



Engineers, Planners & Landscape Architects

Engineering

- Land/Site Development
- Municipal Infrastructure
- Environmental/Water Resources
- Traffic/Transportation
- Recreational

Planning

- Land/Site Development
- Planning Application Management
- Municipal Planning
- Urban Design
- Expert Witness (OLT)
- Wireless Industry

Landscape Architecture

- Streetscapes & Public Amenities
- Open Space, Parks & Recreation
- Community & Residential
- Commercial & Institutional
- Environmental Restoration

39 & 53 Carss Street, Town of Almonte

Traffic Impact Study

Prepared for: 2607129 Ontario Inc.

Engineering excellence.

Planning progress.

Liveable landscapes.

**39 AND 53 CARSS STREET
ALMONTE, ONTARIO
TRAFFIC IMPACT STUDY**

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

August 2025

Novatech File: 119186
Ref: R-2025-038

August 28, 2025

Melanie Knight, MCIP RPP, Acting Director
Municipality of Mississippi Mills
Development Services and Engineering
3131 Old Perth Rd, Box 400
Almonte ON, K0A 1A0

Reference: 39 and 53 Carss Street
Traffic Impact Study
Novatech File No. 119186

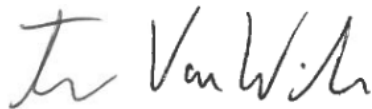
This Traffic Impact Study has been prepared in support of the proposed Official Plan and Zoning By-law Amendments at 39 and 53 Carss Street. The development is located on the southwest corner of the Carss Street/Union Street intersection.

This study determines the traffic impacts of the development. It estimates site generated traffic, and reviews intersection operations and turn lane warrants at the proposed site accesses to Carss Street and Union Street.

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

Yours truly,

NOVATECH



Trevor Van Wiechen, P.Eng.
Project Engineer | Transportation

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	Proposed Development	2
1.2	Analysis Parameters	2
1.3	Analysis Methods.....	2
2.0	EXISTING CONDITIONS	3
2.1	Roadways.....	3
2.2	Intersections	3
2.3	Pedestrian and Cycling Facilities	4
2.4	Transit.....	4
2.5	Existing Traffic Volumes.....	4
3.0	PLANNED CONDITIONS.....	4
4.0	SITE TRAFFIC	5
4.1	Trip Generation – Site A.....	5
4.1.1	Scenario One – Site A	6
4.1.2	Scenario Two – Site A	6
4.1.3	Scenario Three – Site A.....	7
4.2	Trip Generation – Site B.....	7
4.3	Trip Distribution.....	8
4.4	Trip Assignment.....	8
5.0	BACKGROUND TRAFFIC CONDITIONS.....	9
5.1	Historic Growth	9
5.2	Other Area Developments.....	9
6.0	INTERSECTION OPERATING CONDITIONS.....	13
6.1	Existing Traffic Operations	13
6.2	Background Traffic Operations	14
6.3	Total Traffic Operations	14
7.0	ON-SITE DESIGN	16
7.1	Site Access.....	16
7.2	Circulation.....	16
7.3	Parking	17
8.0	CONCLUSIONS AND RECOMMENDATIONS	17

Figures

Figure 1: View of the Subject Site	1
Figure 2: Existing Traffic Volumes.....	5
Figure 3: Site Generated Trips – Scenario 1	8
Figure 4: Site Generated Trips – Scenario 2	9
Figure 5: Site Generated Trips – Scenario 3	9
Figure 6: 2027 Background Traffic Volumes	10
Figure 7: 2032 Background Traffic Volumes	10
Figure 8: 2027 Total Traffic – Scenario 1	11
Figure 9: 2027 Total Traffic – Scenario 2	11
Figure 10: 2027 Total Traffic – Scenario 3	12
Figure 11: 2032 Total Traffic – Scenario 1	12
Figure 12: 2032 Total Traffic – Scenario 2	13
Figure 13: 2032 Total Traffic – Scenario 3	13

Tables

Table 1: Traffic Count Summary	4
Table 2: Trip Generation – Site A.....	6
Table 3: Trip Generation – Site B.....	7
Table 4: Trip Assignment Summary	8
Table 5: Analysis Results - Existing Traffic Conditions	14
Table 6: Analysis Results - Background Traffic Conditions.....	14
Table 7: Analysis Results - Total Traffic Conditions – Scenario 1.....	14
Table 8: Analysis Results - Total Traffic Conditions – Scenario 2.....	15
Table 9: Analysis Results - Total Traffic Conditions – Scenario 3.....	15
Table 10: Parking Requirements.....	17

Appendices

Appendix A: Proposed Concept Plan	
Appendix B: Traffic Count Data	
Appendix C: Synchro Reports	
Appendix D: Left Turn Lane Graphs	

EXECUTIVE SUMMARY

This Traffic Impact Study (TIS) has been prepared in support of the proposed Official Plan and Zoning By-law Amendments at 39 and 53 Carss Street, located on the southwest corner of the Carss Street/Union Street intersection.

