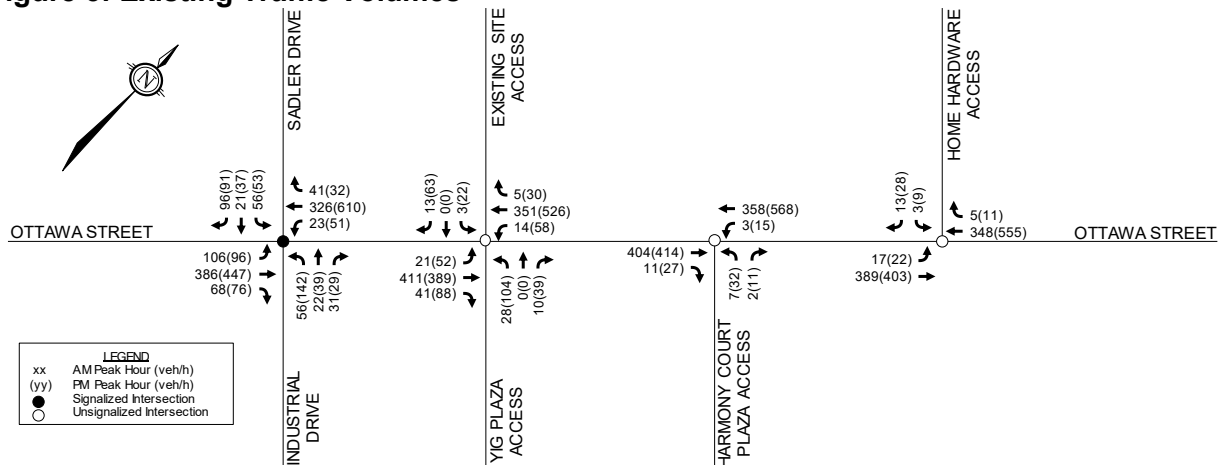
- To/from the north: 10% via Sadler Drive.
- To/from the south: 5% via Industrial Drive.
- To/from the east: 20% via Ottawa Street.
- To/from the west: 65% via Ottawa Street.

Of the trips generated by Your Independent Grocer (YIG), 15% have been assigned to that site's east driveway and 15% have been assigned to that site's driveway off Industrial Drive (driveways not shown in relevant figures of this TIS). 20% of the trips generated by the existing site have been assigned to the shared driveway with Home Hardware and 10% of the existing site's trips to the north have been assigned to the connection at Sadler Drive (shared with Tim Hortons). 60% of the Home Hardware trips to/from the east and 40% of the Home Hardware trips to/from the west have been assigned to that site's east driveway (driveway not shown in relevant figures of this TIS).

The pass-by trip pattern is based on the existing PM peak hour eastbound and westbound directional pattern, which is roughly 65% in the westbound direction and 35% in the eastbound direction.

Based on the foregoing, existing vehicular traffic volumes within the study area are shown in **Figure 3**.

Figure 3: Existing Traffic Volumes



2.2 Planned Conditions

2.2.1 Transportation Projects

The municipality's 2024 TMP identifies the following transportation projects within and in the vicinity of the subject site. While these projects may reduce vehicular traffic through this area, no reduction has been applied for this study.

Ultimate Road Network for Almonte – Schedule 19 of TMP

As part of the ultimate road network plan, retrofitting of Ottawa Street is identified between Paterson Street and Appleton Side Road. It includes addition of MUPs on one or both sides and replace sidewalks wherever applicable along the stretch. It is identified as a long-term project with a 25-year horizon.

Road Network Infrastructure Needs – Section 4.3.7 of TMP

As part of the recommendations for road network infrastructure needs, intersection modifications are recommended for Ottawa Street/Sadler Drive/Industrial Drive intersection. This is identified as long-term intersection needs as part of the corridor renewal cycle. Recommendations include consideration of options that better accommodate cycling facilitates.

Interim and Ultimate Cycling Plans for Almonte – Schedules 11 and 12 of TMP

As part of the interim and ultimate cycling plans, a new or enhanced off-road MUP is identified along the eastern property line of the subject site, connecting Ottawa Street and Honeyborne Street. It extends further south from Ottawa Street and connects to Frank Davis Street.

As part of the interim and ultimate cycling plans, a new MUP is identified along the west side of Industrial Drive between Ottawa Street and Appleton Side Road.

As part of the ultimate cycling plan, a new MUP is identified on both sides of Ottawa Street between Paterson Street and Industrial Drive.

2.2.2 Other Area Developments

The following development applications in the vicinity of the subject site were identified using the municipality's active planning notices and applications tool. Relevant excerpts from the respective TISs are included in **Appendix D**.

Hannan Hills Subdivision (Evoy Lands)

A TIS was prepared by Novatech dated June 12, 2024, for the proposed residential subdivision development consisting of 82 townhouse units, 24 back-to-back townhouses, and 4 single detached dwellings, making a total of 110 units. The proposed development is anticipated to generate 57 two-way vehicle trips during the AM peak hour and 68 two-way vehicle trips during the PM peak hour. A buildout year of 2027 was identified in the TIS.

Mill Run Subdivision Extension – Phases 7 and 8

A TIS was prepared by Novatech dated November 06, 2023, followed by a memorandum in 2026. Based on the latest proposal, the development includes 44 detached single-family units and 42 townhouse units. The proposed development is anticipated to generate less than 82 two-way vehicle trips during the AM peak hour and 102 two-way vehicle trips during the PM peak hour.

For the purposes of this TIS, it is assumed that the subdivision will be buildout by the subject site's buildout year.

Weaver's Way Subdivision (formerly Mill Valley Estates)

A TIS was prepared by CGH dated December 2023, for the proposed residential subdivision development consisting of 253 detached homes and 282 townhomes, making a total of 535 units. The proposed development is anticipated to generate 285 two-way vehicle trips during the AM peak hour and 380 two-way vehicle trips during the PM peak hour. A buildout year of 2027 was identified in the TIS.

Menzie Enclaves Subdivision

Based on the latest concept plan, the proposed residential subdivision consists of 36 semi-detached units, 21 townhouse units, and 1 single-detached unit, making a total of 58 units. A TIS could not be found on the municipality's active planning notices and applications tool. The trip generation estimation and trip distribution/assignment for this development was performed in the Hannan Hills Subdivision TIS. The development is anticipated to generate 22 two-way vehicle trips during the AM peak hour and 28 two-way vehicle trips during the PM peak hour. For the purposes of this TIS, it is assumed that the subdivision will be buildout by the subject site's buildout year.

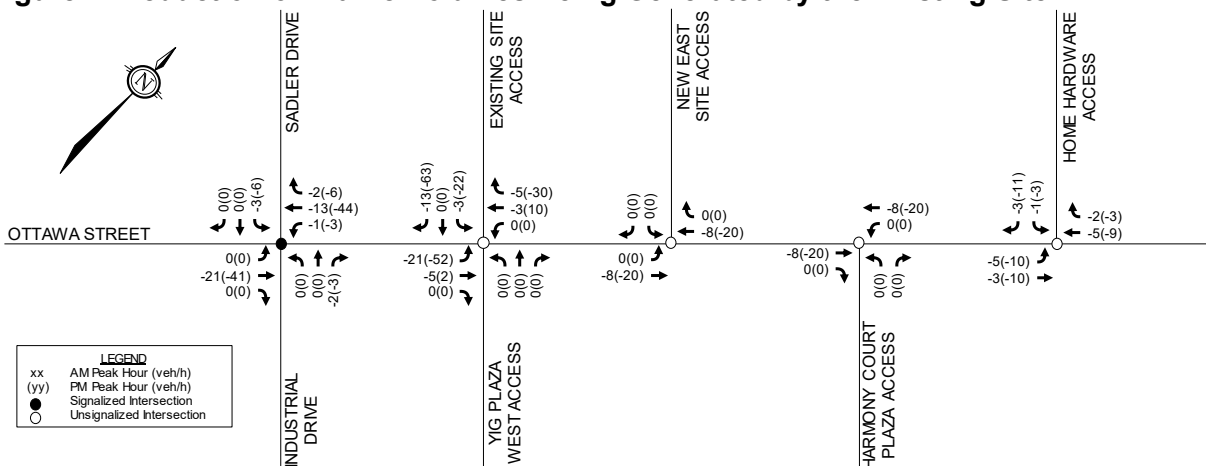
3.0 FORECASTING

3.1 Trip Generation, Distribution, and Assignment

Deduction of Existing Site Generated Traffic Volumes

The subject site will completely be redeveloped and will occur in three phases. Therefore, the existing traffic volumes generated by the subject site (including the pass-by trips) have been deducted from the study area. These traffic volumes are shown in **Figure 4**.

Figure 4: Deduction of Traffic Volumes Being Generated by the Existing Site



Trip Generation due to Phase 1 Redevelopment

A TIS was prepared by Novatech dated April 15, 2020, for the three redevelopment phases of the subject property in support of Official Plan Amendment (OPA) and Zoning By-Law Amendment (ZBA) applications. The TIS was followed by two addendums, one in 2023 and one in 2026. Based on the 2026 addendum, the Phase 1 redevelopment consists of 13,130 ft² of retail space. Phase 1 will be buildout prior to Phase 2. The number of total vehicle trips generated by Phase 1 redevelopment has been estimated using the *ITE Trip Generation Manual 12th Edition* using the rates for LUC 820. The number of pass-by trips have been estimated using the *ITE Trip Generation Manual 3rd Edition*, which identifies a PM peak hour pass-by rate of 34% for a shopping center. All the trips during the AM peak hour are assumed to be primary trips. The number of vehicle trips generated by Phase 1 redevelopment is summarized in **Table 2**.

Table 2: Vehicle Trip Generation by Phase 1 Redevelopment

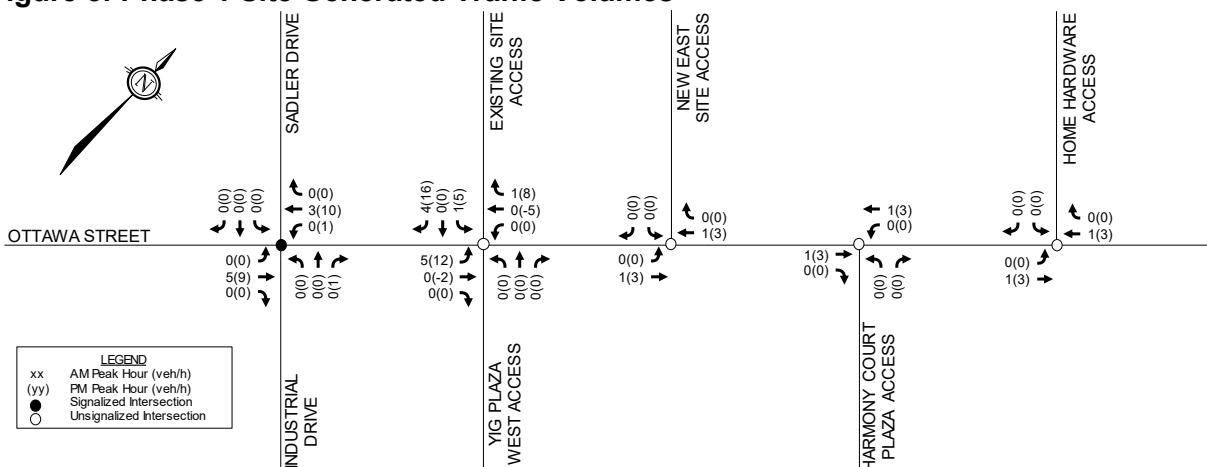
Land Use	Units	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOT	IN	OUT	TOT
Retail (ITE 820)	13,150 ft ²	7	5	12	21	22	43
Pass-by Retail Trips		0	0	0	-7	-7	-14
Primary Trips		7	5	12	14	15	29

Trips generated by Phase 1 redevelopment have been distributed within the study area based on the following trip distribution pattern which is based on the expected directional distribution:

- To/from the north: 10% via Sadler Drive.
- To/from the south: 5% via Industrial Drive.
- To/from the east: 20% via Ottawa Street.
- To/from the west: 65% via Ottawa Street.

The pass-by trip pattern is based on the existing PM peak hour eastbound and westbound directional pattern, which is roughly 65% in the westbound direction and 35% in the eastbound direction. All the trips have been assigned to the existing site driveway off Ottawa Street. The traffic volumes generated by the Phase 1 development are shown in **Figure 5**.

Figure 5: Phase 1 Site Generated Traffic Volumes



Trip Generation due to Phase 2 Redevelopment

The proposed Phase 2 redevelopment includes a 4-storey residential apartment building consisting of 41 one-bedroom units, 75 two-bedroom units, and 11 three-bedroom units is proposed, making a total of 127 units.

The number of vehicle trips generated by the proposed development have been estimated using the *ITE Trip Generation Manual 12th Edition*. Trip generation rates identified for LUC 221 Mid-Rise Multifamily Housing have been used and are summarized in **Table 3**.

Table 3: Trip Generation by Phase 2 Redevelopment

Land Use	Units	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOT	IN	OUT	TOT
Mid-Rise Multifamily Housing (ITE 221)	127	10	36	46	31	18	49

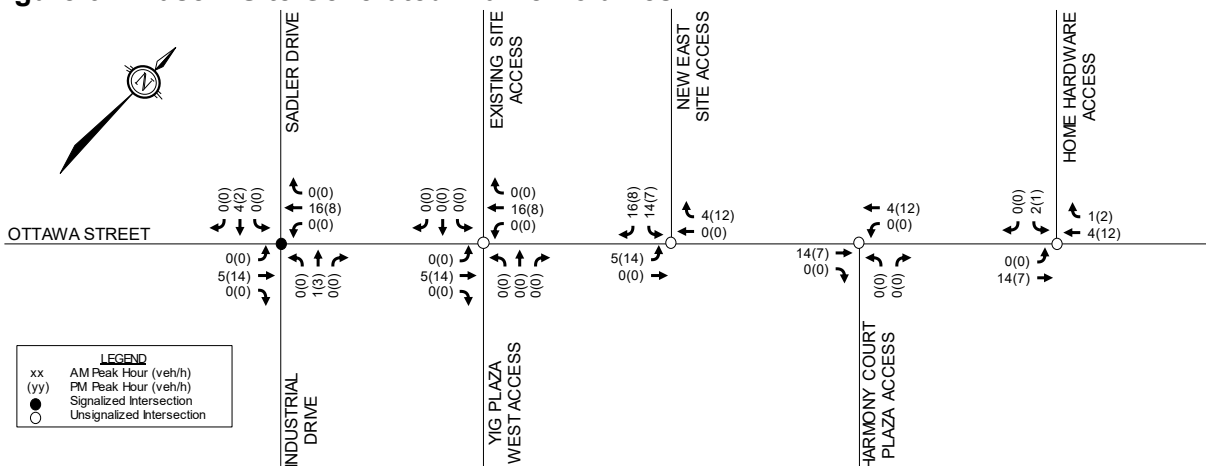
The proposed Phase 2 redevelopment is estimated to generate 46 two-way vehicle trips (10 IN and 36 OUT) during the AM peak hour and 49 two-way vehicle trips (31 IN and 18 OUT) during the PM peak hour.

Trips generated by Phase 2 redevelopment have been distributed based on existing travel patterns (See **Figure 3**). It is estimated that the trips will have the following distribution:

- To/from the north: 0% via Sadler Drive.
- To/from the south: 10% via Industrial Drive.
- To/from the east: 45% via Ottawa Street.
- To/from the west: 45% via Ottawa Street.

It is expected based on the lot layout and driveway configurations that the majority (about 85%) of the trips will use the new east driveway. From the remaining 15%, 10% has been assigned to the shared driveway with Tim Hortons and 5% has been assigned to the shared driveway with Home Hardware Store. Traffic volumes generated by site redevelopment have been assigned to the study area intersections and are shown in **Figure 6**.

Figure 6: Phase 2 Site Generated Traffic Volumes



Combined Phase 1 and Phase 2, the total number of primary vehicle trips generated during the AM peak hour are 58 vehicle trips, and PM peak hour are 78 vehicle trips. The existing site has been estimated to generate 53 primary vehicle trips during the AM peak hour and 130 primary vehicle trips during the PM peak hour. There is negligible difference in the number of vehicle trips during the AM peak hour and a reduction of approximately 50 vehicle trips during the PM peak hour.

3.2 Background Traffic

3.2.1 General Background Traffic Growth

A 4.5% background growth rate has been applied to traffic at the Ottawa Street/Sadler Drive/Industrial Drive intersection and through traffic along Ottawa Street at the nearby driveways. This growth rate has been established based on a review of the projected population growth for the Almonte region as identified in Section 2.2.5 of the municipality's 2024 TMAP. The background growth rate is intended to account for growth in regional traffic and is expected to be high enough to account for approved and ongoing developments within the study area. Therefore, traffic volumes generated from the background developments described in Section 2.2.2 of this TIS have not been added separately.

3.2.2 Future Traffic Conditions

Projected 2029 and 2034 background traffic volumes are shown in Figure 7 and Figure 8 respectively. Projected 2029 and 2034 total traffic volumes are shown in Figure 9 and Figure 10 respectively.

Figure 7: 2029 Background Traffic Volumes

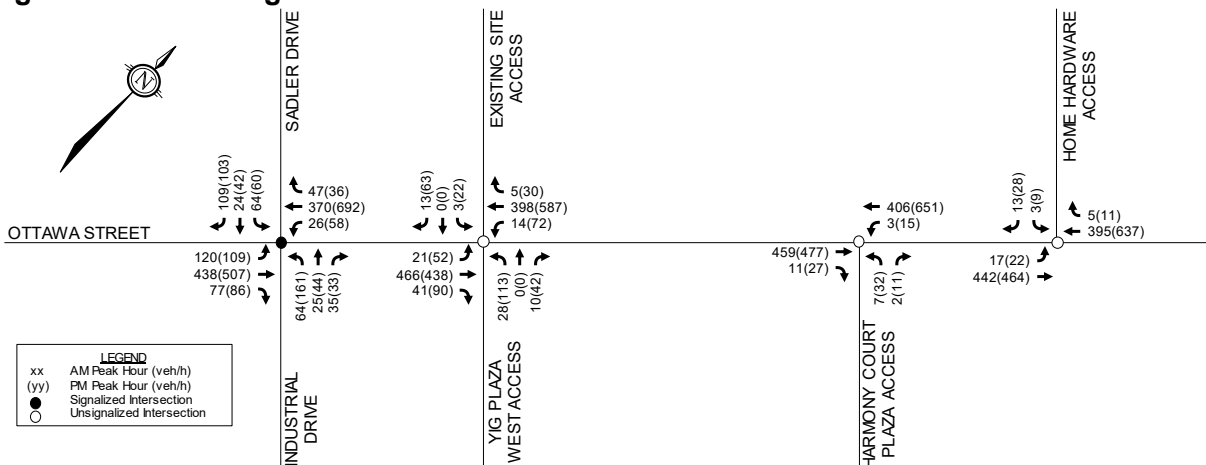


Figure 8: 2034 Background Traffic Volumes

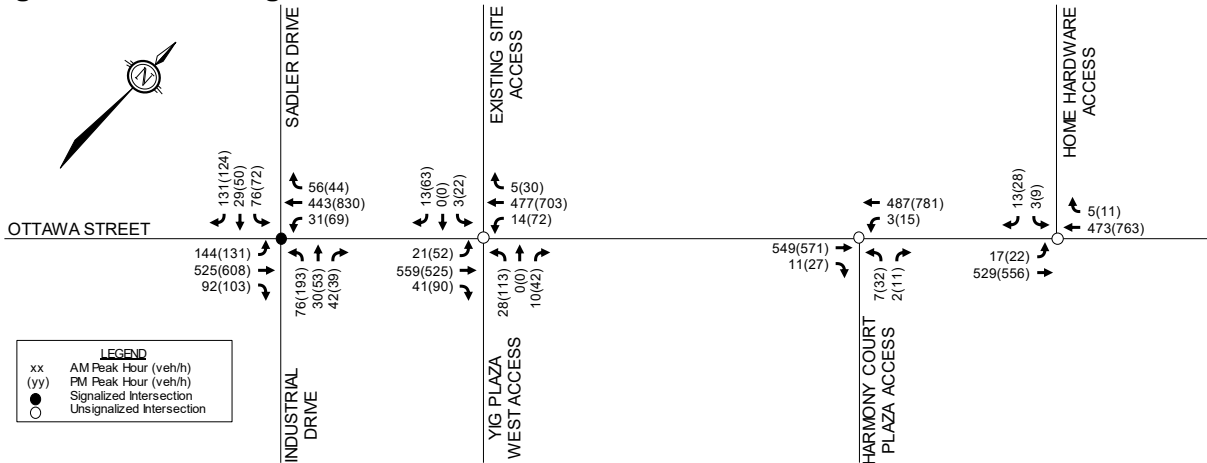


Figure 9: 2029 Total Traffic Volumes

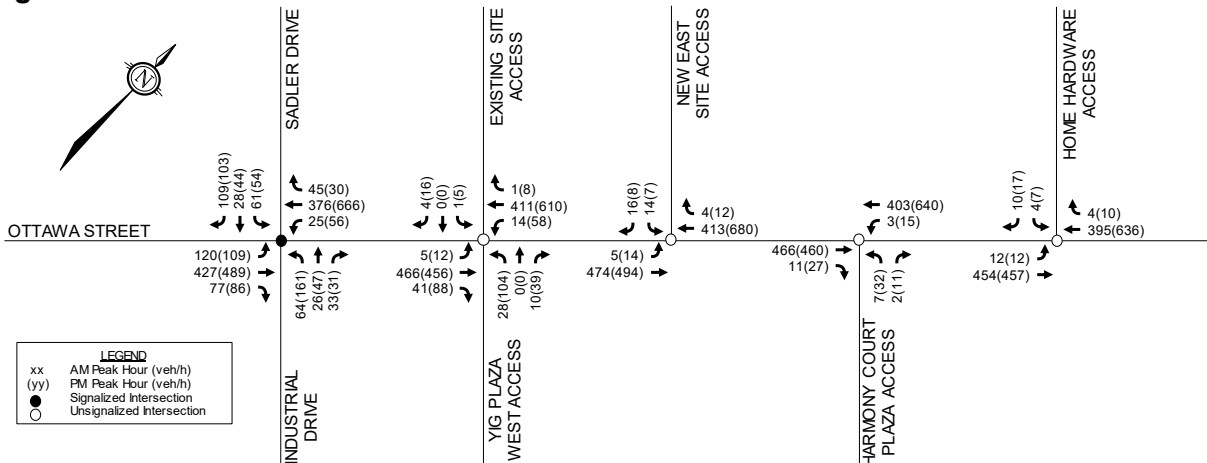
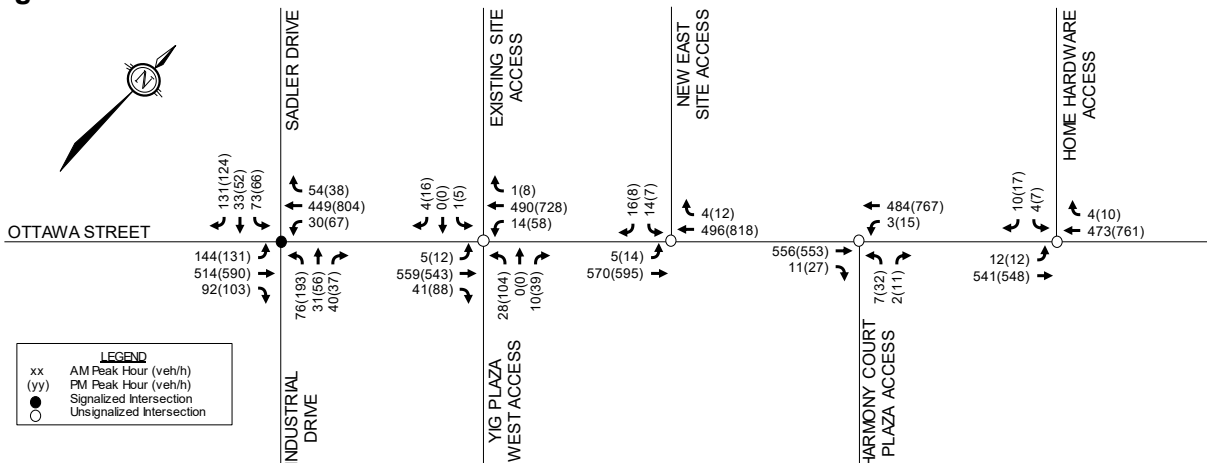


Figure 10: 2034 Total Traffic Volumes



4.0 ANALYSIS

4.1 Intersection Operating Conditions

Section 6.6 of the municipality's 2024 TMP identifies a framework for the TIS. Consistent with the framework, Level of Service (LOS) has been defined based on average control delay as well as v/c (volume/capacity) ratio to assess the traffic operations at signalized and unsignalized intersections. Any vehicle queuing issues have also been identified wherever appropriate. LOS criteria as defined in the TMP is summarized in **Table 5** and **Table 6**.

Table 4: Delay Level of Service Criteria

Criteria	LOS	Traffic Control Signals (Seconds)	Roundabouts (Seconds)	Stop or Yield Sign (Seconds)
Acceptable	A	≤ 10	≤ 10	≤ 10
	B	> 10 and ≤ 20	> 10 and ≤ 20	> 10 and ≤ 15
	C	> 20 and ≤ 35	> 20 and ≤ 35	> 15 and ≤ 25
	D	> 35 and ≤ 55	> 35 and ≤ 50	> 25 and ≤ 35
Periods of Congestion	E	> 50 and ≤ 80	> 50 and ≤ 70	> 35 and ≤ 50
Extended Periods of Congestion	F	> 80	> 70	> 50

Table 5: Volume to Capacity (v/c) Ratio Criteria

Criteria	Volume to Capacity (v/c) Ratio
Acceptable	0 to 0.60
	0.61 to 0.70
	0.71 to 0.80
	0.81 to 0.90
Approaching Capacity	0.91 to 1.00
Exceed Theoretical Capacity	> 1.00

Analysis parameters used in this TIS include a saturation flow rate of 1,800 vphpl, a PHF of 0.90 for existing conditions, and a PHF of 1.00 for future conditions.

4.1.1 Existing Traffic Operations

Intersection capacity analysis has been completed for the existing traffic conditions (See **Figure 3**) and is summarized in **Table 6**. Detailed *Synchro 12* analysis reports for existing conditions are included in **Appendix E**.

Signal timing plan for the signalized intersection at Ottawa Street/Sadler Drive/Industrial Drive is consistent with the *Ontario Traffic Manual (OTM) Book 12 – Traffic Signals*.

Table 6: Traffic Operations – Existing Conditions

Intersection	AM Peak Hour			PM Peak Hour		
	Max. delay; v/c	LOS ¹	Mvmt	Max. delay; v/c	LOS ¹	Mvmt
Ottawa Street/ Sadler Drive/ Industrial Drive	19 sec.; 0.26	B	NBT/L	28 sec.; 0.59	C	NBT/L
Ottawa Street/ Existing Site Access/ YIG Plaza Access	16 sec.; 0.11	C	NB	68 sec.; 0.81	F	NB
Ottawa Street/ Harmony Court Plaza Access	14 sec.; 0.02	B	NB	17 sec.; 0.14	C	NB
Ottawa Street/ Home Hardware Store Access	10 sec.; 0.03	B	SB	13 sec.; 0.08	B	SB

1. LOS is based on average delay.

Based on the foregoing, all the movements at the study area intersections are operating within acceptable LOS under the existing traffic conditions, except for the northbound movement at the Ottawa Street/Existing Site Access/YIG Plaza Access intersection during the PM peak hour. There are multiple accesses to the YIG plaza. Majority of the traffic volumes (70% of total) generated by this plaza has been assigned to the access being analyzed. Therefore, vehicles can use the remaining two accesses which have lesser traffic volumes, and the delays can be reduced.

4.1.2 2029 Background Traffic Operations

Intersection capacity analysis has been completed for 2029 background traffic conditions (See **Figure 7**) and is summarized in **Table 7**. Detailed *Synchro 12* analysis reports for background conditions are included in **Appendix F**.

Table 7: Traffic Operations – 2029 Background Conditions

Intersection	AM Peak Hour			PM Peak Hour		
	Max. delay; v/c	LOS ¹	Mvmt	Max. delay; v/c	LOS ¹	Mvmt
Ottawa Street/ Sadler Drive/ Industrial Drive	19 sec.; 0.27	B	NBT/ L	29 sec.; 0.60	C	NBT/L
Ottawa Street/ Existing Site Access/ YIG Plaza Access	16 sec.; 0.10	C	NB	50 sec.; 0.69	E	NB
Ottawa Street/ Harmony Court Plaza Access	14 sec.; 0.02	B	NB	17 sec.; 0.12	C	NB
Ottawa Street/ Home Hardware Store Access	11 sec.; 0.02	B	SB	13 sec.; 0.08	B	SB

1. LOS is based on average delay.

Based on the foregoing, all the movements at the study area intersections are anticipated to operate within acceptable LOS under the 2029 background traffic conditions. There is some improvement in delays and v/c ratios compared to the existing traffic operations due to PHF being 1.00 for future conditions.

4.1.3 2034 Background Traffic Operations

Intersection capacity analysis has been completed for 2034 background traffic conditions (See **Figure 8**) and is summarized in **Table 8**. Detailed *Synchro 12* analysis reports for background conditions are included in **Appendix F**.

Table 8: Traffic Operations – 2034 Background Conditions

Intersection	AM Peak Hour			PM Peak Hour		
	Max. delay; v/c	LOS ¹	Mvmt	Max. delay; v/c	LOS ¹	Mvmt
Ottawa Street/ Sadler Drive/ Industrial Drive	21 sec.; 0.31	C	NBT/L	36 sec.; 0.72	B	NBT/L
Ottawa Street/ Existing Site Access/ YIG Plaza Access	17 sec.; 0.11	C	NB	82 sec.; 0.84	F	NB
Ottawa Street/ Harmony Court Plaza Access	15 sec.; 0.02	C	NB	20 sec.; 0.15	C	NB
Ottawa Street/ Home Hardware Store Access	11 sec.; 0.03	B	SB	15 sec.; 0.09	B	SB

1. LOS is based on average delay.

Based on the foregoing, all the movements at the study area intersections are anticipated to operate within acceptable LOS under the 2034 background traffic conditions, except for the northbound movement at the Ottawa Street/Existing Site Access/YIG Plaza Access intersection during the PM peak hour. As identified under existing conditions operations, there are multiple accesses to the YIG plaza. Majority of the traffic volumes (70% of total) generated by this plaza has been assigned to the access being analyzed. Therefore, vehicles can use the remaining two accesses which have lesser traffic volumes, and the delays can be reduced.

4.1.4 2029 Total Traffic Operations

Intersection capacity analysis has been completed for 2029 total traffic conditions (See **Figure 9**) and is summarized in **Table 9**. Detailed *Synchro 12* analysis reports for total conditions are included in **Appendix G**.

Table 9: Traffic Operations – 2029 Total Conditions

Intersection	AM Peak Hour			PM Peak Hour		
	Max. delay; v/c	LOS ¹	Mvmt	Max. delay; v/c	LOS ¹	Mvmt
Ottawa Street/ Sadler Drive/ Industrial Drive	19 sec.; 0.27	B	NBT/L	28 sec.; 0.60	C	NBT/L
Ottawa Street/ Existing Site Access/ YIG Plaza Access	15 sec.; 0.09	B	NB	30 sec.; 0.52	D	NB
Ottawa Street/ New East Site Access	12 sec.; 0.06	B	SB	15 sec.; 0.04	B	SB
Ottawa Street/ Harmony Court Plaza Access	14 sec.; 0.02	B	NB	17 sec.; 0.12	C	NB

Intersection	AM Peak Hour			PM Peak Hour		
	Max. delay; v/c	LOS ¹	Mvmt	Max. delay; v/c	LOS ¹	Mvmt
Ottawa Street/ Home Hardware Store Access	11 sec.; 0.02	B	SB	13 sec.; 0.05	B	SB

1. LOS is based on average delay.

Based on the foregoing, the intersection operations within the study area are anticipated to be generally consistent with the 2029 background traffic conditions. All the movements at the study area intersections are anticipated to operate within acceptable LOS.

4.1.5 2034 Total Traffic Operations

Intersection capacity analysis has been completed for 2034 total traffic conditions (See **Figure 10**) and is summarized in **Table 10**. Detailed *Synchro 12* analysis reports for total conditions are included in **Appendix G**.

Table 10: Traffic Operations – 2034 Total Conditions

Intersection	AM Peak Hour			PM Peak Hour		
	Max. delay; v/c	LOS ¹	Mvmt	Max. delay; v/c	LOS ¹	Mvmt
Ottawa Street/ Sadler Drive/ Industrial Drive	21 sec.; 0.31	C	NBT/L	36 sec.; 0.72	C	NBT/L
Ottawa Street/ Existing Site Access/ YIG Plaza Access	16 sec.; 0.11	C	NB	42 sec.; 0.63	E	NB
Ottawa Street/ New East Site Access	13 sec.; 0.07	B	SB	17 sec.; 0.05	C	SB
Ottawa Street/ Harmony Court Plaza Access	15 sec.; 0.03	C	NB	20 sec.; 0.15	C	NB
Ottawa Street/ Home Hardware Store Access	12 sec.; 0.03	B	SB	15 sec.; 0.06	B	SB

1. LOS is based on average delay.

Based on the foregoing, the intersection operations within the study area are anticipated to be generally consistent with the 2034 background traffic conditions. All the movements at the study area intersections are anticipated to operate within acceptable LOS.

The northbound movement at the Ottawa Street/Existing Site Access/YIG Plaza Access intersection which was anticipated to operate under failing LOS in the 2034 background conditions is anticipated to operate within acceptable LOS in 2034 total conditions as there is a net reduction in site generated traffic volumes during the PM peak hour because of redevelopment.

The Ministry of Transportation Ontario (MTO) Left Turn Lane Warrants have been reviewed at the existing site access and the new east site access off Ottawa Street for the 2034 total traffic conditions. Based on the warrants, a left turn lane is not required at either of the accesses. Copies of the completed warrants are included in **Appendix H**.

4.2 Development Design

4.2.1 Design for Sustainable Modes

Concrete walking paths are proposed along the periphery of the building. These walking paths connect to the property's Phase 1 walking paths and provide pedestrian connectivity to Ottawa Street. There are no pedestrian pathway connections on the Tim Hortons property, as such, no connections have been provided to Tim Hortons or Sadler Drive.

A total of 68 bicycle parking spaces are proposed, of which 18 spaces are located outdoor and the remaining 50 spaces are located indoor. Outdoor bicycle parking spots are located at the north and south sides of the building near the drop-off areas. Indoor bicycle parking spots are provided in the bike rooms within the underground parking garage.

4.2.2 Access Design

The design of the proposed New East Site Access has been assessed in accordance with the Section 9.3.9 of the municipality's *Zoning By-Law (ZBL) 11-83* and the *Transportation Association of Canada's (TAC) 2017 Geometric Design Guide for Canadian Roads (GDG)*. The existing site access has been assessed as part of the TIS Addendum prepared in support of SPC application for Phase 1; therefore, it has not been assessed in this TIS.

Section 9.3.9 (a) of the *ZBL* identifies a maximum width of 9.0 m for driveways. The width of the new east site access is 9 m adhering to this requirement.

Section 9.3.9 (b) of the *ZBL* identifies that a maximum of three driveways are permitted for lots having frontage more than 90 m. The site has a frontage of approximately 175 m along Ottawa Street, combined Phase 1 and Phase 2, the property will have two driveways.

Section 8.9.10 of the *TAC's 2017 GDG* identifies a minimum clear throat length of 25 m for apartment driveways (100-200 apartment units) off an arterial roadway. The available throat length is approximately 25 m meeting this requirement.

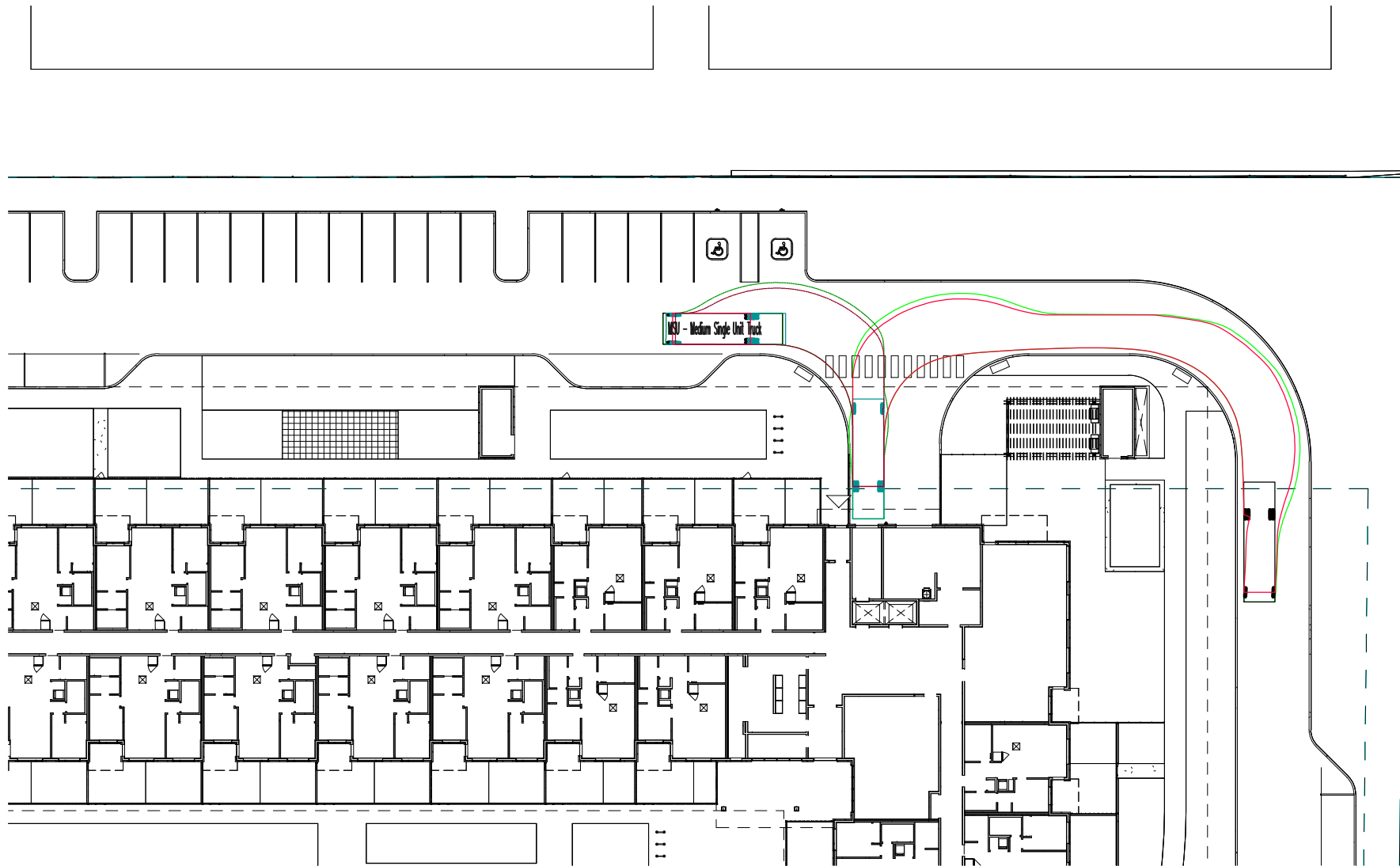
The proposed New East Site Access is west of the midblock pedestrian signal to reduce the conflicts between turning traffic from the site (to Almonte) and pedestrians at the crossing. With the addition of the access, this pedestrian crossing will function more like an Intersection Pedestrian Signal.

4.2.3 Circulation

Moving/Loading area and the garbage room are located beside each other and are provided at the northeast corner of the building. Turning movements for a Medium Single Unit (MSU) which is representative of a moving/garbage truck are shown in **Figure 11**, **Figure 12**, and **Figure 13**.

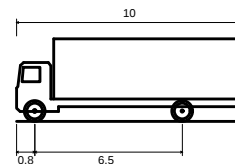
Deliveries for the Phase 1 retail units will happen with WB-20 Tractor-Semitrailers. In the interim until Phase 2 is redeveloped, WB-20 will use the existing mall parking lot. Once Phase 2 is redeveloped, it will loop Phase 1 building through Phase 2. Turning movements for a WB-20 post Phase 2 redevelopment are shown in **Figure 14** and **Figure 15**.

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Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

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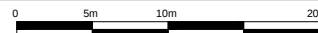
MSU - Medium Single Unit Truck

Overall Length	10.000m
Overall Width	2.600m
Overall Body Height	3.650m
Min Body Ground Clearance	0.445m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	11.100m

430 OTTAWA STREET

TURNING MOVEMENT (MSU)

SCALE 1 : 500

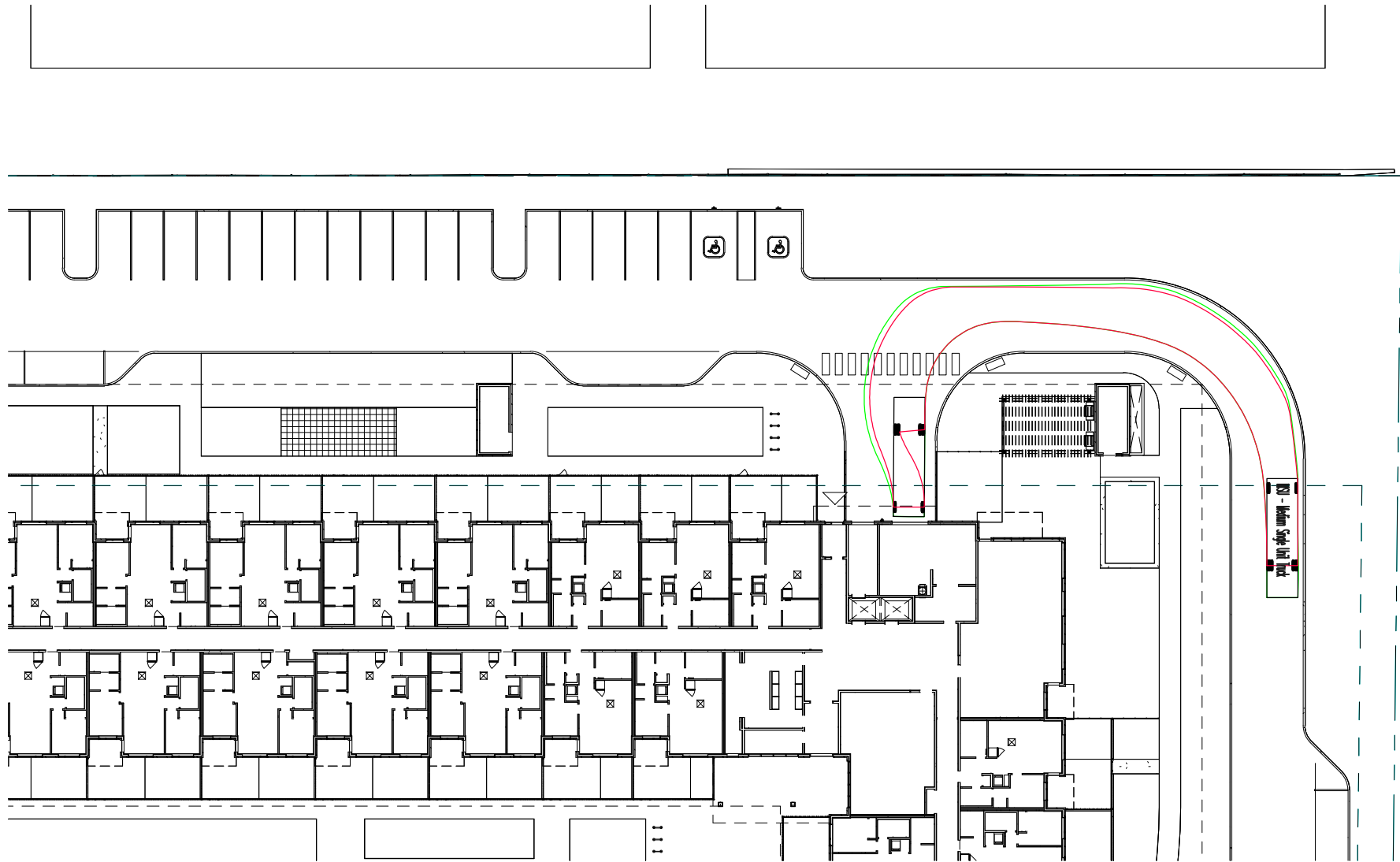


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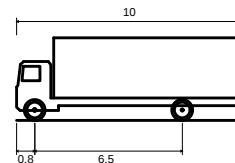
FIGURE 11