The subject site includes the properties of 39 Carss Street and 53 Carss Street which will be developed independently and will operate independent of each other. The 39 Carss Street property contains the Pinehurst Manor, while the 53 Carss Street property is currently vacant. The property has a 'Residential' Land Use from the Municipality of Mississippi Mills Official Plan (OP) and is zoned as 'Development' area in the Zoning By-law (ZBL). From the Lanark County OP the property has a 'Settlement Area' Land Use.

The conceptual development will be developed in two phases (Site A and Site B). The conceptual development is summarized below:

Site A

- 27 individual cabins
- Bed and Breakfast (8 guest rooms)
- Spa with Boutique Spa Hotel (12 guest rooms)
- Banquet Hotel (7 guest rooms)
- Hotel (8 guest rooms)
- Restaurant with 3,605ft² of Gross Floor Area (GFA)
- 184 parking spaces
- One access to Carss Street and one access to Union Street

Site B

- 45 units of senior apartment units
- 63 parking spaces
- Two accesses to Carss Street

For the purposes of this report, the development is anticipated to be constructed in phases with full buildout occurring in 2027.

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

Forecasting

- Scenario One studies the impacts that typical day-to-day operations would have on the study area. Day-to-day uses include trips associated with the planned hotel, restaurant, and spa uses. This scenario assumes site generated traffic arriving and leaving during the AM and PM peak hours and that there will be some internal capture between the three different land uses. Under Scenario One, the development is expected to generate 30 vehicle trips (20 in and 10 out) during the AM peak hour and 60 vehicle trips (34 in and 26 out) during the PM peak hour.
- Scenario Two studies the impacts that a wedding or similar event would have on the study area. Assuming an average vehicle capacity of two persons per car, a wedding with 100 guests arriving during the PM peak hour would generate roughly 50 inbound vehicle trips.

- Scenario Three studies the impacts that a corporate retreat, banquet, or similar type event would have on the study area. During this scenario it is assumed that vehicles would arrive during a discrete time period prior to the start time of the event and would leave the site during a discrete time period upon the conclusion of the event. Assuming an average vehicle capacity of two persons per car, a corporate event with 100 guests would generate roughly 50 trips arriving during the AM peak hour and leaving during the PM peak hour.
- Site B includes a four-storey senior apartment building with 45 dwelling units. The subject site is expected to generate 9 vehicle trips (3 in and 6 out) during the AM peak hour and 11 vehicle trips (6 in and 5 out) during the PM peak hour. Trips from Site B have been applied to all Site A scenarios that have been identified.

Total Traffic Operations

- All movements at all study area intersections are expected to operate with acceptable LOS during all scenarios during the 2027 and 2032 total traffic scenarios. Site generated traffic is not anticipated to have a significant impact on the operating conditions within the study area.
- A left turn lane warrant analysis was conducted to confirm if a northbound left turn lane would be required at the Martin Street/Carss Street intersection under 2032 total traffic conditions from all three scenarios. Based on a design speed of 70km/hr, the left turn lane warrants indicated that a northbound left turn lane at the Martin Street/Carss Street intersection would not be required.
- The total traffic volumes on all roadways within the study area are expected to be within the optimal thresholds for a local road identified in the 2024 MMTMP.

Development Design

- As the proposed Union Street access meets Union Street at a perpendicular angle and no sightline obstruction have been identified based on a desktop review, available sightlines are within recommended guidelines to allow safe all directional access to the development.
- As the proposed and existing Carss Street accesses meets Carss Street at a perpendicular angle and no sightline obstruction have been identified based on a desktop review, available sightlines are within recommended guidelines to allow safe all directional access to the development.
- As the proposed driveways to Carss Street are not expected to handle a significant amount of traffic and are spaced 10m away this is assumed to be sufficient.
- The proposed Union Street access to Site A intersects with the Ottawa Valley Rec Trail, approximately 15-20m west of Union Street. To ensure pedestrian and cyclist safety stop signs and street lighting along the access are recommended on both sides of the Ottawa Valley Rec Trail.
- All streets within the site have a proposed platform width of 6.0m. Pathways will be provided throughout the site connecting the various uses. Lay-by's will be provided in front of the restaurant and spa uses.
- Fire route access is provided throughout the proposed development.

Parking

- The proposed development includes 184 vehicle parking spaces for the non-residential uses and 63 vehicle parking spaces for the future seniors apartments meeting the ZBL requirements.