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MSU - Medium Single Unit Truck

Overall Length	10.000m
Overall Width	2.600m
Overall Body Height	3.650m
Min Body Ground Clearance	0.445m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	11.100m

430 OTTAWA STREET

TURNING MOVEMENT
(MSU / GARBAGE TRUCK)

SCALE 1 : 500

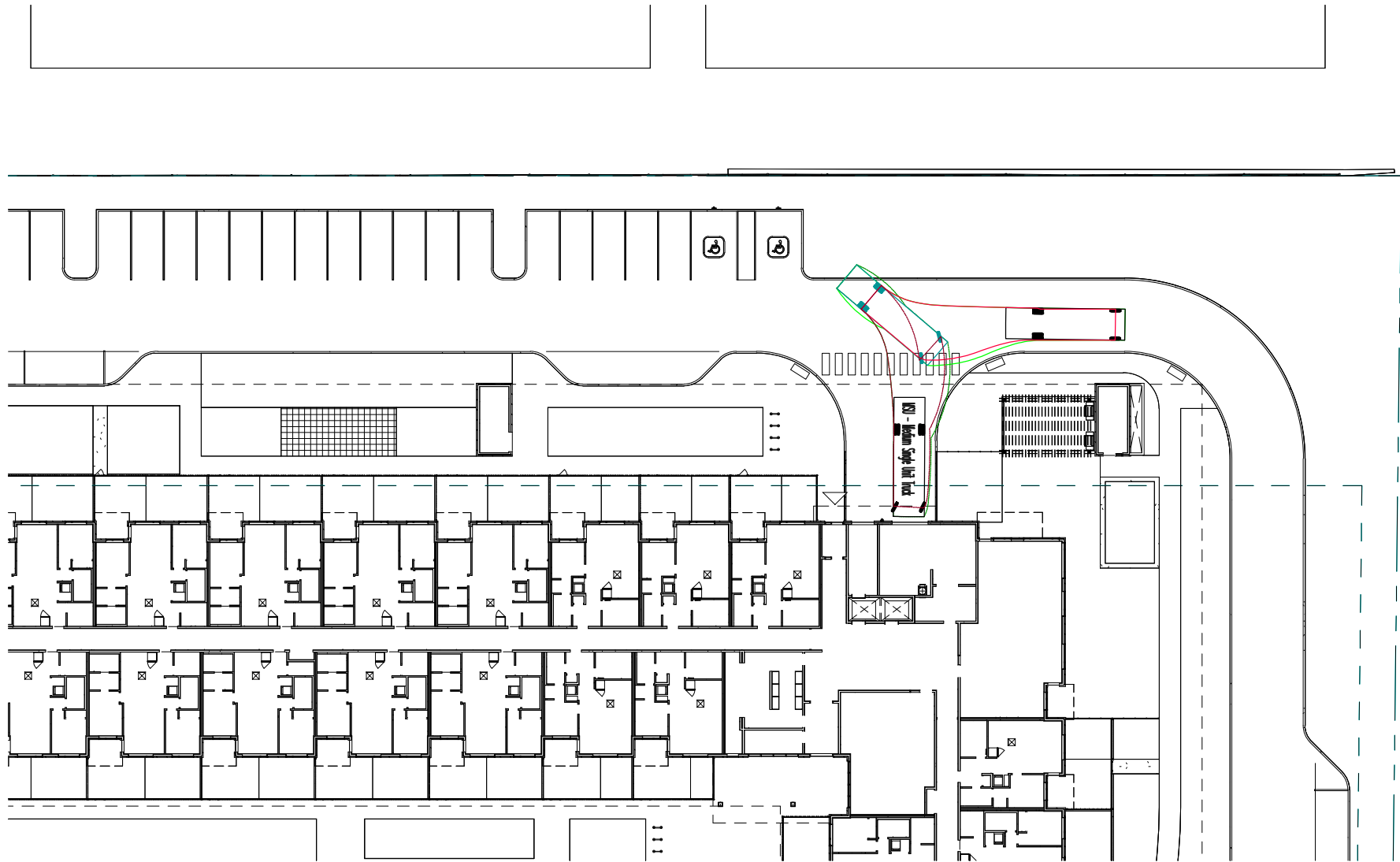


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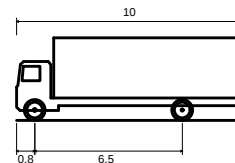
FIGURE 12

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MSU - Medium Single Unit Truck

Overall Length	10.000m
Overall Width	2.600m
Overall Body Height	3.650m
Min Body Ground Clearance	0.445m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	11.100m

430 OTTAWA STREET

TURNING MOVEMENT
(MSU / GARBAGE TRUCK)

SCALE 1 : 500

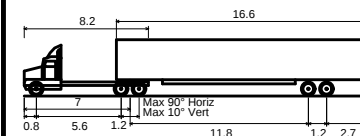
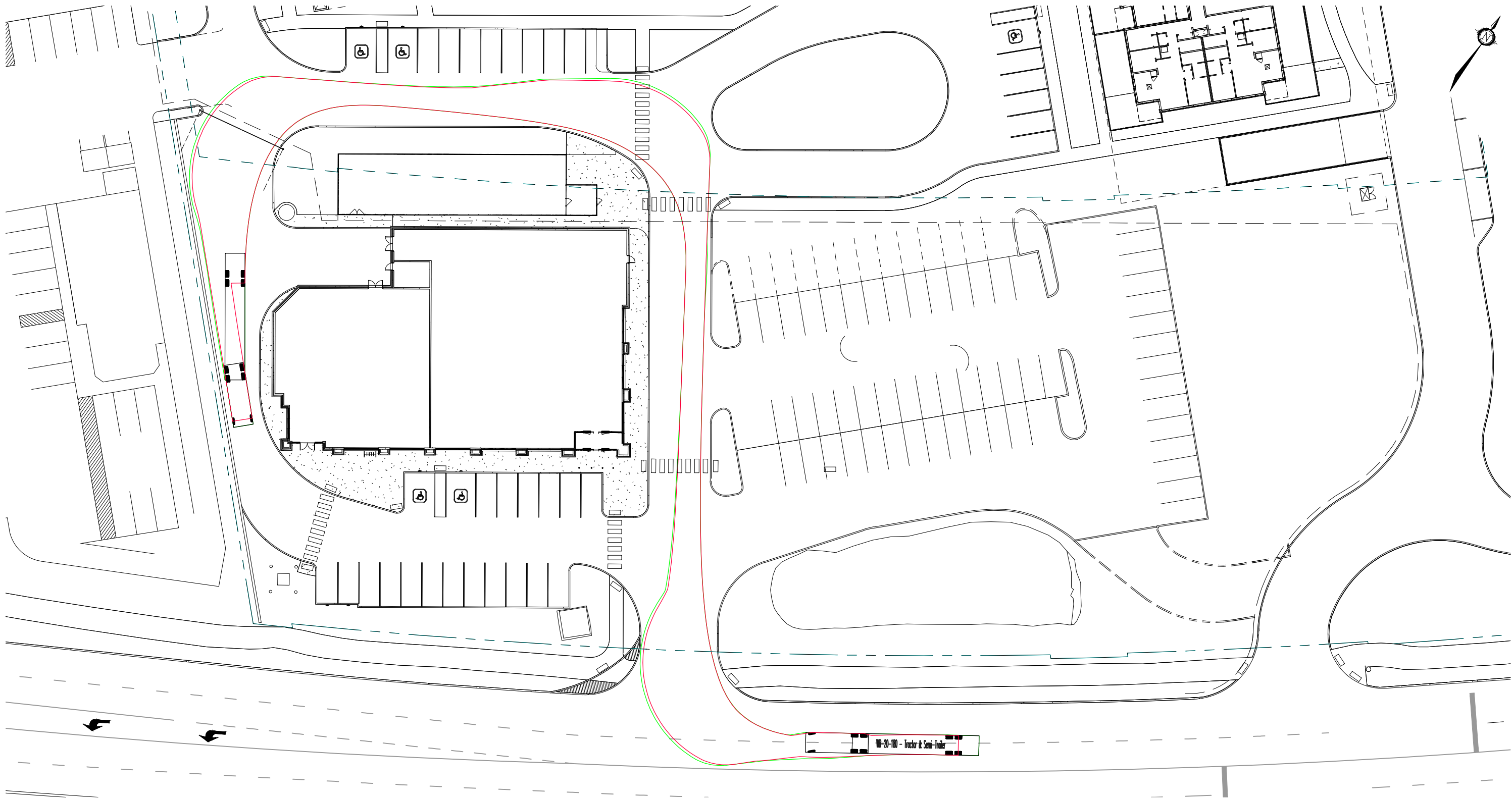


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JOB 119190

FIGURE 13

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WB-20 - Tractor & Semi-Trailer	
Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

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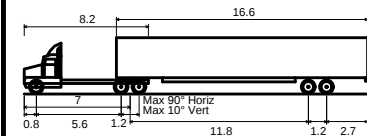
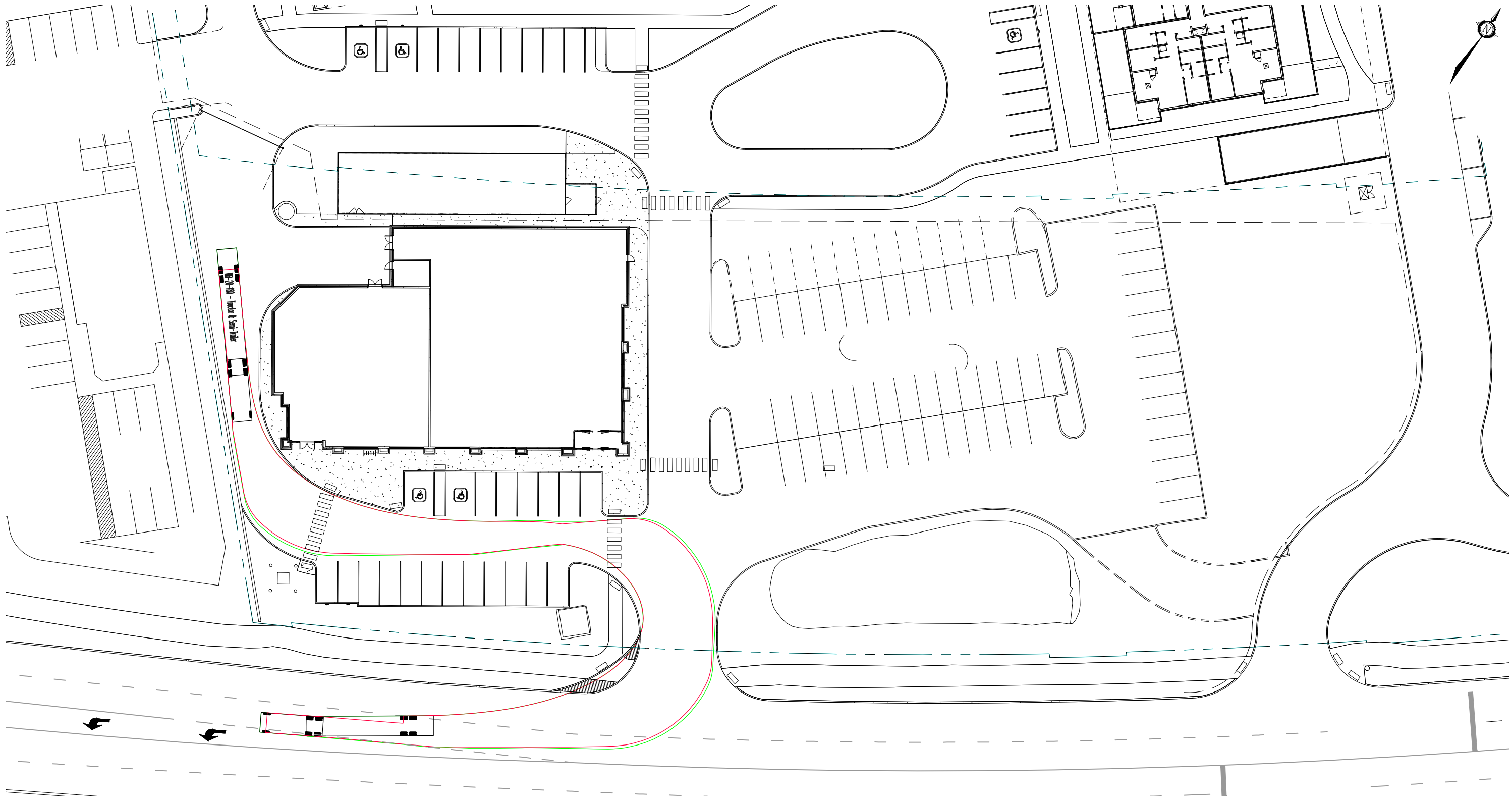
430 OTTAWA STREET

**TURNING MOVEMENT
(WB-20)**

SCALE 1 : 500 0 5m 10m 20m

DATE AUG 2026 JOB 119190 FIGURE 14

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WB-20 - Tractor & Semi-Trailer	
Overall Length	22.700m
Overall Width	2.600m
Overall Body Height	3.730m
Min Body Ground Clearance	0.435m
Track Width	2.600m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14.300m

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Website www.novatech-eng.com

430 OTTAWA STREET

TURNING MOVEMENT
(WB-20)

SCALE 1 : 500 0 5m 10m 20m

DATE AUG 2026 JOB 119190 FIGURE 15

Fire route includes the New East Site Access, runs along the main drive aisle and includes the Existing Site Access. It has a minimum clear width of 6.0 m and a centerline radius of 12.0 m meeting the minimum requirements of Section 3.2.5.7 of the *Ontario Building Code (OBC)*.

Underground parking garage ramp is provided along the eastern property line.

4.3 Parking

The minimum parking requirements for the proposed development have been assessed in accordance with the municipality's *ZBL*. Section 9.2 and 9.5 of the *ZBL* identify the minimum rates for vehicular and bicycle parking respectively. The minimum parking requirements and the number parking spaces proposed are summarized in **Table 11**.

Table 11: Parking Summary

Land Use	Rate	Units	Spaces Required	Spaces Provided
Vehicle Parking				
Apartment - Resident	1.2 per dwelling unit	127	153	204
Apartment - Visitor	0.2 per dwelling unit		26	37
		Total	179	241
Bicycle Parking				
Apartment	0.5 per dwelling unit	127	64	68

Section 9.3.2 of the *ZBL* identifies that when 151-200 vehicle parking spaces are required for a non-residential use, then 6 parking spaces shall be designated as accessible parking spaces. Though not required by the *ZBL*, a total of 8 accessible parking spaces are proposed, of which 6 parking spaces are located on the surface level and the remaining 2 parking spaces are located within the parking garage.

Based on the forgoing, the minimum parking requirements for the proposed development are met.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations of this TIS can be summarized as follows:

Trip Generation

- The proposed Phase 2 redevelopment is estimated to generate 46 two-way vehicle trips (10 IN and 36 OUT) during the AM peak hour and 49 two-way vehicle trips (31 IN and 18 OUT) during the PM peak hour.

Existing Traffic Operations

- All the movements at the study area intersections are operating within acceptable LOS under the existing traffic conditions, except for the northbound movement at the Ottawa Street/Existing Site Access/YIG Plaza Access intersection during the PM peak hour. There are multiple accesses to the YIG plaza. Majority of the traffic volumes (70% of total) generated by this plaza has been assigned to the access being analyzed. Therefore, vehicles can use the remaining two accesses which have lesser traffic volumes, and the delays can be reduced.

Background Traffic Operations

- All the movements at the study area intersections are anticipated to operate within acceptable LOS under the 2029 background traffic conditions.
- All the movements at the study area intersections are anticipated to operate within acceptable LOS under the 2034 background traffic conditions, except for the northbound movement at the Ottawa Street/Existing Site Access/YIG Plaza Access intersection during the PM peak hour. As identified under existing conditions operations, there are multiple accesses to the YIG plaza. Majority of the traffic volumes (70% of total) generated by this plaza has been assigned to the access being analyzed. Therefore, vehicles can use the remaining two accesses which have lesser traffic volumes, and the delays can be reduced.

Total Traffic Operations

- All the movements at the study area intersections are anticipated to operate within acceptable LOS under the 2029 and 2034 total traffic conditions.
- The northbound movement at the Ottawa Street/Existing Site Access/YIG Plaza Access intersection which was anticipated to operate under failing LOS in the 2034 background conditions is anticipated to operate within acceptable LOS in 2034 total conditions as there is a net reduction in site generated traffic volumes during the PM peak hour because of redevelopment.
- The Ministry of Transportation Ontario (MTO) Left Turn Lane Warrants have been reviewed at the existing site access and the new east site access off Ottawa Street for the 2034 total traffic conditions. Based on the warrants, a left turn lane is not required at either of the accesses.

Development Design

- Concrete walking paths are proposed along the periphery of the building. These walking paths connect to the property's Phase 1 walking paths and provide pedestrian connectivity to Ottawa Street. There are no pedestrian pathway connections on the Tim Hortons property, as such, no connections have been provided to Tim Hortons or Sadler Drive.
- A total of 68 bicycle parking spaces are proposed, of which 18 spaces are located outdoor and the remaining 50 spaces are located indoor.

Access Design

- The design of the proposed new east access meets all the relevant requirements of the municipality's ZBL.
- The minimum required clear throat length of 25 m (based on TAC GDG) is available at the proposed new east access.
- The proposed New East Site Access is west of the midblock pedestrian signal to reduce the conflicts between turning traffic from the site (to Almonte) and pedestrians at the crossing. With the addition of the access, this pedestrian crossing will function more like an Intersection Pedestrian Signal.

Circulation

- Moving/Loading area and the garbage room are located beside each other and are provided at the northeast corner of the building.
- Deliveries for the Phase 1 retail units will happen with WB-20 Tractor-Semitrailers. In the interim until Phase 2 is redeveloped, WB-20 will use the existing mall parking lot. Once Phase 2 is redeveloped, it will loop Phase 1 building through Phase 2.
- Fire route includes the New East Site Access, runs along the main drive aisle and includes the Existing Site Access. It has a minimum clear width of 6.0 m and a centerline radius of 12.0 m meeting the minimum requirements of Section 3.2.5.7 of the *Ontario Building Code (OBC)*.
- Underground parking garage ramp is provided along the eastern property line.

Parking

- A total of 241 vehicle parking spaces and 68 bicycle parking spaces are proposed. The minimum vehicle and bicycle parking requirements per the municipality's *ZBL* are met.
- Though not required by the municipality's *ZBL*, a total of 8 accessible parking spaces are proposed, of which 6 parking spaces are located on the surface level and the remaining 2 parking spaces are located within the parking garage.

The proposed development is recommended from a transportation perspective.

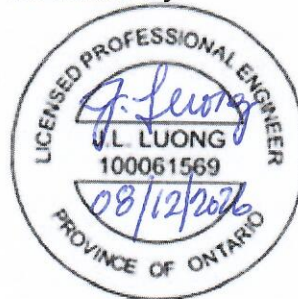
NOVATECH

Prepared by:



Mohammed Talha, M. Eng.
Engineering Intern | Transportation

Reviewed by:



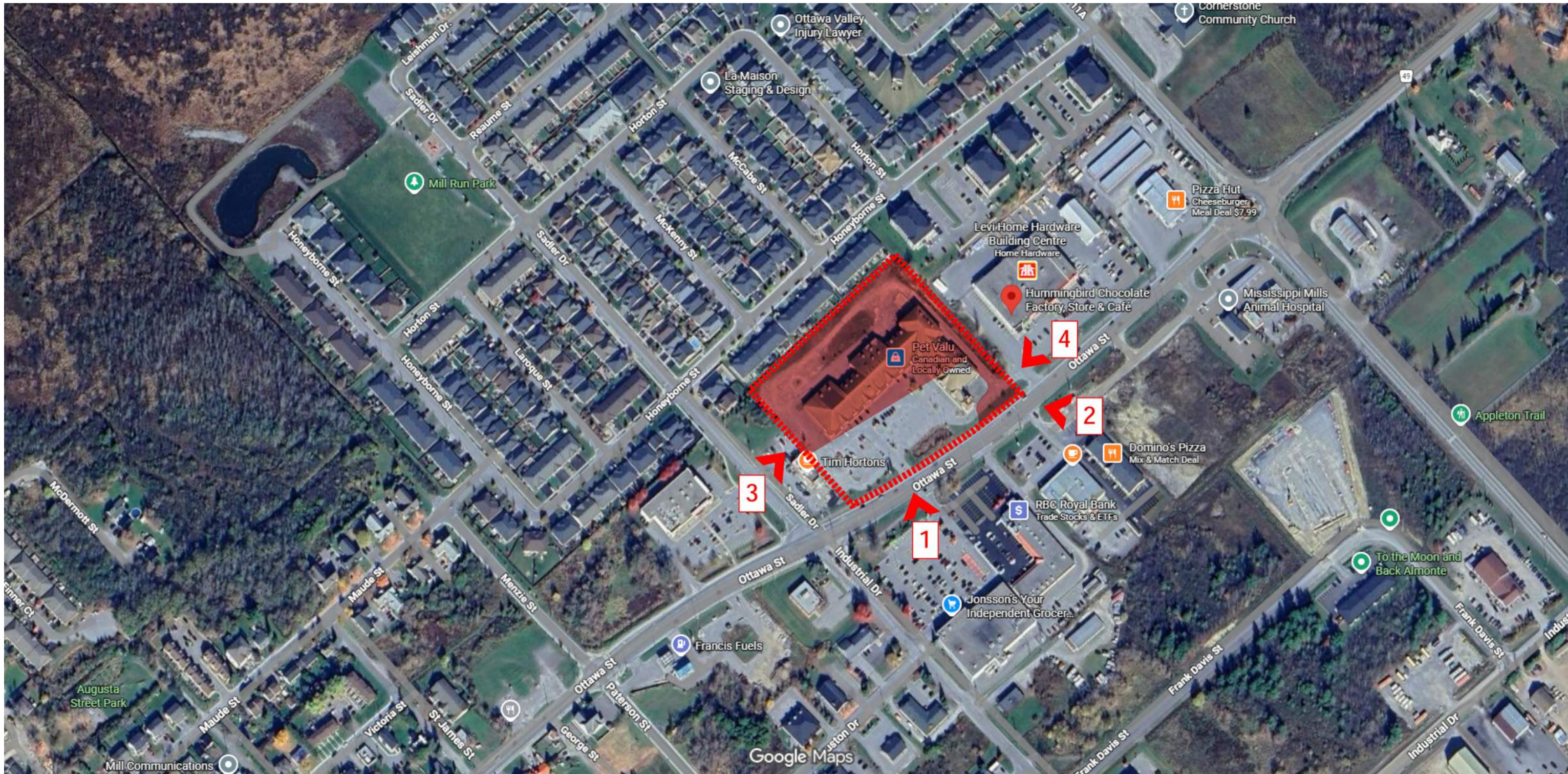
Jennifer Luong, P. Eng.
Senior Project Manager | Transportation

Appendix A: Proposed Site Plan



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CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS ON THE JOB. ANY DISCREPANCY OR CONTRADICTIONARY INFORMATION WITHIN THIS SET OF DRAWINGS AND / OR OTHER CONSULTANTS' DRAWINGS MUST BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING.



CONTEXT MAP & SITE PHOTO KEY PLAN

PROJECT INFORMATION	
OWNER:	ELM DEVELOPMENTS
DP APPLICANT:	ZEIDLER ARCHITECTURE
MUNICIPAL ADDRESS:	430 OTTAWA STREET, ALMONTE, ONTARIO
LEGAL ADDRESS:	PART LOT 16, CONCESSION 10 Being Part 1 on RP 27R-8990, Parts 1-4, 9-12 on RP 27R-8445
PARCEL AREA:	25,504.8 m ² / 274,531 ft ² / 2.55 ha / 6.30 ac
LANDUSE BYLAW:	MUNICIPALITY OF MISSISSIPPI MILLS COMPREHENSIVE ZONING BY-LAW #11-83 OFFICE CONSOLIDATION November 9, 2024
ZONING (EXISTING):	SHOPPING CENTRE COMMERCIAL- SPECIAL EXCEPTION HOLDING (C4-4H)
GENERAL DESCRIPTION:	4 STOREY WOOD FRAME APARTMENT HOUSING
PRINCIPAL USES / FLOOR:	RESIDENTIAL
UNIT TYPE BREAKDOWN:	APARTMENT DWELLING: 1 BEDROOM: 41 (32%) 2 BEDROOM: 75 (59%) 3 BEDROOM: 11 (9%) TOTAL UNITS: 127 (100%)

CLAUSE	REQUIREMENT	PROVIDED
MAXIMUM DENSITY:	MAXIMUM 50 UNITS PER NET HECTARE (2.55ha x 50units/ha = MAX 127 UNITS)	127 UNITS
SETBACKS:	RESIDENTIAL USES: FRONT SETBACK FROM OTTAWA STREET: 60m REAR YARD (FOR APARTMENT DWELLING MID RISE): 26m SIDE YARD: 6m	FRONT YARD: 72.8m (COMPLIANT) REAR YARD: 28.9m (COMPLIANT) SIDE YARD (WEST): 22.3m (COMPLIANT) SIDE YARD (EAST): 27.2m (COMPLIANT)
BUILDING HEIGHT	RESIDENTIAL USES: MAXIMUM HEIGHT: 15m OR 4 STOREYS	14.1m - 4 STOREYS
AMENITY SPACE:	THE REQUIRED MINIMUM AMENITY SPACE IS 6 m ² PER UNIT, AND 10% OF THE GFA OF EACH ROOMING UNIT 127 UNITS x 6 m ² = 762 m ² 9,889.5 m ² x 10% = 989 m ² = 1,751 m ² TOTAL AMENITY REQUIRED. COMMUNAL AMENITY AREA: MINIMUM 50%	AMENITY SPACE PROVIDED: COMMUNAL AMENITY EXTERIOR PATIO: 212 m ² COMMUNAL AMENITY EXTERIOR WALKWAY: 1,364 m ² COMMUNAL AMENITY EXTERIOR PET AREA: 256 m ² COMMUNAL AMENITY INTERIOR: 342 m ² PRIVATE AMENITY - BALCONIES/PATIOS: 1,824.5 m ² TOTAL COMMUNAL AMENITY SPACE PROVIDED: 2,174 m ² TOTAL PRIVATE AMENITY SPACE PROVIDED: 1,824.5 m ² TOTAL AMENITY SPACE PROVIDED: 3,998.5 m ²
MOTOR VEHICLE PARKING REQUIREMENTS:	APARTMENT 1.2 RESIDENT PARKING STALLS PER UNIT = 1.2 STALLS x 127 UNITS = 152.4 = 153 RESIDENT STALLS REQ'D 0.2 VISITOR PARKING STALLS PER UNIT = 0.2 STALLS x 127 UNITS = 25.4 = 26 VISITOR STALLS REQ'D TOTAL PARKING STALLS REQUIRED: 179 STALLS	RESIDENT PARKING STALLS PROVIDED: UNDERGROUND: 179 STALLS SURFACE: 25 STALLS TOTAL RESIDENTIAL STALLS PROVIDED: 204 STALLS VISITOR PARKING STALLS PROVIDED: SURFACE: 37 STALLS TOTAL VISITOR STALLS PROVIDED: 37 STALLS TOTAL PARKING STALLS PROVIDED: 241 STALLS ACCESSIBLE PARKING SPACES: 4% REQUIRED (BY AODA): 4% X 179 SPACES = 8 PROVIDED: SURFACE: 6, UNDERGROUND: 2
BICYCLE PARKING REQUIREMENTS:	APARTMENT BUILDING = 0.5 SPACES PER DWELLING UNIT = 0.5 x 127 = 63.5 TOTAL BICYCLE PARKING REQUIRED: 64 SPACES	BICYCLE PARKING PROVIDED: INTERNAL BIKE ROOM: 50 SPACES EXTERIOR BICYCLE PARKING: 18 SPACES TOTAL BICYCLE PARKING PROVIDED: 68 SPACES

BUILDING AREA (GROSS FLOOR AREA)

LEVEL	AREA
LEVEL 1	2937.6 m ²
LEVEL 2	2920.5 m ²
LEVEL 3	2920.5 m ²
LEVEL 4	2920.5 m ²
TOTAL	11699.2 m ²

LEASABLE AREA (NET UNIT AREA)

TOTAL 9,889.5 m²

LOT COVERAGE

4,154.3 m² / 25,504.8 m² = 16.3%



1. VIEW FROM OTTAWA STREET - LOOKING NORTH



2. VIEW FROM OTTAWA STREET - LOOKING NORTH WEST



3. VIEW FROM ADJACENT SITE - LOOKING NORTH EAST



4. VIEW FROM ADJACENT SITE - LOOKING SOUTH WEST

1 PHASE II SITE PLAN APPLICATION 2026-07-23

NO. ISSUE/ REVISION DATE

SEAL

PROJECT

430 Ottawa Street
Phase II

PROJECT ADDRESS

430 Ottawa Street
Almonte, Ontario

TITLE

PROJECT + BYLAW
INFO., BLOCK PLAN &
SITE PHOTOS

PROJECT NO. SCALE DRAWN CHECKED

224-026

Author

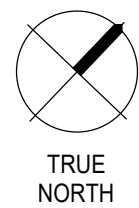
Checker

DRAWING NO.

REVISION NO.

SPA1.01

1



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1	PHASE II SITE PLAN APPLICATION	2026-07-23
NO.	ISSUE/ REVISION	DATE
SEAL		

PROJECT
**430 Ottawa Street
Phase II**

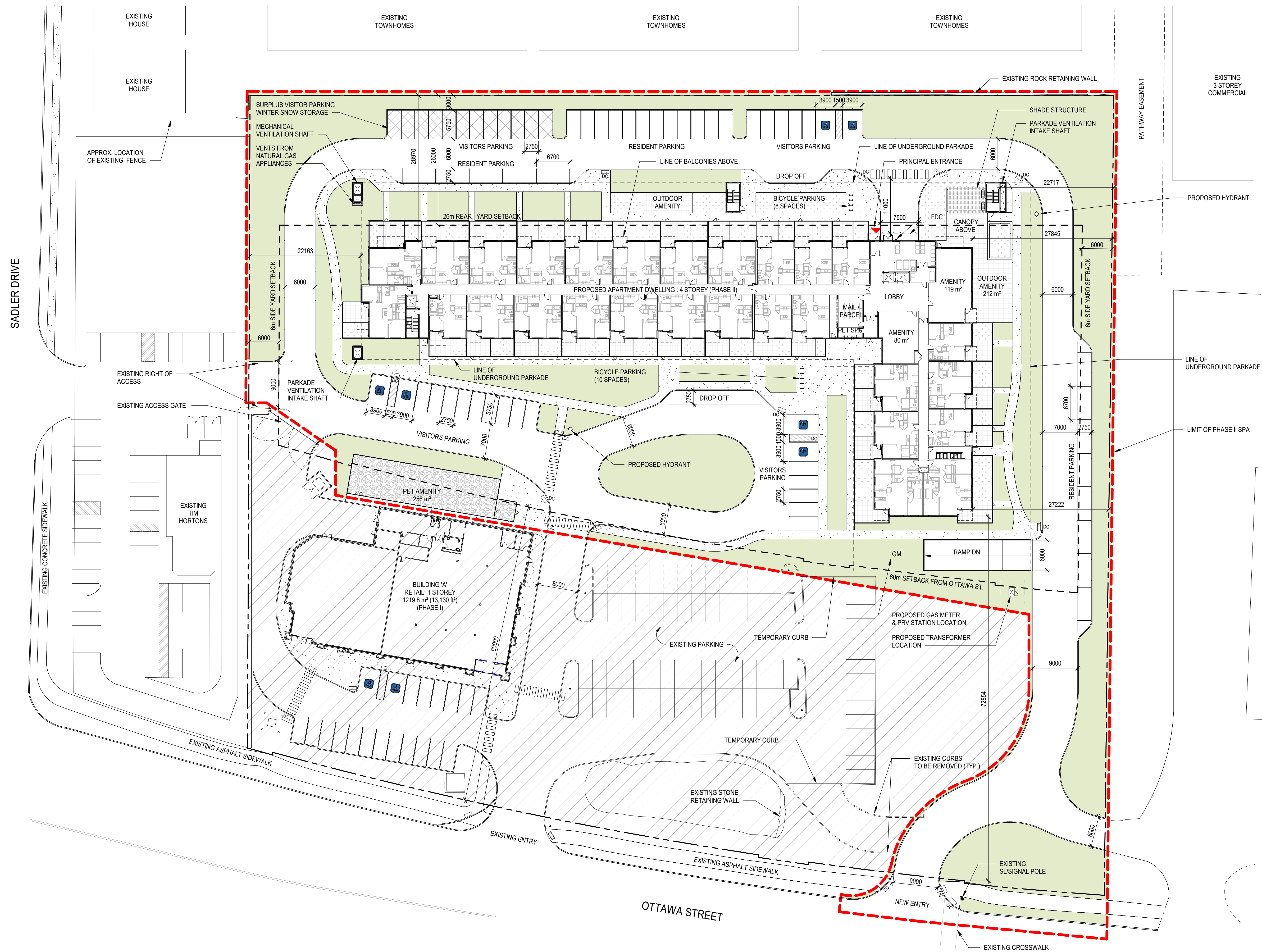
PROJECT ADDRESS
430 Ottawa Street
Almonte, Ontario

TITLE
SITE PLAN - PHASE II

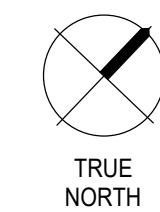
PROJECT NO.	SCALE	DRAWN	CHECKED
224-026	1 : 400	Author	Checker
DRAWING NO.		REVISION NO.	

SPA1.02

1



2 SITE PLAN
SPA1.02 SCALE: 1 : 400



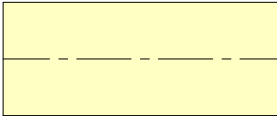
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SADLER DRIVE

OTTAWA STREET

1 SITE PLAN - FIRE ACCESS ROUTE -PHASE II
SPA1.03 SCALE: 1:400



FIRE APPARATUS ACCESS ROUTES MUST BE DESIGNED IN ACCORDANCE WITH ARTICLE 3.2.5.6, AS SUMMARIZED:

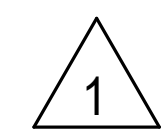
- HAVE A CLEAR WIDTH NOT LESS THAN 6 m.
- HAVE A CENTRELINE RADIUS OF NOT LESS THAN 12 m.
- HAVE AN OVERHEAD CLEARANCE NOT LESS THAN 5 m.
- HAVE A CHANGE OF GRADIENT NOT MORE THAN 1 IN 12.5 OVER A MINIMUM DISTANCE OF 15 m.
- BE DESIGNED TO SUPPORT THE EXPECTED LOADS (85,000 lbs) IMPOSED BY FIREFIGHTING EQUIPMENT AND BE SURFACED WITH CONCRETE, ASPHALT, OR OTHER MATERIAL DESIGNED TO PERMIT ACCESSIBILITY UNDER ALL CLIMATIC CONDITIONS.
- HAVE TURNAROUND FACILITIES FOR ANY DEAD-END PORTION OF THE ACCESS ROUTE MORE THAN 90m LONG.

1	PHASE II SITE PLAN APPLICATION	2026-07-23
NO.	ISSUE/ REVISION	DATE
SEAL		

PROJECT		
430 Ottawa Street Phase II		
PROJECT ADDRESS		
430 Ottawa Street Almonte, Ontario		
TITLE		
FIRE ACCESS ROUTE		

PROJECT NO.	SCALE	DRAWN	CHECKED
224-026	1:400	Author	Checker
DRAWING NO.		REVISION NO.	

SPA1.03

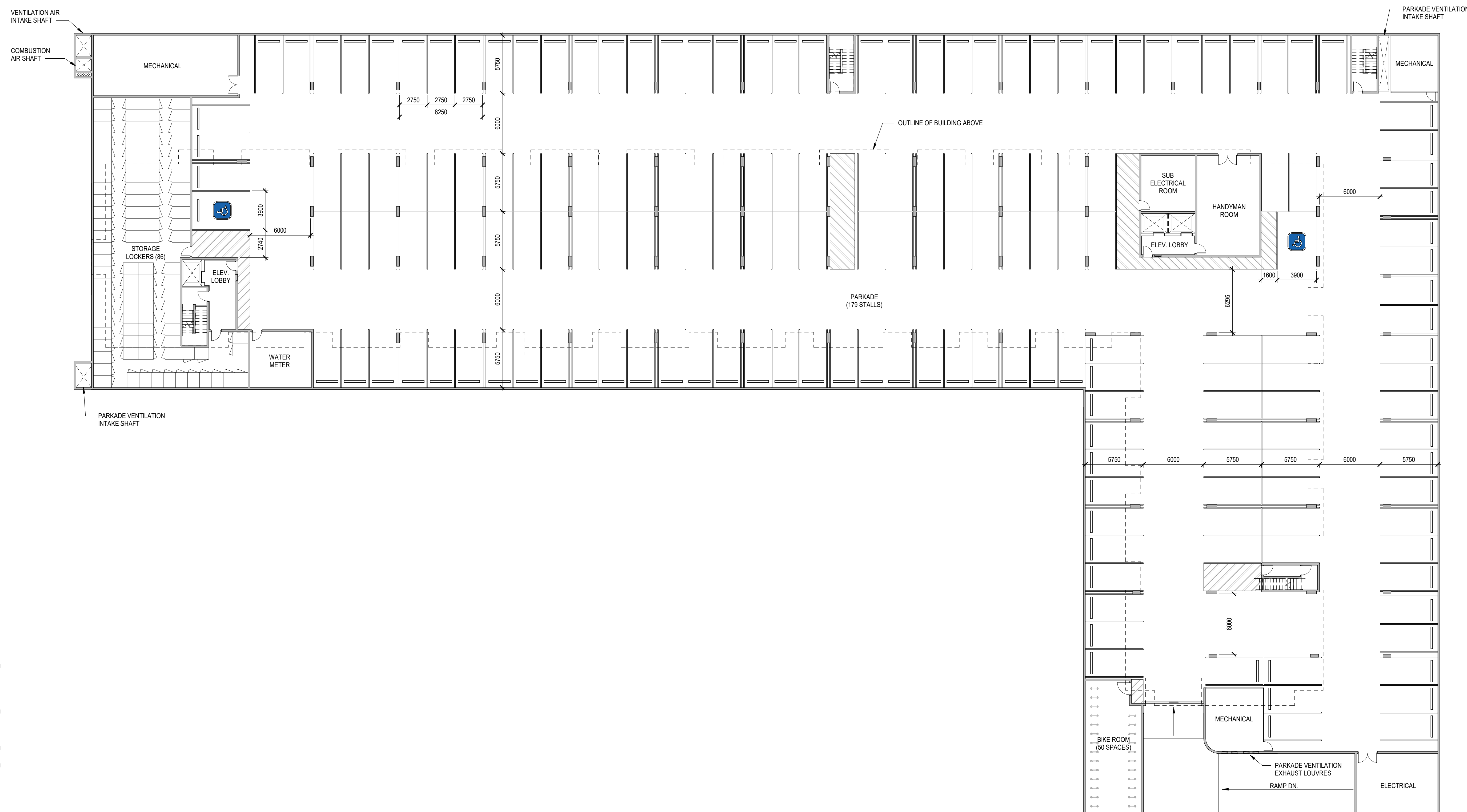


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1	PHASE II SITE PLAN APPLICATION	2026-07-23
NO.	ISSUE/ REVISION	DATE
SEAL		

PROJECT

430 Ottawa Street Phase II

PROJECT ADDRESS

430 Ottawa Street
Almonte, Ontario

TITLE _____

FLOOR PLAN - PARKADE

PROJECT NO.	SCALE	DRAWN	CHECKED
224-026	1 : 200	Author	Checker

DRAWING NO. _____ REVISION NO. _____

SPA2.00 

ED
ker

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CPA 2.1

A triangle with the number 1 inside.

2026-07-23 2:10:19 PM

1 LEVEL 1 FLOOR PLAN
SPA2.01 SCALE: 1:200

NOT FOR CONSTRUCTION

Appendix B: Ride the LT Route Map

Ride the LT

It's safe, easy & affordable!

PICK UPS THROUGHOUT MISSISSIPPI MILLS TO ALMONTE

1st and 3rd Thursday of each month

PICK UPS THROUGHOUT MISSISSIPPI MILLS TO CARLETON PLACE

2nd and 4th Thursday of each month

lanarktransportation.com

	AM	AM	PM
Mississippi Mills Library (Almonte)	10:00	10:45	11:30
Almonte General Hospital	10:10	10:55	11:40
Shoppers Drug Mart	10:20	11:05	11:50
Independent	10:25	11:10	11:55
Tim Hortons	10:35	11:20	12:05

	AM	AM	PM
Mississippi Mills Library (Almonte)	10:00		12:25
FreshCo	10:20	11:05	11:50
Tim Hortons	10:25	11:10	11:55
Walmart	10:30	11:15	12:00
Giant Tiger	10:35	11:20	12:05

Community bus service

You choose!
Two stops of approx. 45 mins each
or one stop of approx. 90 mins.

613-264-8256
1-877-445-5777

WHO.
WHAT.
WHERE.
WHEN.
HOW!

?

WHO?

LT by Lanark Transportation

WHAT?

The LT is a community bus service provided for the low fee of \$2 per person.

WHERE?

Pick ups throughout **Mississippi Mills to Almonte** on the 1st and 3rd Thursday of each month.

Pick ups throughout **Mississippi Mills to Carleton Place** on the 2nd and 4th Thursday of each month.

WHEN?

Thursday mornings

Departure from Library: 10:00

Return to Tim Hortons: 12:05 (Almonte)

12:25 (Carleton Place)

HOW?

Registration deadline: **Wednesdays at 10 am**

Phone: 613-264-8256

?



WHY RIDE THE LT?

- Weekly trips from within Mississippi Mills to popular destinations in Almonte or Carleton Place.
- Personalized pick up and drop off at your home address.
- Additional stops along the route if you have a mobility issue.
- Easy registration!
Just phone: 613-264-8256 or 1-877-445-5777 by Wednesday at 10 am



In Partnership with the
Municipality of Mississippi Mills

40 Sunset Blvd Ste 126, Perth, ON K7H 2Y4
613-264-8256 | 1-877-445-5777 (Toll free)
dispatch@lanarktransportation.com
lanarktransportation.com



@lanarktransportation

Ride the LT

It's safe, easy & affordable!

ONLY **\$2** PER PERSON
(ROUND TRIP!)

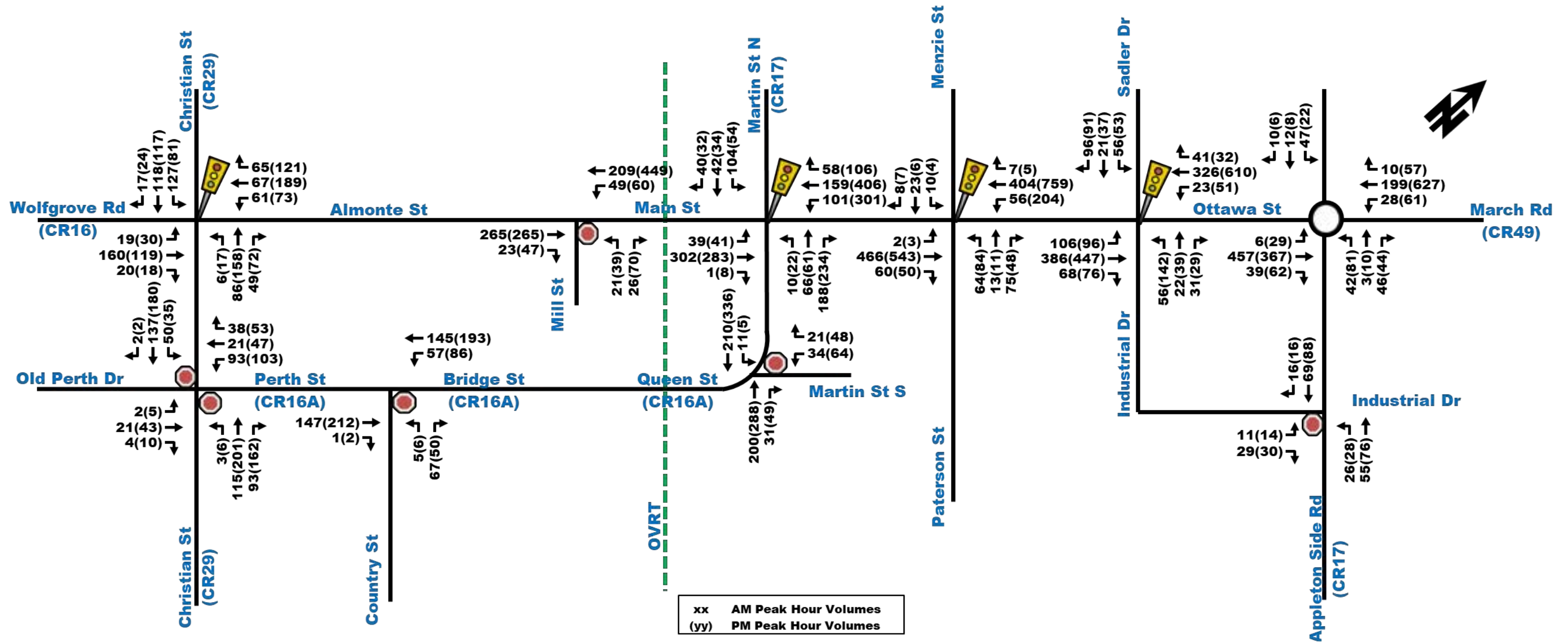
Community bus service

1-877-445-5777

613-264-8256

Appendix C: Traffic Count Data

Almonte Existing Intersection Peak Hour Volumes



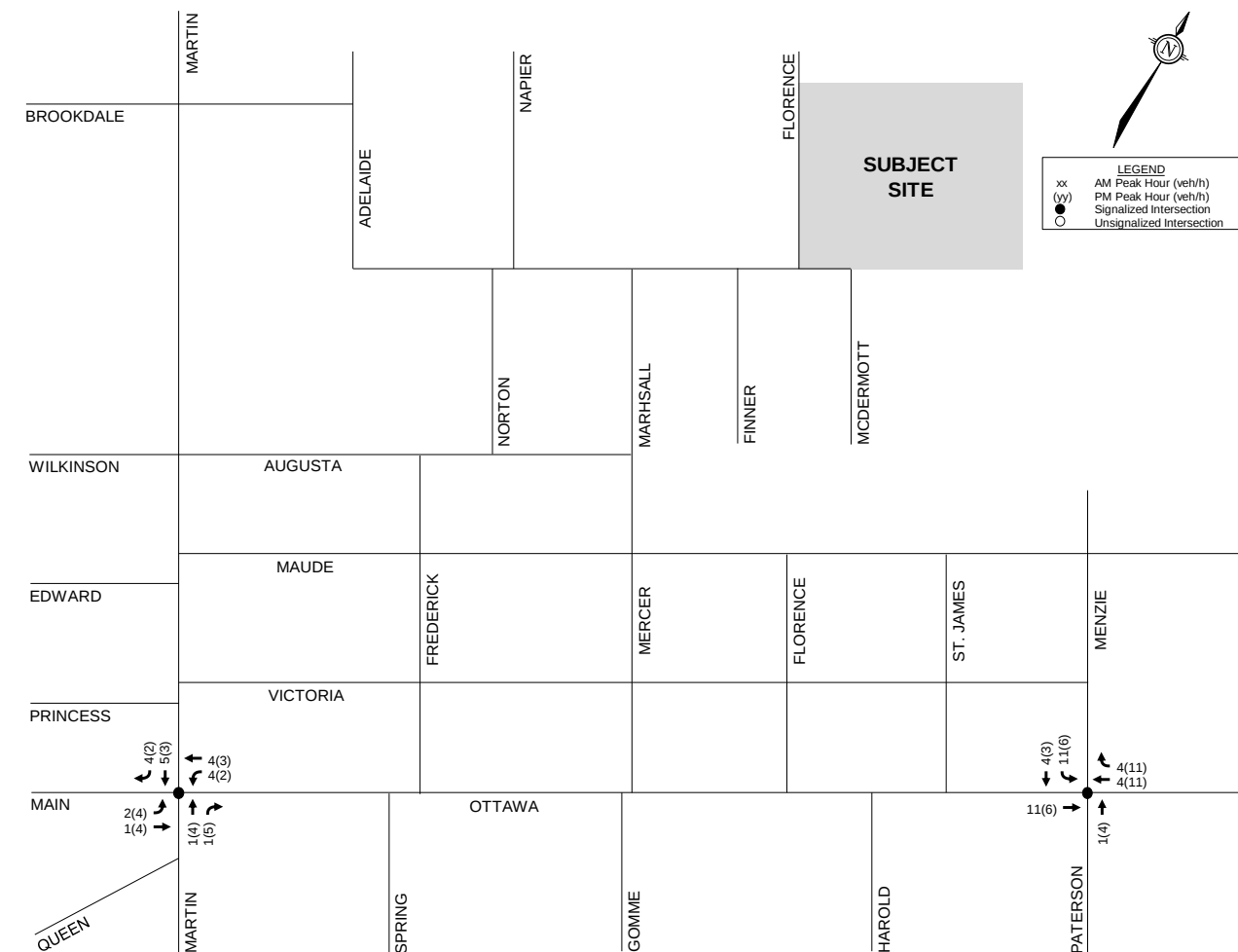
Appendix D: Background Developments TIS Excerpts

Of the trips assigned to the west via Main Street and southwest via Queen Street, half have been assumed to utilize the side streets connecting to Martin Street North (Adelaide Street, Teskey Street, Augusta Street, Maude Street, or Victoria Street), while half have been assumed to utilize the side streets connecting to Ottawa Street (Mercer Street or Frederick Street).

Trips assigned to the south via Paterson Street have been assigned to Menzie Street via Maude Street.

Traffic volumes generated by site have been assigned to the study area intersections and are shown in **Figure 4**.

Figure 4: Site-Generated Traffic Volumes



The assumed distribution of trips generated by the proposed development has been estimated based on the local and commuter traffic patterns. The trip distribution assumptions for trips generated by the proposed development are as follows:

- 40% to/from the east
- 20% to/from the south
- 40% to/from the west

Using the trips generated and the assumed trip distribution the following **Figure 3** was created to show the generated turning movements at the Sadler Drive/Ottawa Street/Industrial Drive intersection. Total traffic volumes at this intersection are shown in **Figure 4**.

Figure 3: Site Generated Traffic

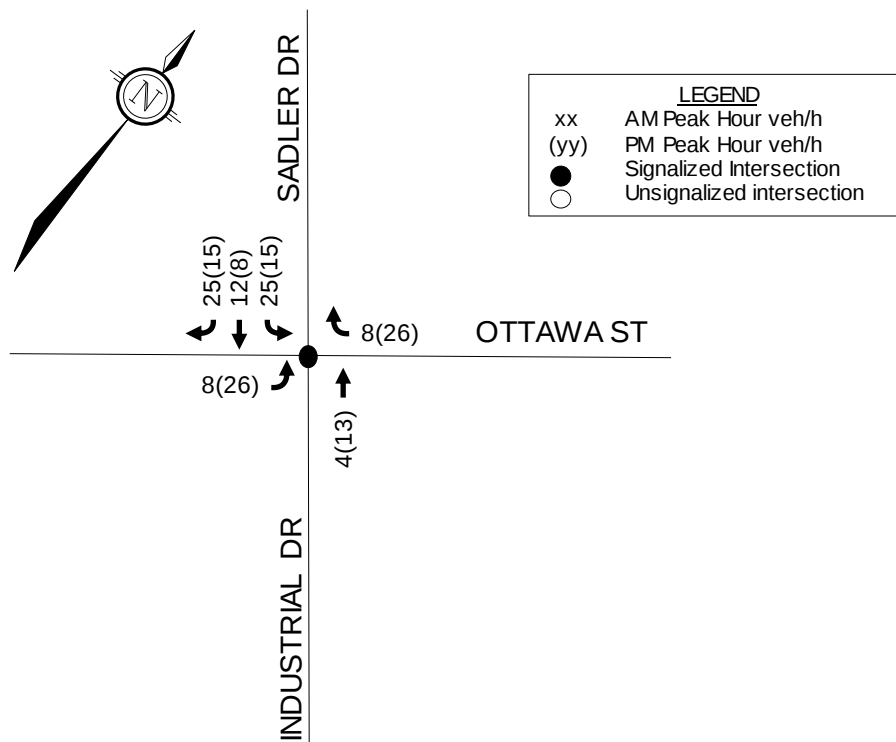


Table 3: Vehicle Site Trip Generation

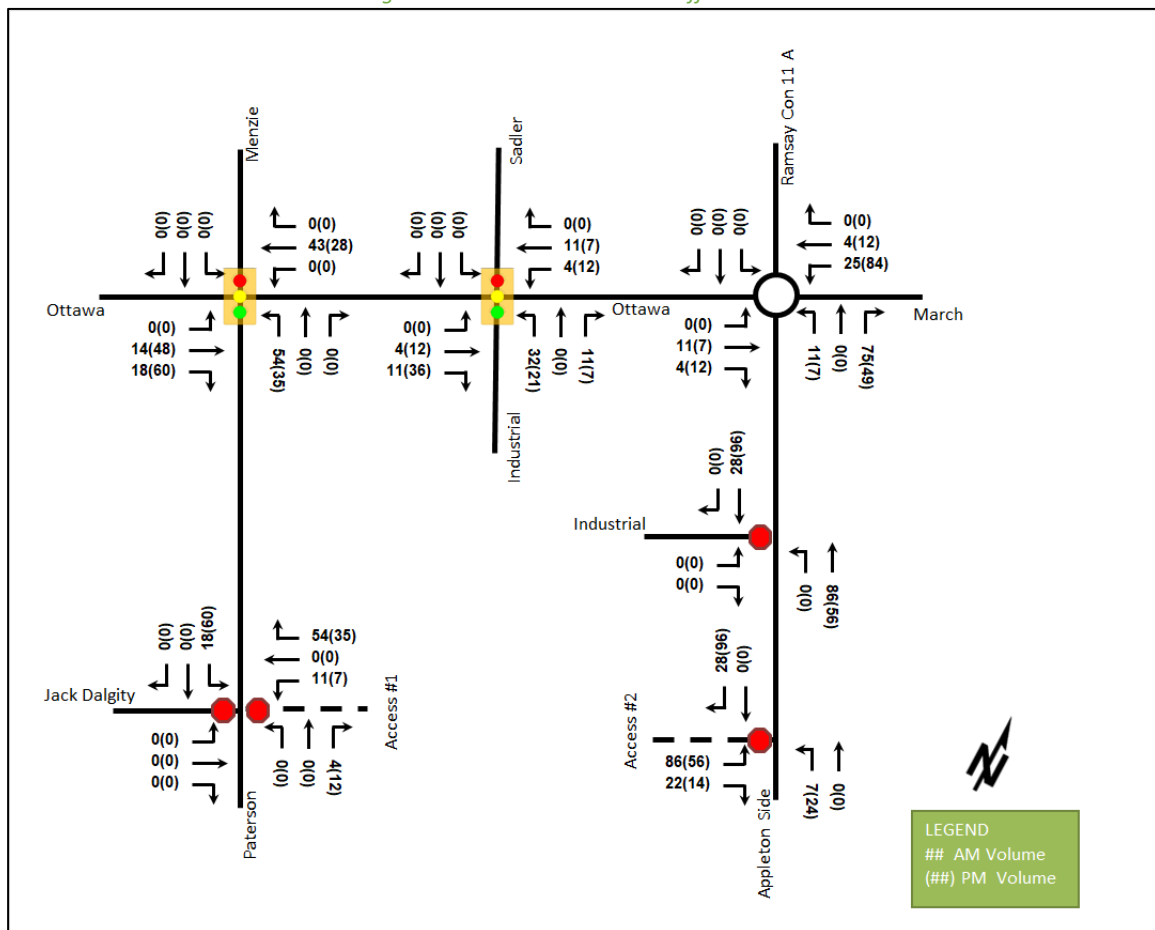
Land Use	Units	AM Peak (veh/hr)			PM Peak (veh/hr)		
		In	Out	Total	In	Out	Total
Single Family Detached	253	45	130	175	150	88	238
Multifamily Housing (Low-Rise)	282	26	84	110	89	53	142
Total		71	214	285	239	141	380

As shown above, a total of 285 AM and 380 PM new peak hour two-way vehicle trips are projected as a result of proposed development.

3.2 Vehicle Traffic Distribution and Assignment

Traffic distribution was based on the existing volume splits at study area intersections and a knowledge of the area travel. Based on these factors, new site-generated trips were assigned to study area intersections, which is illustrated in Figure 9. Section 5.2 provides further information regarding proposed access configurations.

Figure 9: New Site-Generated Traffic Volumes



3.3 Future Total Travel Demands

The 2027 and 2032 site-generated traffic has been combined with the 2027 and 2032 future background traffic volumes to estimate the 2027 and 2032 future total traffic volumes. Figure 10 and Figure 11 illustrate the 2027 and 2032 future total traffic volumes, respectively. Access configuration details are presented in Section 5.2.

Appendix E: Synchro Analysis Reports – Existing Conditions

1: Industrial Drive/Sadler Drive & Ottawa Street
Existing - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	386	68	23	326	41	56	22	31	56	21	96
Future Volume (vph)	106	386	68	23	326	41	56	22	31	56	21	96
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	22.0		0.0	0.0		23.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	55.0		7.6	55.0		7.6	7.6		34.0	7.6		7.6
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.99	1.00			0.99	0.98	0.99	0.98	
Fr't		0.977			0.983				0.850		0.877	
Flt Protected	0.950			0.950				0.965		0.950		
Satd. Flow (prot)	1695	3292	0	1695	3320	0	0	1722	1517	1695	1537	0
Flt Permitted	0.428			0.466				0.706		0.701		
Satd. Flow (perm)	758	3292	0	823	3320	0	0	1252	1485	1241	1537	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			19				105		107	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.7			104.2			151.0			71.6	
Travel Time (s)		15.2			7.5			10.9			5.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
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
Adj. Flow (vph)	118	429	76	26	362	46	62	24	34	62	23	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	505	0	26	408	0	0	86	34	62	130	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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	9.8	27.4		9.8	36.4		34.5	34.5	34.5	32.2	32.2	
Total Split (s)	11.0	40.0		10.0	39.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	12.9%	47.1%		11.8%	45.9%		41.2%	41.2%	41.2%	41.2%	41.2%	
Maximum Green (s)	6.2	33.6		5.2	32.6		28.5	28.5	28.5	28.8	28.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	3.1		1.5	3.1		3.2	3.2	3.2	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	6.4		4.8	6.4			6.5	6.5	6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												

1: Industrial Drive/Sadler Drive & Ottawa Street
Existing - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min		None	None	None	None	None	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)		14.0			23.0		21.0	21.0	21.0	19.0	19.0	
Pedestrian Calls (#/hr)		5			5		5	5	5	5	5	
Act Effect Green (s)	28.5	28.0		24.4	20.6			13.2	13.2	13.4	13.4	
Actuated g/C Ratio	0.58	0.57		0.49	0.42			0.27	0.27	0.27	0.27	
v/c Ratio	0.21	0.27		0.05	0.29			0.26	0.07	0.18	0.26	
Control Delay (s/veh)	8.3	9.8		7.8	14.9			18.8	0.3	17.6	7.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay (s/veh)	8.3	9.8		7.8	14.9			18.8	0.3	17.6	7.3	
LOS	A	A		A	B			B	A	B	A	
Approach Delay (s/veh)		9.6			14.5			13.5			10.6	
Approach LOS		A			B			B			B	
Queue Length 50th (m)	4.2	10.6		0.9	13.8			5.6	0.0	3.9	1.4	
Queue Length 95th (m)	17.3	41.0		5.5	33.9			19.9	0.0	15.2	13.5	
Internal Link Dist (m)		187.7			80.2			127.0			47.6	
Turn Bay Length (m)	45.0			22.0					23.0			
Base Capacity (vph)	567	2427		507	2393			795	981	797	1025	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.21	0.21		0.05	0.17			0.11	0.03	0.08	0.13	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 49.4

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.29

Intersection Signal Delay (s/veh): 11.6

Intersection LOS: B

Intersection Capacity Utilization 55.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Industrial Drive/Sadler Drive & Ottawa Street

#1  Ø1	#1  Ø2	#1  Ø4
10 s	40 s	35 s
#1  Ø5	#1  Ø6	#1  Ø8
11 s	39 s	35 s

2: YIG Plaza Access/Existing Site Access & Ottawa Street
Existing - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	411	41	14	351	5	28	0	10	3	0	13
Future Volume (Veh/h)	21	411	41	14	351	5	28	0	10	3	0	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	23	457	46	16	390	6	31	0	11	3	0	14
Pedestrians								5			5	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		104										
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	401			508			772	964	257	716	984	203
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	401			376			654	856	112	595	878	203
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			90	100	99	99	100	98
cM capacity (veh/h)	1149			1114			316	267	870	350	259	800
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	252	275	211	201	42	17						
Volume Left	23	0	16	0	31	3						
Volume Right	0	46	0	6	11	14						
cSH	1149	1700	1114	1700	379	652						
Volume to Capacity	0.02	0.16	0.01	0.12	0.11	0.03						
Queue Length 95th (m)	0.5	0.0	0.3	0.0	2.8	0.6						
Control Delay (s/veh)	0.9	0.0	0.8	0.0	15.7	10.7						
Lane LOS	A		A		C	B						
Approach Delay (s/veh)	0.4		0.4		15.7	10.7						
Approach LOS					C	B						
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			42.2%		ICU Level of Service		A					
Analysis Period (min)			15									

3: Harmony Court Plaza Access & Ottawa Street
Existing - AM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	404	11	3	358	7	2
Future Volume (Veh/h)	404	11	3	358	7	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	449	12	3	398	8	2
Pedestrians						5
Lane Width (m)						3.7
Walking Speed (m/s)						1.1
Percent Blockage						0
Right turn flare (veh)						
Median type	None		None			
Median storage veh)						
Upstream signal (m)	222					
pX, platoon unblocked						
vC, conflicting volume			466	665		236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			466	665		236
tC, single (s)			4.1	6.8		6.9
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			100	98		100
cM capacity (veh/h)			1087	390		763
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	299	162	136	265	10	
Volume Left	0	0	3	0	8	
Volume Right	0	12	0	0	2	
cSH	1700	1700	1087	1700	432	
Volume to Capacity	0.18	0.10	0.00*	0.16	0.02	
Queue Length 95th (m)	0.0	0.0	0.1	0.0	0.5	
Control Delay (s/veh)	0.0	0.0	0.2	0.0	13.5	
Lane LOS			A	B		
Approach Delay (s/veh)	0.0		0.1		13.5	
Approach LOS						B
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization			22.7%	ICU Level of Service		A
Analysis Period (min)	15					

* Value less than 0.01.

4: Ottawa Street & Home Hardware Access

Existing - AM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	389	348	5	3	13
Future Volume (Veh/h)	17	389	348	5	3	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	432	387	6	3	14
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		239				
pX, platoon unblocked						
vC, conflicting volume	398				649	202
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	398				649	202
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	98
cM capacity (veh/h)	1152				394	802
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	163	288	258	135	17	
Volume Left	19	0	0	0	3	
Volume Right	0	0	0	6	14	
cSH	1152	1700	1700	1700	678	
Volume to Capacity	0.02	0.17	0.15	0.08	0.03	
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.6	
Control Delay (s/veh)	1.1	0.0	0.0	0.0	10.4	
Lane LOS	A				B	
Approach Delay (s/veh)	0.4		0.0		10.4	
Approach LOS					B	
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			34.5%		ICU Level of Service	A
Analysis Period (min)			15			

* Value less than 0.01.

1: Industrial Drive/Sadler Drive & Ottawa Street
Existing - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	447	76	51	610	32	142	39	29	53	37	91
Future Volume (vph)	96	447	76	51	610	32	142	39	29	53	37	91
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	22.0		0.0	0.0		23.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	55.0		7.6	55.0		7.6	7.6		34.0	7.6		7.6
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		0.99	1.00			0.99	0.98	0.99	0.98	
Frt		0.978			0.992				0.850		0.893	
Flt Protected	0.950			0.950				0.962		0.950		
Satd. Flow (prot)	1695	3297	0	1695	3357	0	0	1717	1517	1695	1569	0
Flt Permitted	0.277			0.433				0.680		0.632		
Satd. Flow (perm)	492	3297	0	766	3357	0	0	1206	1485	1120	1569	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			7				105		101	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.7			104.2			151.0			71.6	
Travel Time (s)		15.2			7.5			10.9			5.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
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
Adj. Flow (vph)	107	497	84	57	678	36	158	43	32	59	41	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	581	0	57	714	0	0	201	32	59	142	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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	9.8	27.4		9.8	36.4		34.5	34.5	34.5	32.2	32.2	
Total Split (s)	11.4	40.0		10.0	38.6		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	13.4%	47.1%		11.8%	45.4%		41.2%	41.2%	41.2%	41.2%	41.2%	
Maximum Green (s)	6.6	33.6		5.2	32.2		28.5	28.5	28.5	28.8	28.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	3.1		1.5	3.1		3.2	3.2	3.2	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	6.4		4.8	6.4			6.5	6.5	6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												

1: Industrial Drive/Sadler Drive & Ottawa Street
Existing - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min		None	None	None	None	None	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)		14.0			23.0		21.0	21.0	21.0	19.0	19.0	
Pedestrian Calls (#/hr)		5			5		5	5	5	5	5	
Act Effect Green (s)	28.0	22.9		25.2	19.6			16.6	16.6	17.0	17.0	
Actuated g/C Ratio	0.48	0.39		0.43	0.33			0.28	0.28	0.29	0.29	
v/c Ratio	0.28	0.45		0.14	0.64			0.59	0.06	0.18	0.27	
Control Delay (s/veh)	10.2	15.3		9.1	20.4			28.4	0.2	19.7	8.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay (s/veh)	10.2	15.3		9.1	20.4			28.4	0.2	19.7	8.9	
LOS	B	B		A	C			C	A	B	A	
Approach Delay (s/veh)		14.5			19.5			24.6			12.1	
Approach LOS		B			B			C			B	
Queue Length 50th (m)	5.1	24.2		2.6	34.0			19.4	0.0	5.0	3.4	
Queue Length 95th (m)	15.9	47.8		9.7	64.1			45.6	0.0	15.0	16.4	
Internal Link Dist (m)		187.7			80.2			127.0			47.6	
Turn Bay Length (m)	45.0			22.0					23.0			
Base Capacity (vph)	382	2072		417	2014			639	837	600	888	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.28	0.28		0.14	0.35			0.31	0.04	0.10	0.16	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 58.8

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay (s/veh): 17.5

Intersection LOS: B

Intersection Capacity Utilization 72.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Industrial Drive/Sadler Drive & Ottawa Street

#1  Ø1	#1  Ø2	#1  Ø4
10 s	40 s	35 s
#1  Ø5	#1  Ø6	#1  Ø8
11.4 s	38.6 s	35 s

2: YIG Plaza Access/Existing Site Access & Ottawa Street
Existing - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	386	90	72	517	30	113	0	42	22	0	63
Future Volume (Veh/h)	52	386	90	72	517	30	113	0	42	22	0	63
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	58	429	100	80	574	33	126	0	47	24	0	70
Pedestrians								5			5	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		104										
pX, platoon unblocked				0.90			0.90	0.90	0.90	0.90	0.90	
vC, conflicting volume	612			534			1117	1372	270	1133	1406	309
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	612			265			912	1195	0	930	1232	309
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			93			24	100	95	86	100	90
cM capacity (veh/h)	959			1163			166	145	973	170	137	684
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	273	315	367	320	173	94						
Volume Left	58	0	80	0	126	24						
Volume Right	0	100	0	33	47	70						
cSH	959	1700	1163	1700	214	387						
Volume to Capacity	0.06	0.19	0.07	0.19	0.81	0.24						
Queue Length 95th (m)	1.5	0.0	1.7	0.0	44.8	7.1						
Control Delay (s/veh)	2.4	0.0	2.4	0.0	68.2	17.3						
Lane LOS	A		A		F	C						
Approach Delay (s/veh)	1.1		1.3		68.2	17.3						
Approach LOS					F	C						
Intersection Summary												
Average Delay			9.7									
Intersection Capacity Utilization			60.3%		ICU Level of Service		B					
Analysis Period (min)			15									

3: Harmony Court Plaza Access & Ottawa Street
Existing - PM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	420	27	15	574	32	11
Future Volume (Veh/h)	420	27	15	574	32	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	467	30	17	638	36	12
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)	222					
pX, platoon unblocked						
vC, conflicting volume			502		840	254
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			502		840	254
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		88	98
cM capacity (veh/h)			1054		298	742
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	311	186	230	425	48	
Volume Left	0	0	17	0	36	
Volume Right	0	30	0	0	12	
cSH	1700	1700	1054	1700	350	
Volume to Capacity	0.18	0.11	0.02	0.25	0.14	
Queue Length 95th (m)	0.0	0.0	0.4	0.0	3.6	
Control Delay (s/veh)	0.0	0.0	0.8	0.0	16.9	
Lane LOS			A	C		
Approach Delay (s/veh)	0.0		0.3		16.9	
Approach LOS					C	
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			38.1%	ICU Level of Service	A	
Analysis Period (min)			15			

4: Ottawa Street & Home Hardware Access
Existing - PM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	409	561	11	9	28
Future Volume (Veh/h)	22	409	561	11	9	28
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	24	454	623	12	10	31
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		239				
pX, platoon unblocked						
vC, conflicting volume	640				909	323
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	640				909	323
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				96	95
cM capacity (veh/h)	936				266	670
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	175	303	415	220	41	
Volume Left	24	0	0	0	10	
Volume Right	0	0	0	12	31	
cSH	936	1700	1700	1700	489	
Volume to Capacity	0.03	0.18	0.24	0.13	0.08	
Queue Length 95th (m)	0.6	0.0	0.0	0.0	2.1	
Control Delay (s/veh)	1.4	0.0	0.0	0.0	13.0	
Lane LOS	A				B	
Approach Delay (s/veh)	0.5		0.0		13.0	
Approach LOS					B	
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			39.2%		ICU Level of Service	A
Analysis Period (min)			15			

Appendix F: Synchro Analysis Reports – Background Conditions

1: Industrial Drive/Sadler Drive & Ottawa Street
BG2029 - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	438	77	26	370	47	64	25	35	64	24	109
Future Volume (vph)	120	438	77	26	370	47	64	25	35	64	24	109
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	22.0		0.0	0.0		23.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	55.0		7.6	55.0		7.6	7.6		34.0	7.6		7.6
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.99	1.00			0.99	0.98	0.99	0.98	
Fr't		0.978			0.983				0.850		0.877	
Flt Protected	0.950			0.950				0.965		0.950		
Satd. Flow (prot)	1695	3296	0	1695	3320	0	0	1722	1517	1695	1537	0
Flt Permitted	0.425			0.462				0.704		0.699		
Satd. Flow (perm)	753	3296	0	817	3320	0	0	1249	1485	1237	1537	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			19				105		109	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.7			104.2			151.0			71.6	
Travel Time (s)		15.2			7.5			10.9			5.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour 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
Adj. Flow (vph)	120	438	77	26	370	47	64	25	35	64	24	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	120	515	0	26	417	0	0	89	35	64	133	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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	9.8	27.4		9.8	36.4		34.5	34.5	34.5	32.2	32.2	
Total Split (s)	11.0	40.0		10.0	39.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	12.9%	47.1%		11.8%	45.9%		41.2%	41.2%	41.2%	41.2%	41.2%	
Maximum Green (s)	6.2	33.6		5.2	32.6		28.5	28.5	28.5	28.8	28.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	3.1		1.5	3.1		3.2	3.2	3.2	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	6.4		4.8	6.4			6.5	6.5	6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												

1: Industrial Drive/Sadler Drive & Ottawa Street
BG2029 - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min		None	None	None	None	None	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)		14.0			23.0		21.0	21.0	21.0	19.0	19.0	
Pedestrian Calls (#/hr)		5			5		5	5	5	5	5	
Act Effect Green (s)	28.7	28.3		24.7	20.8			13.2	13.2	13.4	13.4	
Actuated g/C Ratio	0.58	0.57		0.50	0.42			0.27	0.27	0.27	0.27	
v/c Ratio	0.21	0.27		0.05	0.30			0.27	0.07	0.19	0.27	
Control Delay (s/veh)	8.3	9.8		7.8	14.8			19.1	0.3	17.9	7.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay (s/veh)	8.3	9.8		7.8	14.8			19.1	0.3	17.9	7.4	
LOS	A	A		A	B			B	A	B	A	
Approach Delay (s/veh)		9.5			14.4			13.8			10.8	
Approach LOS		A			B			B			B	
Queue Length 50th (m)	4.3	10.8		0.9	14.2			5.8	0.0	4.1	1.5	
Queue Length 95th (m)	17.6	41.9		5.5	34.8			20.6	0.0	15.6	13.8	
Internal Link Dist (m)		187.7			80.2			127.0			47.6	
Turn Bay Length (m)	45.0			22.0					23.0			
Base Capacity (vph)	565	2417		507	2380			789	976	789	1020	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.21	0.21		0.05	0.18			0.11	0.04	0.08	0.13	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 49.6

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.30

Intersection Signal Delay (s/veh): 11.6

Intersection LOS: B

Intersection Capacity Utilization 68.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Industrial Drive/Sadler Drive & Ottawa Street

#1  Ø1	#1  Ø2	#1  Ø4
10 s	40 s	35 s
#1  Ø5	#1  Ø6	#1  Ø8
11 s	39 s	35 s

2: YIG Plaza Access/Existing Site Access & Ottawa Street
BG2029 - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	466	41	14	398	5	28	0	10	3	0	13
Future Volume (Veh/h)	21	466	41	14	398	5	28	0	10	3	0	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	21	466	41	14	398	5	28	0	10	3	0	13
Pedestrians								5			5	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		104										
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	408			512			774	970	259	719	988	207
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	408			381			656	863	114	599	882	207
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			91	100	99	99	100	98
cM capacity (veh/h)	1142			1110			316	265	867	350	259	796
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	254	274	213	204	38	16						
Volume Left	21	0	14	0	28	3						
Volume Right	0	41	0	5	10	13						
cSH	1142	1700	1110	1700	380	642						
Volume to Capacity	0.02	0.16	0.01	0.12	0.10	0.02						
Queue Length 95th (m)	0.4	0.0	0.3	0.0	2.5	0.6						
Control Delay (s/veh)	0.8	0.0	0.7	0.0	15.5	10.7						
Lane LOS	A		A		C	B						
Approach Delay (s/veh)	0.4		0.3		15.5	10.7						
Approach LOS					C	B						
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			45.0%		ICU Level of Service		A					
Analysis Period (min)			15									

3: Harmony Court Plaza Access & Ottawa Street
BG2029 - AM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	459	11	3	406	7	2
Future Volume (Veh/h)	459	11	3	406	7	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	459	11	3	406	7	2
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None		None			
Median storage veh)						
Upstream signal (m)	222					
pX, platoon unblocked						
vC, conflicting volume			475	679		240
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			475	679		240
tC, single (s)			4.1	6.8		6.9
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			100	98		100
cM capacity (veh/h)			1078	383		757
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	306	164	138	271	9	
Volume Left	0	0	3	0	7	
Volume Right	0	11	0	0	2	
cSH	1700	1700	1078	1700	430	
Volume to Capacity	0.18	0.10	0.00*	0.16	0.02	
Queue Length 95th (m)	0.0	0.0	0.1	0.0	0.5	
Control Delay (s/veh)	0.0	0.0	0.2	0.0	13.6	
Lane LOS			A	B		
Approach Delay (s/veh)	0.0	0.1		13.6		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			24.1%	ICU Level of Service		A
Analysis Period (min)			15			

* Value less than 0.01.

4: Ottawa Street & Home Hardware Access
BG2029 - AM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	442	395	5	3	13
Future Volume (Veh/h)	17	442	395	5	3	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	17	442	395	5	3	13
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		239				
pX, platoon unblocked						
vC, conflicting volume	405				658	205
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	405				658	205
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	98
cM capacity (veh/h)	1145				390	798
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	164	295	263	137	16	
Volume Left	17	0	0	0	3	
Volume Right	0	0	0	5	13	
cSH	1145	1700	1700	1700	667	
Volume to Capacity	0.01	0.17	0.15	0.08	0.02	
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.6	
Control Delay (s/veh)	1.0	0.0	0.0	0.0	10.5	
Lane LOS	A				B	
Approach Delay (s/veh)	0.3		0.0		10.5	
Approach LOS					B	
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			36.0%		ICU Level of Service	A
Analysis Period (min)			15			

* Value less than 0.01.

1: Industrial Drive/Sadler Drive & Ottawa Street
BG2029 - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	507	86	58	692	36	161	44	33	60	42	103
Future Volume (vph)	109	507	86	58	692	36	161	44	33	60	42	103
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	22.0		0.0	0.0		23.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	55.0		7.6	55.0		7.6	7.6		34.0	7.6		7.6
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		0.99	1.00			0.99	0.98	0.99	0.98	
Fr't		0.978			0.993				0.850		0.893	
Flt Protected	0.950			0.950				0.962		0.950		
Satd. Flow (prot)	1695	3296	0	1695	3361	0	0	1717	1517	1695	1569	0
Flt Permitted	0.270			0.428				0.678		0.629		
Satd. Flow (perm)	480	3296	0	757	3361	0	0	1202	1485	1115	1569	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			7				105		103	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.7			104.2			151.0			71.6	
Travel Time (s)		15.2			7.5			10.9			5.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour 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
Adj. Flow (vph)	109	507	86	58	692	36	161	44	33	60	42	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	593	0	58	728	0	0	205	33	60	145	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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	9.8	27.4		9.8	36.4		34.5	34.5	34.5	32.2	32.2	
Total Split (s)	11.4	40.0		10.0	38.6		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	13.4%	47.1%		11.8%	45.4%		41.2%	41.2%	41.2%	41.2%	41.2%	
Maximum Green (s)	6.6	33.6		5.2	32.2		28.5	28.5	28.5	28.8	28.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	3.1		1.5	3.1		3.2	3.2	3.2	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	6.4		4.8	6.4			6.5	6.5	6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												

1: Industrial Drive/Sadler Drive & Ottawa Street
BG2029 - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min		None	None	None	None	None	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)		14.0			23.0		21.0	21.0	21.0	19.0	19.0	
Pedestrian Calls (#/hr)		5			5		5	5	5	5	5	
Act Effect Green (s)	28.4	23.2		25.6	19.9			16.8	16.8	17.2	17.2	
Actuated g/C Ratio	0.48	0.39		0.43	0.34			0.28	0.28	0.29	0.29	
v/c Ratio	0.29	0.45		0.14	0.64			0.60	0.07	0.19	0.28	
Control Delay (s/veh)	10.3	15.4		9.1	20.5			29.1	0.3	19.9	8.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay (s/veh)	10.3	15.4		9.1	20.5			29.1	0.3	19.9	8.9	
LOS	B	B		A	C			C	A	B	A	
Approach Delay (s/veh)		14.6			19.7			25.1			12.1	
Approach LOS		B			B			C			B	
Queue Length 50th (m)	5.2	25.1		2.7	35.2			20.1	0.0	5.1	3.5	
Queue Length 95th (m)	16.2	48.8		9.7	65.5			46.9	0.0	15.5	16.8	
Internal Link Dist (m)		187.7			80.2			127.0			47.6	
Turn Bay Length (m)	45.0			22.0					23.0			
Base Capacity (vph)	377	2052		415	1999			631	830	592	881	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.29	0.29		0.14	0.36			0.32	0.04	0.10	0.16	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 59.4

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay (s/veh): 17.7

Intersection LOS: B

Intersection Capacity Utilization 77.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Industrial Drive/Sadler Drive & Ottawa Street

#1  Ø1	#1  Ø2	#1  Ø4
10 s	40 s	35 s
#1  Ø5	#1  Ø6	#1  Ø8
11.4 s	38.6 s	35 s

2: YIG Plaza Access/Existing Site Access & Ottawa Street
BG2029 - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	438	90	72	587	30	113	0	42	22	0	63
Future Volume (Veh/h)	52	438	90	72	587	30	113	0	42	22	0	63
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	52	438	90	72	587	30	113	0	42	22	0	63
Pedestrians								5			5	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		104										
pX, platoon unblocked				0.90			0.90	0.90	0.90	0.90	0.90	
vC, conflicting volume	622			533			1093	1358	269	1116	1388	314
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	622			270			889	1183	0	915	1216	314
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			94			36	100	96	88	100	91
cM capacity (veh/h)	950			1161			176	149	975	178	143	679
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	271	309	366	324	155	85						
Volume Left	52	0	72	0	113	22						
Volume Right	0	90	0	30	42	63						
cSH	950	1700	1161	1700	226	392						
Volume to Capacity	0.05	0.18	0.06	0.19	0.69	0.22						
Queue Length 95th (m)	1.3	0.0	1.5	0.0	33.3	6.2						
Control Delay (s/veh)	2.2	0.0	2.1	0.0	49.7	16.7						
Lane LOS	A		A		E	C						
Approach Delay (s/veh)	1.0		1.1		49.7	16.7						
Approach LOS					E	C						
Intersection Summary												
Average Delay			7.0									
Intersection Capacity Utilization			63.8%		ICU Level of Service		B					
Analysis Period (min)			15									

3: Harmony Court Plaza Access & Ottawa Street
BG2029 - PM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	477	27	15	651	32	11
Future Volume (Veh/h)	477	27	15	651	32	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	477	27	15	651	32	11
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None		None			
Median storage veh)						
Upstream signal (m)	222					
pX, platoon unblocked						
vC, conflicting volume			509		851	257
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			509		851	257
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		89	99
cM capacity (veh/h)			1047		293	739
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	318	186	232	434	43	
Volume Left	0	0	15	0	32	
Volume Right	0	27	0	0	11	
cSH	1700	1700	1047	1700	347	
Volume to Capacity	0.19	0.11	0.01	0.26	0.12	
Queue Length 95th (m)	0.0	0.0	0.3	0.0	3.2	
Control Delay (s/veh)	0.0	0.0	0.7	0.0	16.8	
Lane LOS			A	C		
Approach Delay (s/veh)	0.0		0.2		16.8	
Approach LOS						C
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			40.3%	ICU Level of Service		A
Analysis Period (min)			15			

4: Ottawa Street & Home Hardware Access
BG2029 - PM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	464	637	11	9	28
Future Volume (Veh/h)	22	464	637	11	9	28
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	22	464	637	11	9	28
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		239				
pX, platoon unblocked						
vC, conflicting volume	653				924	329
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	653				924	329
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				97	96
cM capacity (veh/h)	925				261	664
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	177	309	425	223	37	
Volume Left	22	0	0	0	9	
Volume Right	0	0	0	11	28	
cSH	925	1700	1700	1700	483	
Volume to Capacity	0.02	0.18	0.25	0.13	0.08	
Queue Length 95th (m)	0.6	0.0	0.0	0.0	1.9	
Control Delay (s/veh)	1.3	0.0	0.0	0.0	13.1	
Lane LOS	A				B	
Approach Delay (s/veh)	0.5		0.0		13.1	
Approach LOS					B	
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			40.7%		ICU Level of Service	A
Analysis Period (min)			15			

1: Industrial Drive/Sadler Drive & Ottawa Street
BG2034 - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	525	92	31	443	56	76	30	42	76	29	131
Future Volume (vph)	144	525	92	31	443	56	76	30	42	76	29	131
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	22.0		0.0	0.0		23.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	55.0		7.6	55.0		7.6	7.6		34.0	7.6		7.6
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.99	1.00			0.99	0.98	0.99	0.98	
Frt		0.978			0.983				0.850		0.877	
Flt Protected	0.950			0.950				0.965		0.950		
Satd. Flow (prot)	1695	3296	0	1695	3320	0	0	1722	1517	1695	1537	0
Flt Permitted	0.410			0.418				0.689		0.689		
Satd. Flow (perm)	727	3296	0	740	3320	0	0	1222	1485	1220	1537	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			19				105		131	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.7			104.2			151.0			71.6	
Travel Time (s)		15.2			7.5			10.9			5.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour 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
Adj. Flow (vph)	144	525	92	31	443	56	76	30	42	76	29	131
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	617	0	31	499	0	0	106	42	76	160	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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	9.8	27.4		9.8	36.4		34.5	34.5	34.5	32.2	32.2	
Total Split (s)	11.0	40.0		10.0	39.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	12.9%	47.1%		11.8%	45.9%		41.2%	41.2%	41.2%	41.2%	41.2%	
Maximum Green (s)	6.2	33.6		5.2	32.6		28.5	28.5	28.5	28.8	28.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	3.1		1.5	3.1		3.2	3.2	3.2	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	6.4		4.8	6.4			6.5	6.5	6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												

1: Industrial Drive/Sadler Drive & Ottawa Street
BG2034 - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min		None	None	None	None	None	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)		14.0			23.0		21.0	21.0	21.0	19.0	19.0	
Pedestrian Calls (#/hr)		5			5		5	5	5	5	5	
Act Effect Green (s)	28.4	27.1		25.2	21.9			14.0	14.0	14.2	14.2	
Actuated g/C Ratio	0.57	0.54		0.50	0.44			0.28	0.28	0.28	0.28	
v/c Ratio	0.26	0.34		0.06	0.34			0.31	0.09	0.22	0.30	
Control Delay (s/veh)	8.8	11.9		7.8	15.0			20.6	0.3	19.0	7.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay (s/veh)	8.8	11.9		7.8	15.0			20.6	0.3	19.0	7.4	
LOS	A	B		A	B			C	A	B	A	
Approach Delay (s/veh)		11.4			14.6			14.8			11.1	
Approach LOS		B			B			B			B	
Queue Length 50th (m)	5.2	13.7		1.0	17.6			7.6	0.0	5.3	1.9	
Queue Length 95th (m)	20.8	51.3		6.3	42.0			24.0	0.0	18.0	15.4	
Internal Link Dist (m)		187.7			80.2			127.0			47.6	
Turn Bay Length (m)	45.0			22.0					23.0			
Base Capacity (vph)	550	2339		486	2303			770	974	774	1023	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.26	0.26		0.06	0.22			0.14	0.04	0.10	0.16	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 50

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay (s/veh): 12.7

Intersection LOS: B

Intersection Capacity Utilization 72.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Industrial Drive/Sadler Drive & Ottawa Street

#1  Ø1	#1  Ø2	#1  Ø4
10 s	40 s	35 s
#1  Ø5	#1  Ø6	#1  Ø8
11 s	39 s	35 s

2: YIG Plaza Access/Existing Site Access & Ottawa Street
BG2034 - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	559	41	14	477	5	28	0	10	3	0	13
Future Volume (Veh/h)	21	559	41	14	477	5	28	0	10	3	0	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	21	559	41	14	477	5	28	0	10	3	0	13
Pedestrians								5			5	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		104										
pX, platoon unblocked				0.92			0.92	0.92	0.92	0.92	0.92	
vC, conflicting volume	487			605			906	1142	305	844	1160	246
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	487			399			726	982	73	659	1001	246
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			90	100	99	99	100	98
cM capacity (veh/h)	1067			1060			272	219	892	306	213	751
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	301	321	253	244	38	16						
Volume Left	21	0	14	0	28	3						
Volume Right	0	41	0	5	10	13						
cSH	1067	1700	1060	1700	333	590						
Volume to Capacity	0.02	0.19	0.01	0.14	0.11	0.03						
Queue Length 95th (m)	0.5	0.0	0.3	0.0	2.9	0.6						
Control Delay (s/veh)	0.8	0.0	0.6	0.0	17.2	11.3						
Lane LOS	A		A		C	B						
Approach Delay (s/veh)	0.4		0.3		17.2	11.3						
Approach LOS					C	B						
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			47.6%		ICU Level of Service		A					
Analysis Period (min)			15									

3: Harmony Court Plaza Access & Ottawa Street
BG2034 - AM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	549	11	3	487	7	2
Future Volume (Veh/h)	549	11	3	487	7	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	549	11	3	487	7	2
Pedestrians						5
Lane Width (m)						3.7
Walking Speed (m/s)						1.1
Percent Blockage						0
Right turn flare (veh)						
Median type	None		None			
Median storage veh)						
Upstream signal (m)	222					
pX, platoon unblocked						
vC, conflicting volume			565		809	285
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			565		809	285
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			998		316	709
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	366	194	165	325	9	
Volume Left	0	0	3	0	7	
Volume Right	0	11	0	0	2	
cSH	1700	1700	998	1700	360	
Volume to Capacity	0.22	0.11	0.00*	0.19	0.02	
Queue Length 95th (m)	0.0	0.0	0.1	0.0	0.6	
Control Delay (s/veh)	0.0	0.0	0.2	0.0	15.3	
Lane LOS			A	C		
Approach Delay (s/veh)	0.0		0.1		15.3	
Approach LOS						C
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			26.4%	ICU Level of Service	A	
Analysis Period (min)			15			

* Value less than 0.01.

4: Ottawa Street & Home Hardware Access
BG2034 - AM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	529	473	5	3	13
Future Volume (Veh/h)	17	529	473	5	3	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	17	529	473	5	3	13
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		239				
pX, platoon unblocked						
vC, conflicting volume	483				779	244
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	483				779	244
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	98
cM capacity (veh/h)	1071				326	753
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	193	353	315	163	16	
Volume Left	17	0	0	0	3	
Volume Right	0	0	0	5	13	
cSH	1071	1700	1700	1700	604	
Volume to Capacity	0.02	0.21	0.19	0.10	0.03	
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.6	
Control Delay (s/veh)	0.9	0.0	0.0	0.0	11.1	
Lane LOS	A				B	
Approach Delay (s/veh)	0.3		0.0		11.1	
Approach LOS					B	
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			38.4%		ICU Level of Service	A
Analysis Period (min)			15			

* Value less than 0.01.

1: Industrial Drive/Sadler Drive & Ottawa Street
BG2034 - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	608	103	69	830	44	193	53	39	72	50	124
Future Volume (vph)	131	608	103	69	830	44	193	53	39	72	50	124
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	22.0		0.0	0.0		23.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	55.0		7.6	55.0		7.6	7.6		34.0	7.6		7.6
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		0.99	1.00			0.99	0.98	0.99	0.98	
Frt		0.978			0.992				0.850		0.893	
Flt Protected	0.950			0.950				0.962		0.950		
Satd. Flow (prot)	1695	3296	0	1695	3357	0	0	1717	1517	1695	1569	0
Flt Permitted	0.206			0.353				0.661		0.570		
Satd. Flow (perm)	366	3296	0	626	3357	0	0	1172	1485	1011	1569	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			7				105		124	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.7			104.2			151.0			71.6	
Travel Time (s)		15.2			7.5			10.9			5.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour 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
Adj. Flow (vph)	131	608	103	69	830	44	193	53	39	72	50	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	131	711	0	69	874	0	0	246	39	72	174	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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	9.8	27.4		9.8	36.4		34.5	34.5	34.5	32.2	32.2	
Total Split (s)	11.4	40.0		10.0	38.6		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	13.4%	47.1%		11.8%	45.4%		41.2%	41.2%	41.2%	41.2%	41.2%	
Maximum Green (s)	6.6	33.6		5.2	32.2		28.5	28.5	28.5	28.8	28.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	3.1		1.5	3.1		3.2	3.2	3.2	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	6.4		4.8	6.4			6.5	6.5	6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												

1: Industrial Drive/Sadler Drive & Ottawa Street
BG2034 - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min		None	None	None	None	None	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)		14.0			23.0		21.0	21.0	21.0	19.0	19.0	
Pedestrian Calls (#/hr)		5			5		5	5	5	5	5	
Act Effect Green (s)	33.2	28.1		30.4	24.8			19.6	19.6	19.9	19.9	
Actuated g/C Ratio	0.50	0.42		0.46	0.37			0.29	0.29	0.30	0.30	
v/c Ratio	0.41	0.51		0.18	0.70			0.72	0.08	0.24	0.31	
Control Delay (s/veh)	13.0	16.8		10.2	22.5			36.0	0.3	22.1	9.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay (s/veh)	13.0	16.8		10.2	22.5			36.0	0.3	22.1	9.1	
LOS	B	B		B	C			D	A	C	A	
Approach Delay (s/veh)		16.2			21.6			31.1			12.9	
Approach LOS		B			C			C			B	
Queue Length 50th (m)	7.7	36.1		3.9	50.6			29.1	0.0	7.2	4.8	
Queue Length 95th (m)	19.2	61.0		11.3	82.4			59.3	0.0	18.5	19.2	
Internal Link Dist (m)		187.7			80.2			127.0			47.6	
Turn Bay Length (m)	45.0			22.0					23.0			
Base Capacity (vph)	324	1809		374	1757			541	743	472	799	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.40	0.39		0.18	0.50			0.45	0.05	0.15	0.22	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 66.8

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay (s/veh): 19.9

Intersection LOS: B

Intersection Capacity Utilization 84.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Industrial Drive/Sadler Drive & Ottawa Street

#1  Ø1	#1  Ø2	#1  Ø4
10 s	40 s	35 s
#1  Ø5	#1  Ø6	#1  Ø8
11.4 s	38.6 s	35 s

2: YIG Plaza Access/Existing Site Access & Ottawa Street
BG2034 - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	525	90	72	703	30	113	0	42	22	0	63
Future Volume (Veh/h)	52	525	90	72	703	30	113	0	42	22	0	63
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	52	525	90	72	703	30	113	0	42	22	0	63
Pedestrians								5			5	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		104										
pX, platoon unblocked				0.88			0.88	0.88	0.88	0.88	0.88	
vC, conflicting volume	738			620			1238	1561	313	1276	1591	372
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	738			288			992	1360	0	1035	1394	372
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			94			20	100	96	84	100	90
cM capacity (veh/h)	860			1110			142	112	947	140	107	623
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	315	353	424	382	155	85						
Volume Left	52	0	72	0	113	22						
Volume Right	0	90	0	30	42	63						
cSH	860	1700	1110	1700	184	329						
Volume to Capacity	0.06	0.21	0.06	0.22	0.84	0.26						
Queue Length 95th (m)	1.5	0.0	1.6	0.0	45.8	7.7						
Control Delay (s/veh)	2.1	0.0	2.0	0.0	82.3	19.7						
Lane LOS	A		A		F	C						
Approach Delay (s/veh)	1.0		1.1		82.3	19.7						
Approach LOS					F	C						
Intersection Summary												
Average Delay			9.3									
Intersection Capacity Utilization			69.7%		ICU Level of Service				C			
Analysis Period (min)			15									

3: Harmony Court Plaza Access & Ottawa Street
BG2034 - PM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	571	27	15	781	32	11
Future Volume (Veh/h)	571	27	15	781	32	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	571	27	15	781	32	11
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None		None			
Median storage veh)						
Upstream signal (m)	222					
pX, platoon unblocked						
vC, conflicting volume			603		1010	304
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			603		1010	304
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		86	98
cM capacity (veh/h)			966		231	689
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	381	217	275	521	43	
Volume Left	0	0	15	0	32	
Volume Right	0	27	0	0	11	
cSH	1700	1700	966	1700	279	
Volume to Capacity	0.22	0.13	0.02	0.31	0.15	
Queue Length 95th (m)	0.0	0.0	0.4	0.0	4.1	
Control Delay (s/veh)	0.0	0.0	0.6	0.0	20.3	
Lane LOS			A	C		
Approach Delay (s/veh)	0.0		0.2		20.3	
Approach LOS					C	
Intersection Summary						
Average Delay	0.7					
Intersection Capacity Utilization			44.1%	ICU Level of Service		A
Analysis Period (min)	15					

4: Ottawa Street & Home Hardware Access
BG2034 - PM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	556	763	11	9	28
Future Volume (Veh/h)	22	556	763	11	9	28
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	22	556	763	11	9	28
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		239				
pX, platoon unblocked						
vC, conflicting volume	779				1096	392
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	779				1096	392
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				96	95
cM capacity (veh/h)	830				201	604
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	207	371	509	265	37	
Volume Left	22	0	0	0	9	
Volume Right	0	0	0	11	28	
cSH	830	1700	1700	1700	406	
Volume to Capacity	0.03	0.22	0.30	0.16	0.09	
Queue Length 95th (m)	0.6	0.0	0.0	0.0	2.3	
Control Delay (s/veh)	1.3	0.0	0.0	0.0	14.7	
Lane LOS	A				B	
Approach Delay (s/veh)	0.5		0.0		14.7	
Approach LOS					B	
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			43.2%		ICU Level of Service	A
Analysis Period (min)			15			

Appendix G: Synchro Analysis Reports - Total Conditions

1: Industrial Drive/Sadler Drive & Ottawa Street
Total2029 - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	427	77	25	376	45	64	26	33	61	28	109
Future Volume (vph)	120	427	77	25	376	45	64	26	33	61	28	109
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	22.0		0.0	0.0		23.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	55.0		7.6	55.0		7.6	7.6		34.0	7.6		7.6
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.99	1.00			0.99	0.98	0.99	0.98	
Frt		0.977			0.984				0.850		0.881	
Flt Protected	0.950			0.950				0.966		0.950		
Satd. Flow (prot)	1695	3292	0	1695	3324	0	0	1724	1517	1695	1545	0
Flt Permitted	0.423			0.467				0.704		0.699		
Satd. Flow (perm)	749	3292	0	825	3324	0	0	1249	1485	1237	1545	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			17				105		109	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.7			104.2			151.0			71.6	
Travel Time (s)		15.2			7.5			10.9			5.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour 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
Adj. Flow (vph)	120	427	77	25	376	45	64	26	33	61	28	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	120	504	0	25	421	0	0	90	33	61	137	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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	9.8	27.4		9.8	36.4		34.5	34.5	34.5	32.2	32.2	
Total Split (s)	11.0	40.0		10.0	39.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	12.9%	47.1%		11.8%	45.9%		41.2%	41.2%	41.2%	41.2%	41.2%	
Maximum Green (s)	6.2	33.6		5.2	32.6		28.5	28.5	28.5	28.8	28.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	3.1		1.5	3.1		3.2	3.2	3.2	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	6.4		4.8	6.4			6.5	6.5	6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												

1: Industrial Drive/Sadler Drive & Ottawa Street

Total2029 - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min		None	None	None	None	None	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)		14.0			23.0		21.0	21.0	21.0	19.0	19.0	
Pedestrian Calls (#/hr)		5			5		5	5	5	5	5	
Act Effect Green (s)	28.8	28.3		24.7	20.9			13.2	13.2	13.4	13.4	
Actuated g/C Ratio	0.58	0.57		0.50	0.42			0.27	0.27	0.27	0.27	
v/c Ratio	0.21	0.27		0.05	0.30			0.27	0.07	0.18	0.28	
Control Delay (s/veh)	8.3	9.8		7.8	14.9			19.2	0.3	17.8	7.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay (s/veh)	8.3	9.8		7.8	14.9			19.2	0.3	17.8	7.7	
LOS	A	A		A	B			B	A	B	A	
Approach Delay (s/veh)		9.5			14.5			14.2			10.8	
Approach LOS		A			B			B			B	
Queue Length 50th (m)	4.3	10.6		0.8	14.5			5.9	0.0	3.9	1.7	
Queue Length 95th (m)	17.6	40.8		5.4	35.2			20.8	0.0	15.0	14.5	
Internal Link Dist (m)		187.7			80.2			127.0			47.6	
Turn Bay Length (m)	45.0			22.0					23.0			
Base Capacity (vph)	564	2412		510	2380			788	976	789	1025	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.21	0.21		0.05	0.18			0.11	0.03	0.08	0.13	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 49.7

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.30

Intersection Signal Delay (s/veh): 11.7

Intersection LOS: B

Intersection Capacity Utilization 68.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Industrial Drive/Sadler Drive & Ottawa Street

#1  Ø1	#1  Ø2	#1  Ø4
10 s	40 s	35 s
#1  Ø5	#1  Ø6	#1  Ø8
11 s	39 s	35 s

2: YIG Plaza Access/Existing Site Access & Ottawa Street
Total2029 - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	466	41	14	411	2	28	0	10	2	0	4
Future Volume (Veh/h)	5	466	41	14	411	2	28	0	10	2	0	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	5	466	41	14	411	2	28	0	10	2	0	4
Pedestrians								5			5	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		104										
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	418			512			739	948	259	698	967	212
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	418			391			629	848	126	586	869	212
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			92	100	99	99	100	99
cM capacity (veh/h)	1132			1105			339	276	856	362	268	790
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	238	274	220	208	38	6						
Volume Left	5	0	14	0	28	2						
Volume Right	0	41	0	2	10	4						
cSH	1132	1700	1105	1700	403	567						
Volume to Capacity	0.00*	0.16	0.01	0.12	0.09	0.01						
Queue Length 95th (m)	0.1	0.0	0.3	0.0	2.4	0.2						
Control Delay (s/veh)	0.2	0.0	0.6	0.0	14.9	11.4						
Lane LOS	A		A		B	B						
Approach Delay (s/veh)	0.1		0.3		14.9	11.4						
Approach LOS					B	B						
Intersection Summary												
Average Delay			0.8									
Intersection Capacity Utilization			34.0%		ICU Level of Service		A					
Analysis Period (min)			15									

* Value less than 0.01.

3: Ottawa Street & New East Site Access
Total2029 - AM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	475	414	4	14	20
Future Volume (Veh/h)	5	475	414	4	14	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	475	414	4	14	20
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		179				
pX, platoon unblocked						
vC, conflicting volume	423				669	214
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	423				669	214
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	97
cM capacity (veh/h)	1127				388	787
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	163	317	276	142	34	
Volume Left	5	0	0	0	14	
Volume Right	0	0	0	4	20	
cSH	1127	1700	1700	1700	553	
Volume to Capacity	0.00*	0.19	0.16	0.08	0.06	
Queue Length 95th (m)	0.1	0.0	0.0	0.0	1.5	
Control Delay (s/veh)	0.3	0.0	0.0	0.0	11.9	
Lane LOS	A				B	
Approach Delay (s/veh)	0.1		0.0		11.9	
Approach LOS					B	
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			27.6%		ICU Level of Service	A
Analysis Period (min)			15			
* Value less than 0.01.						

4: Harmony Court Plaza Access & Ottawa Street
Total2029 - AM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	467	11	3	404	7	2
Future Volume (Veh/h)	467	11	3	404	7	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	467	11	3	404	7	2
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None		None			
Median storage veh)						
Upstream signal (m)	222					
pX, platoon unblocked						
vC, conflicting volume			483	686		244
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			483	686		244
tC, single (s)			4.1	6.8		6.9
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			100	98		100
cM capacity (veh/h)			1071	379		753
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	311	167	138	269	9	
Volume Left	0	0	3	0	7	
Volume Right	0	11	0	0	2	
cSH	1700	1700	1071	1700	426	
Volume to Capacity	0.18	0.10	0.00*	0.16	0.02	
Queue Length 95th (m)	0.0	0.0	0.1	0.0	0.5	
Control Delay (s/veh)	0.0	0.0	0.2	0.0	13.6	
Lane LOS			A	B		
Approach Delay (s/veh)	0.0		0.1		13.6	
Approach LOS				B		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			24.0%	ICU Level of Service	A	
Analysis Period (min)			15			

* Value less than 0.01.

5: Ottawa Street & Home Hardware Access
Total2029 - AM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	455	396	4	4	10
Future Volume (Veh/h)	12	455	396	4	4	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	455	396	4	4	10
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		239				
pX, platoon unblocked						
vC, conflicting volume	405				655	205
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	405				655	205
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1145				393	798
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	164	303	264	136	14	
Volume Left	12	0	0	0	4	
Volume Right	0	0	0	4	10	
cSH	1145	1700	1700	1700	617	
Volume to Capacity	0.01	0.18	0.16	0.08	0.02	
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.5	
Control Delay (s/veh)	0.7	0.0	0.0	0.0	11.0	
Lane LOS	A				B	
Approach Delay (s/veh)	0.2		0.0		11.0	
Approach LOS					B	
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			32.4%		ICU Level of Service	A
Analysis Period (min)			15			
* Value less than 0.01.						

1: Industrial Drive/Sadler Drive & Ottawa Street
Total2029 - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	489	86	56	666	30	161	47	31	54	44	103
Future Volume (vph)	109	489	86	56	666	30	161	47	31	54	44	103
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	22.0		0.0	0.0		23.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	55.0		7.6	55.0		7.6	7.6		34.0	7.6		7.6
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		0.99	1.00			0.99	0.98	0.99	0.98	
Fr't		0.978			0.994				0.850		0.895	
Flt Protected	0.950			0.950				0.963		0.950		
Satd. Flow (prot)	1695	3296	0	1695	3365	0	0	1718	1517	1695	1573	0
Flt Permitted	0.285			0.436				0.680		0.628		
Satd. Flow (perm)	506	3296	0	771	3365	0	0	1206	1485	1113	1573	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			6				105		103	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.7			104.2			151.0			71.6	
Travel Time (s)		15.2			7.5			10.9			5.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour 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
Adj. Flow (vph)	109	489	86	56	666	30	161	47	31	54	44	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	575	0	56	696	0	0	208	31	54	147	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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	9.8	27.4		9.8	36.4		34.5	34.5	34.5	32.2	32.2	
Total Split (s)	11.4	40.0		10.0	38.6		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	13.4%	47.1%		11.8%	45.4%		41.2%	41.2%	41.2%	41.2%	41.2%	
Maximum Green (s)	6.6	33.6		5.2	32.2		28.5	28.5	28.5	28.8	28.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	3.1		1.5	3.1		3.2	3.2	3.2	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	6.4		4.8	6.4			6.5	6.5	6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												

1: Industrial Drive/Sadler Drive & Ottawa Street

Total2029 - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min		None	None	None	None	None	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)		14.0			23.0		21.0	21.0	21.0	19.0	19.0	
Pedestrian Calls (#/hr)		5			5		5	5	5	5	5	
Act Effect Green (s)	27.4	22.2		24.5	18.9			16.8	16.8	17.1	17.1	
Actuated g/C Ratio	0.47	0.38		0.42	0.32			0.29	0.29	0.29	0.29	
v/c Ratio	0.29	0.45		0.14	0.64			0.60	0.06	0.17	0.28	
Control Delay (s/veh)	10.3	15.5		9.2	20.6			28.3	0.2	19.1	8.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay (s/veh)	10.3	15.5		9.2	20.6			28.3	0.2	19.1	8.8	
LOS	B	B		A	C			C	A	B	A	
Approach Delay (s/veh)		14.6			19.7			24.7			11.6	
Approach LOS		B			B			C			B	
Queue Length 50th (m)	5.2	24.0		2.6	33.3			20.2	0.0	4.5	3.6	
Queue Length 95th (m)	16.3	47.2		9.5	62.3			46.9	0.0	14.0	16.9	
Internal Link Dist (m)		187.7			80.2			127.0			47.6	
Turn Bay Length (m)	45.0			22.0					23.0			
Base Capacity (vph)	384	2078		414	2039			645	844	602	898	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.28	0.28		0.14	0.34			0.32	0.04	0.09	0.16	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 58.3

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay (s/veh): 17.6

Intersection LOS: B

Intersection Capacity Utilization 76.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Industrial Drive/Sadler Drive & Ottawa Street

#1  Ø1	#1  Ø2	#1  Ø4
10 s	40 s	35 s
#1  Ø5	#1  Ø6	#1  Ø8
11.4 s	38.6 s	35 s

2: YIG Plaza Access/Existing Site Access & Ottawa Street
Total2029 - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	452	90	72	600	9	113	0	42	7	0	16
Future Volume (Veh/h)	12	452	90	72	600	9	113	0	42	7	0	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	12	452	90	72	600	9	113	0	42	7	0	16
Pedestrians								5			5	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		104										
pX, platoon unblocked				0.91			0.91	0.91	0.91	0.91	0.91	
vC, conflicting volume	614			547			986	1284	276	1046	1325	310
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	614			301			784	1112	2	849	1156	310
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			52	100	96	97	100	98
cM capacity (veh/h)	957			1137			234	173	977	206	163	683
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	238	316	372	309	155	23						
Volume Left	12	0	72	0	113	7						
Volume Right	0	90	0	9	42	16						
cSH	957	1700	1137	1700	295	401						
Volume to Capacity	0.01	0.19	0.06	0.18	0.52	0.06						
Queue Length 95th (m)	0.3	0.0	1.5	0.0	21.7	1.4						
Control Delay (s/veh)	0.6	0.0	2.1	0.0	29.9	14.5						
Lane LOS	A		A		D	B						
Approach Delay (s/veh)	0.2		1.2		29.9	14.5						
Approach LOS					D	B						
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization			62.7%		ICU Level of Service		B					
Analysis Period (min)			15									

3: Ottawa Street & New East Site Access
Total2029 - PM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	496	687	12	7	10
Future Volume (Veh/h)	14	496	687	12	7	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	496	687	12	7	10
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		179				
pX, platoon unblocked						
vC, conflicting volume	704				974	355
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	704				974	355
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				97	98
cM capacity (veh/h)	885				244	639
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	179	331	458	241	17	
Volume Left	14	0	0	0	7	
Volume Right	0	0	0	12	10	
cSH	885	1700	1700	1700	384	
Volume to Capacity	0.02	0.19	0.27	0.14	0.04	
Queue Length 95th (m)	0.4	0.0	0.0	0.0	1.1	
Control Delay (s/veh)	0.9	0.0	0.0	0.0	14.8	
Lane LOS	A				B	
Approach Delay (s/veh)	0.3		0.0		14.8	
Approach LOS					B	
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			35.1%		ICU Level of Service	A
Analysis Period (min)			15			

4: Harmony Court Plaza Access & Ottawa Street
Total2029 - PM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	469	27	15	647	32	11
Future Volume (Veh/h)	469	27	15	647	32	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	469	27	15	647	32	11
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)	222					
pX, platoon unblocked						
vC, conflicting volume			501		841	253
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			501		841	253
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		89	99
cM capacity (veh/h)			1055		298	743
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	313	183	231	431	43	
Volume Left	0	0	15	0	32	
Volume Right	0	27	0	0	11	
cSH	1700	1700	1055	1700	352	
Volume to Capacity	0.18	0.11	0.01	0.25	0.12	
Queue Length 95th (m)	0.0	0.0	0.3	0.0	3.1	
Control Delay (s/veh)	0.0	0.0	0.7	0.0	16.7	
Lane LOS			A		C	
Approach Delay (s/veh)	0.0		0.2		16.7	
Approach LOS					C	
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			40.2%	ICU Level of Service	A	
Analysis Period (min)			15			

5: Ottawa Street & Home Hardware Access
Total2029 - PM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	466	644	10	7	17
Future Volume (Veh/h)	12	466	644	10	7	17
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	466	644	10	7	17
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		239				
pX, platoon unblocked						
vC, conflicting volume	659				911	332
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	659				911	332
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	97
cM capacity (veh/h)	921				269	661
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	167	311	429	225	24	
Volume Left	12	0	0	0	7	
Volume Right	0	0	0	10	17	
cSH	921	1700	1700	1700	464	
Volume to Capacity	0.01	0.18	0.25	0.13	0.05	
Queue Length 95th (m)	0.3	0.0	0.0	0.0	1.2	
Control Delay (s/veh)	0.8	0.0	0.0	0.0	13.2	
Lane LOS	A				B	
Approach Delay (s/veh)	0.3		0.0		13.2	
Approach LOS					B	
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			32.7%		ICU Level of Service	A
Analysis Period (min)			15			

1: Industrial Drive/Sadler Drive & Ottawa Street
Total2034 - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	514	92	30	449	54	76	31	40	73	33	131
Future Volume (vph)	144	514	92	30	449	54	76	31	40	73	33	131
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	22.0		0.0	0.0		23.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	55.0		7.6	55.0		7.6	7.6		34.0	7.6		7.6
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.99	1.00			0.99	0.98	0.99	0.98	
Frt		0.977			0.984				0.850		0.880	
Flt Protected	0.950			0.950				0.966		0.950		
Satd. Flow (prot)	1695	3292	0	1695	3324	0	0	1724	1517	1695	1543	0
Flt Permitted	0.408			0.423				0.689		0.688		
Satd. Flow (perm)	723	3292	0	749	3324	0	0	1223	1485	1218	1543	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			18				105		131	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.7			104.2			151.0			71.6	
Travel Time (s)		15.2			7.5			10.9			5.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour 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
Adj. Flow (vph)	144	514	92	30	449	54	76	31	40	73	33	131
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	606	0	30	503	0	0	107	40	73	164	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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	9.8	27.4		9.8	36.4		34.5	34.5	34.5	32.2	32.2	
Total Split (s)	11.0	40.0		10.0	39.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	12.9%	47.1%		11.8%	45.9%		41.2%	41.2%	41.2%	41.2%	41.2%	
Maximum Green (s)	6.2	33.6		5.2	32.6		28.5	28.5	28.5	28.8	28.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	3.1		1.5	3.1		3.2	3.2	3.2	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	6.4		4.8	6.4			6.5	6.5	6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												

1: Industrial Drive/Sadler Drive & Ottawa Street

Total2034 - AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min		None	None	None	None	None	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)		14.0			23.0		21.0	21.0	21.0	19.0	19.0	
Pedestrian Calls (#/hr)		5			5		5	5	5	5	5	
Act Effect Green (s)	28.3	27.0		25.1	21.9			14.0	14.0	14.2	14.2	
Actuated g/C Ratio	0.57	0.54		0.50	0.44			0.28	0.28	0.28	0.28	
v/c Ratio	0.26	0.34		0.06	0.34			0.31	0.08	0.21	0.31	
Control Delay (s/veh)	8.8	11.9		7.8	15.1			20.6	0.3	18.8	7.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay (s/veh)	8.8	11.9		7.8	15.1			20.6	0.3	18.8	7.6	
LOS	A	B		A	B			C	A	B	A	
Approach Delay (s/veh)		11.3			14.7			15.1			11.1	
Approach LOS		B			B			B			B	
Queue Length 50th (m)	5.2	13.4		1.0	17.9			7.7	0.0	5.1	2.2	
Queue Length 95th (m)	20.8	50.3		6.1	42.4			24.3	0.0	17.3	16.1	
Internal Link Dist (m)		187.7			80.2			127.0			47.6	
Turn Bay Length (m)	45.0			22.0					23.0			
Base Capacity (vph)	548	2336		490	2305			770	974	773	1027	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.26	0.26		0.06	0.22			0.14	0.04	0.09	0.16	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 49.9

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay (s/veh): 12.7

Intersection LOS: B

Intersection Capacity Utilization 72.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Industrial Drive/Sadler Drive & Ottawa Street

#1  Ø1	#1  Ø2	#1  Ø4
10 s	40 s	35 s
#1  Ø5	#1  Ø6	#1  Ø8
11 s	39 s	35 s

2: YIG Plaza Access/Existing Site Access & Ottawa Street
Total2034 - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	559	41	14	490	2	28	0	10	2	0	4
Future Volume (Veh/h)	5	559	41	14	490	2	28	0	10	2	0	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	5	559	41	14	490	2	28	0	10	2	0	4
Pedestrians								5			5	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		104										
pX, platoon unblocked				0.92			0.92	0.92	0.92	0.92	0.92	
vC, conflicting volume	497			605			872	1120	305	824	1139	251
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	497			410			698	966	85	646	987	251
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			90	100	99	99	100	99
cM capacity (veh/h)	1058			1054			293	228	881	318	221	745
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	285	321	259	247	38	6						
Volume Left	5	0	14	0	28	2						
Volume Right	0	41	0	2	10	4						
cSH	1058	1700	1054	1700	356	514						
Volume to Capacity	0.00*	0.19	0.01	0.15	0.11	0.01						
Queue Length 95th (m)	0.1	0.0	0.3	0.0	2.7	0.3						
Control Delay (s/veh)	0.2	0.0	0.6	0.0	16.3	12.1						
Lane LOS	A		A		C	B						
Approach Delay (s/veh)	0.1		0.3		16.3	12.1						
Approach LOS					C	B						
Intersection Summary												
Average Delay			0.8									
Intersection Capacity Utilization			36.3%		ICU Level of Service		A					
Analysis Period (min)			15									

* Value less than 0.01.

3: Ottawa Street & New East Site Access
Total2034 - AM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	571	497	4	14	20
Future Volume (Veh/h)	5	571	497	4	14	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	571	497	4	14	20
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		179				
pX, platoon unblocked					0.99	
vC, conflicting volume	506				800	256
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	506				778	256
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	97
cM capacity (veh/h)	1050				327	740
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	195	381	331	170	34	
Volume Left	5	0	0	0	14	
Volume Right	0	0	0	4	20	
cSH	1050	1700	1700	1700	487	
Volume to Capacity	0.00*	0.22	0.19	0.10	0.07	
Queue Length 95th (m)	0.1	0.0	0.0	0.0	1.7	
Control Delay (s/veh)	0.3	0.0	0.0	0.0	13.0	
Lane LOS	A				B	
Approach Delay (s/veh)	0.1		0.0		13.0	
Approach LOS					B	
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			30.4%		ICU Level of Service	A
Analysis Period (min)			15			
* Value less than 0.01.						

4: Harmony Court Plaza Access & Ottawa Street
Total2034 - AM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	557	11	3	485	7	2
Future Volume (Veh/h)	557	11	3	485	7	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	557	11	3	485	7	2
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None		None			
Median storage veh)						
Upstream signal (m)	222					
pX, platoon unblocked						
vC, conflicting volume			573		816	289
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			573		816	289
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			991		313	704
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	371	197	165	323	9	
Volume Left	0	0	3	0	7	
Volume Right	0	11	0	0	2	
cSH	1700	1700	991	1700	357	
Volume to Capacity	0.22	0.12	0.00*	0.19	0.03	
Queue Length 95th (m)	0.0	0.0	0.1	0.0	0.6	
Control Delay (s/veh)	0.0	0.0	0.2	0.0	15.4	
Lane LOS			A	C		
Approach Delay (s/veh)	0.0		0.1		15.4	
Approach LOS					C	
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			26.6%	ICU Level of Service	A	
Analysis Period (min)			15			

* Value less than 0.01.

5: Ottawa Street & Home Hardware Access
Total2034 - AM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	542	474	4	4	10
Future Volume (Veh/h)	12	542	474	4	4	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	542	474	4	4	10
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		239				
pX, platoon unblocked						
vC, conflicting volume	483				776	244
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	483				776	244
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1071				329	753
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	193	361	316	162	14	
Volume Left	12	0	0	0	4	
Volume Right	0	0	0	4	10	
cSH	1071	1700	1700	1700	550	
Volume to Capacity	0.01	0.21	0.19	0.10	0.03	
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.6	
Control Delay (s/veh)	0.6	0.0	0.0	0.0	11.7	
Lane LOS	A				B	
Approach Delay (s/veh)	0.2		0.0		11.7	
Approach LOS					B	
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			34.9%		ICU Level of Service	A
Analysis Period (min)			15			
* Value less than 0.01.						

1: Industrial Drive/Sadler Drive & Ottawa Street
Total2034 - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	590	103	67	804	38	193	56	37	66	52	124
Future Volume (vph)	131	590	103	67	804	38	193	56	37	66	52	124
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	45.0		0.0	22.0		0.0	0.0		23.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (m)	55.0		7.6	55.0		7.6	7.6		34.0	7.6		7.6
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		0.99	1.00			0.99	0.98	0.99	0.98	
Fr't		0.978			0.993				0.850		0.894	
Flt Protected	0.950			0.950				0.963		0.950		
Satd. Flow (prot)	1695	3296	0	1695	3361	0	0	1718	1517	1695	1571	0
Flt Permitted	0.218			0.364				0.663		0.569		
Satd. Flow (perm)	388	3296	0	645	3361	0	0	1176	1485	1009	1571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			6				105		124	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.7			104.2			151.0			71.6	
Travel Time (s)		15.2			7.5			10.9			5.2	
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour 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
Adj. Flow (vph)	131	590	103	67	804	38	193	56	37	66	52	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	131	693	0	67	842	0	0	249	37	66	176	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)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	9.8	27.4		9.8	36.4		34.5	34.5	34.5	32.2	32.2	
Total Split (s)	11.4	40.0		10.0	38.6		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	13.4%	47.1%		11.8%	45.4%		41.2%	41.2%	41.2%	41.2%	41.2%	
Maximum Green (s)	6.6	33.6		5.2	32.2		28.5	28.5	28.5	28.8	28.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.5	3.1		1.5	3.1		3.2	3.2	3.2	2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	6.4		4.8	6.4			6.5	6.5	6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												

1: Industrial Drive/Sadler Drive & Ottawa Street

Total2034 - PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min		None	Min		None	None	None	None	None	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)		14.0			23.0		21.0	21.0	21.0	19.0	19.0	
Pedestrian Calls (#/hr)		5			5		5	5	5	5	5	
Act Effect Green (s)	32.6	27.5		29.8	24.2			19.5	19.5	19.8	19.8	
Actuated g/C Ratio	0.49	0.42		0.45	0.37			0.30	0.30	0.30	0.30	
v/c Ratio	0.40	0.50		0.18	0.68			0.72	0.07	0.22	0.32	
Control Delay (s/veh)	12.7	16.7		10.1	22.2			35.8	0.3	21.6	9.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay (s/veh)	12.7	16.7		10.1	22.2			35.8	0.3	21.6	9.1	
LOS	B	B		B	C			D	A	C	A	
Approach Delay (s/veh)		16.1			21.3			31.2			12.5	
Approach LOS		B			C			C			B	
Queue Length 50th (m)	7.7	34.6		3.8	47.9			28.9	0.0	6.4	4.9	
Queue Length 95th (m)	19.2	59.2		11.1	78.9			59.9	0.0	17.3	19.4	
Internal Link Dist (m)		187.7			80.2			127.0			47.6	
Turn Bay Length (m)	45.0			22.0					23.0			
Base Capacity (vph)	332	1830		380	1779			550	750	477	808	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.39	0.38		0.18	0.47			0.45	0.05	0.14	0.22	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 66.1

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay (s/veh): 19.7

Intersection LOS: B

Intersection Capacity Utilization 83.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Industrial Drive/Sadler Drive & Ottawa Street

#1  Ø1	#1  Ø2	#1  Ø4
10 s	40 s	35 s
#1  Ø5	#1  Ø6	#1  Ø8
11.4 s	38.6 s	35 s

2: YIG Plaza Access/Existing Site Access & Ottawa Street
Total2034 - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	539	90	72	716	9	113	0	42	7	0	16
Future Volume (Veh/h)	12	539	90	72	716	9	113	0	42	7	0	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	12	539	90	72	716	9	113	0	42	7	0	16
Pedestrians								5			5	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.1			1.1	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		104										
pX, platoon unblocked				0.88			0.88	0.88	0.88	0.88	0.88	
vC, conflicting volume	730			634			1131	1487	320	1205	1528	368
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	730			321			884	1287	0	967	1333	368
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			93			41	100	96	96	100	97
cM capacity (veh/h)	866			1086			192	131	953	163	123	627
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	282	360	430	367	155	23						
Volume Left	12	0	72	0	113	7						
Volume Right	0	90	0	9	42	16						
cSH	866	1700	1086	1700	245	336						
Volume to Capacity	0.01	0.21	0.07	0.22	0.63	0.07						
Queue Length 95th (m)	0.3	0.0	1.6	0.0	29.3	1.7						
Control Delay (s/veh)	0.5	0.0	2.0	0.0	42.1	16.5						
Lane LOS	A		A		E	C						
Approach Delay (s/veh)	0.2		1.1		42.1	16.5						
Approach LOS					E	C						
Intersection Summary												
Average Delay			4.9									
Intersection Capacity Utilization			68.6%		ICU Level of Service		C					
Analysis Period (min)			15									

3: Ottawa Street & New East Site Access
Total2034 - PM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	597	826	12	7	10
Future Volume (Veh/h)	14	597	826	12	7	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	597	826	12	7	10
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		179				
pX, platoon unblocked					0.98	
vC, conflicting volume	843				1164	424
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	843				1129	424
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				96	98
cM capacity (veh/h)	785				190	576
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	213	398	551	287	17	
Volume Left	14	0	0	0	7	
Volume Right	0	0	0	12	10	
cSH	785	1700	1700	1700	313	
Volume to Capacity	0.02	0.23	0.32	0.17	0.05	
Queue Length 95th (m)	0.4	0.0	0.0	0.0	1.3	
Control Delay (s/veh)	0.8	0.0	0.0	0.0	17.1	
Lane LOS	A				C	
Approach Delay (s/veh)	0.3		0.0		17.1	
Approach LOS					C	
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			38.0%		ICU Level of Service	A
Analysis Period (min)			15			

4: Harmony Court Plaza Access & Ottawa Street
Total2034 - PM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	563	27	15	777	32	11
Future Volume (Veh/h)	563	27	15	777	32	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	563	27	15	777	32	11
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)	222					
pX, platoon unblocked						
vC, conflicting volume			595		1000	300
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			595		1000	300
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		86	98
cM capacity (veh/h)			973		235	693
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	375	215	274	518	43	
Volume Left	0	0	15	0	32	
Volume Right	0	27	0	0	11	
cSH	1700	1700	973	1700	283	
Volume to Capacity	0.22	0.13	0.02	0.30	0.15	
Queue Length 95th (m)	0.0	0.0	0.4	0.0	4.0	
Control Delay (s/veh)	0.0	0.0	0.6	0.0	20.0	
Lane LOS			A	C		
Approach Delay (s/veh)	0.0		0.2		20.0	
Approach LOS						C
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			43.9%	ICU Level of Service	A	
Analysis Period (min)			15			

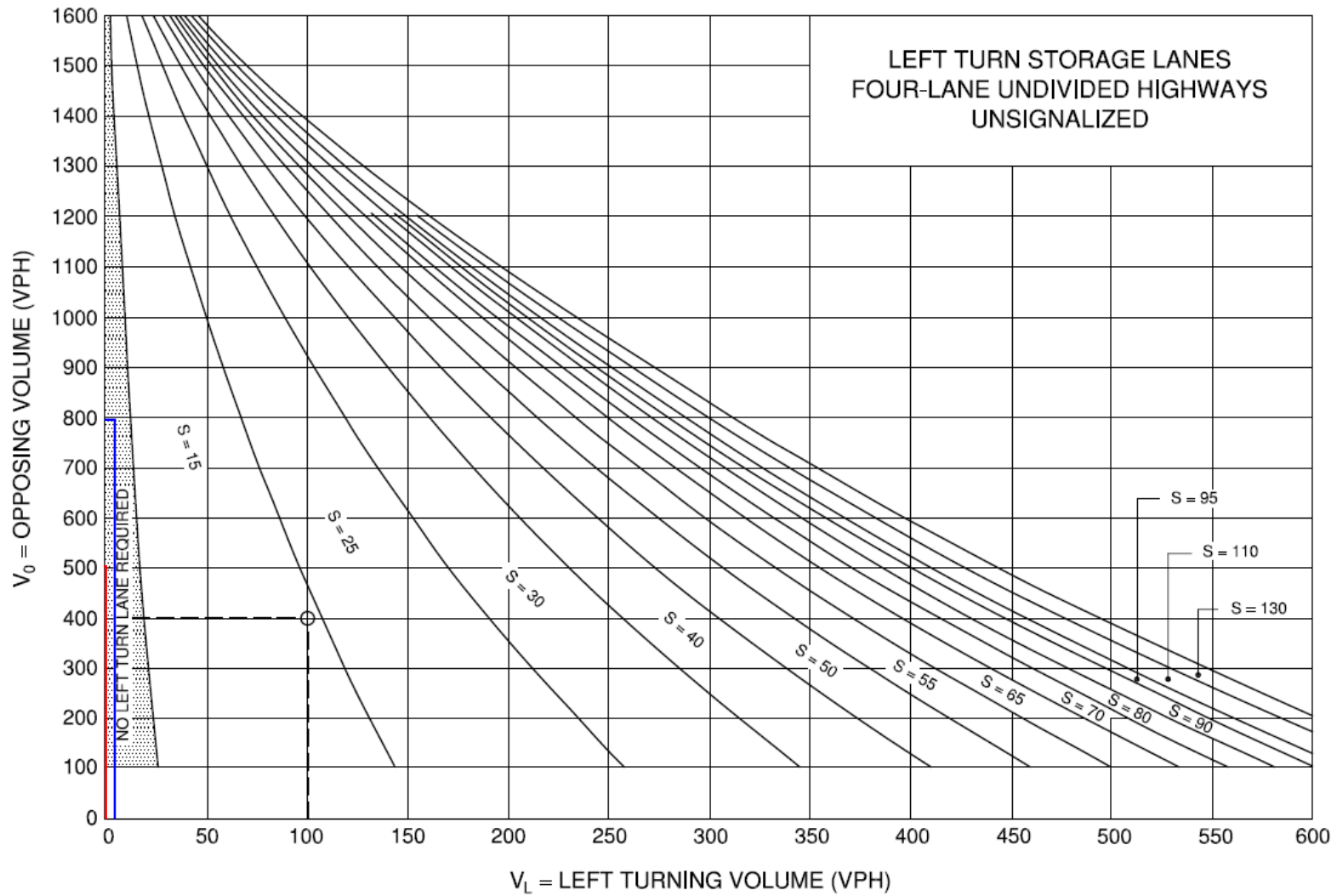
5: Ottawa Street & Home Hardware Access
Total2034 - PM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	558	770	10	7	17
Future Volume (Veh/h)	12	558	770	10	7	17
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	558	770	10	7	17
Pedestrians					5	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		239				
pX, platoon unblocked						
vC, conflicting volume	785				1083	395
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	785				1083	395
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	97
cM capacity (veh/h)	826				208	601
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	198	372	513	267	24	
Volume Left	12	0	0	0	7	
Volume Right	0	0	0	10	17	
cSH	826	1700	1700	1700	387	
Volume to Capacity	0.01	0.22	0.30	0.16	0.06	
Queue Length 95th (m)	0.3	0.0	0.0	0.0	1.5	
Control Delay (s/veh)	0.7	0.0	0.0	0.0	14.9	
Lane LOS	A				B	
Approach Delay (s/veh)	0.2		0.0		14.9	
Approach LOS					B	
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			35.3%		ICU Level of Service	A
Analysis Period (min)			15			

Appendix H: MTO Left Turn Lane Warrants

2034 Total Traffic Conditions
Intersection: Ottawa Street/Existing Site Access/YIG Plaza

Exhibit-9A-31



AM Peak Hour	PM Peak Hour
$V_L = 5$ vehicles	$V_L = 12$ vehicles
$V_0 = 505$ vehicles	$V_0 = 794$ vehicles

2034 Total Traffic Conditions
Intersection: Ottawa Street/New East Site Access

Exhibit-9A-31