1.0 INTRODUCTION

This Traffic Impact Study (TIS) has been prepared in support of the proposed Official Plan and Zoning By-law Amendments at 39 and 53 Carss Street, located on the southwest corner of the Carss Street/Union Street intersection.

An aerial view of the subject site is provided in **Figure 1**.

Figure 1: View of the Subject Site



The subject site includes the properties of 39 Carss Street and 53 Carss Street which will be developed independently and will operate independent of each other. The 39 Carss Street property contains the Pinehurst Manor, while the 53 Carss Street property is currently vacant. The property has a 'Residential' Land Use from the Municipality of Mississippi Mills Official Plan (OP) and is zoned as 'Development' area in the Zoning By-law (ZBL). From the Lanark County OP the property has a 'Settlement Area' Land Use.

1.1 Proposed Development

The conceptual development will be developed in two phases (Site A and Site B). The conceptual development is summarized below:

Site A

- 27 individual cabins
- Bed and Breakfast (8 guest rooms)
- Spa with Boutique Spa Hotel (12 guest rooms)
- Banquet Hotel (7 guest rooms)
- Hotel (8 guest rooms)
- Restaurant with 3,605ft² of Gross Floor Area (GFA)
- 184 parking spaces
- One access to Carss Street and one access to Union Street

Site B

- 45 units of senior apartment units
- 63 parking spaces
- Two accesses to Carss Street

For the purposes of this report, the development is anticipated to be constructed in phases with full buildout occurring in 2027.

A copy of the Concept Plan is included in **Appendix A**.

1.2 Analysis Parameters

The study area was discussed with Municipality of Mississippi Mill's staff and will include an analysis of the future accesses to Carss Street and Union Street, the Union Street/Brookdale intersection, and the Carss Street/Martin Street intersection for the following years:

- 2027 Full build-out
- 2032 Five-year horizon

1.3 Analysis Methods

Intersection capacity analysis was completed using Synchro 11 software. This software uses methodology from the Highway Capacity Manual (HCM), published by the Transportation Research Board, to evaluate signalized and unsignalized intersections.

Intersection operating conditions are commonly described in terms of a Level of Service (LOS) and volume to capacity (v/c) ratio. LOS is a quality measure of speed, freedom to manoeuvre, interruptions, comfort, and convenience. Letters are assigned to six levels, with LOS 'A' representing optimal operating conditions and LOS 'F' representing failing operating conditions. Vehicle capacity is defined as the maximum number of vehicles that can pass a given point during a specified period under prevailing traffic conditions.

The LOS of an unsignalized intersection is based on average control delay and is defined for individual movements. Control delay includes initial deceleration, queue move-up time, stopped

time and final acceleration. For unsignalized intersections, Exhibit 19-1 of the 2010 HCM defines the relationship between control delay and LOS as follows:

LOS	Delay (sec/veh)
A	<10
B	10 to 15
C	15 to 25
D	25 to 35
E	35 to 50
F	>50

In this study, movements at unsignalized intersections have been evaluated in terms of the LOS as defined in the foregoing tables. Mitigation measures will be considered for movements with a LOS of E or F for unsignalized intersections.

2.0 EXISTING CONDITIONS

2.1 Roadways

Carss Street is an east-west local roadway that extends from Martin Street to the Mississippi River. Carss Street has an undivided urban cross-section. To the east of Union Street it has a paved surface and to the west of Union Street it has a gravel surface. Carss Street has an unposted regulatory speed limit of 50km/h.

Brookdale Street is an east-west local roadway that extends from Union Street to Martin Street. It has a two-lane undivided urban cross. It has an unposted regulatory speed limit of 50km/h.

Union Street is a north-south local urban roadway that extends from Queen Street to Carss Street. It was recently reconstructed with a two-lane undivided urban cross section with a concrete sidewalk on the east side. It has an unposted regulatory speed limit of 50km/h.

Martin Street (CR 17) is a north-south roadway under the Jurisdiction of Lanark County that extends from Queen Street to Blakeney Road. To the south of Brookdale Street, it has an urban cross section with a posted speed of 40km/h and asphalt sidewalks on both sides of the road. To the north of Brookdale Street, it has a rural cross section with a posted speed of 60km/h.

2.2 Intersections

The Union Street/Brookdale Street intersection operates under all-way stop control. No auxiliary turn lanes are currently provided at this intersection.

The Carss Street/Martin Street intersection operates under side street stop control with free flow along Martin Street. No auxiliary turn lanes are currently provided at this intersection.

2.3 Pedestrian and Cycling Facilities

Currently there are no sidewalks or cycling facilities provided on Carss Street within the vicinity of the proposed development. Union Street has a sidewalk on the east side within the vicinity of the proposed development.

The Ottawa Valley Recreational Trail travels in a north-south direction along the eastern frontage of the subject site.

The Springbank Trail begins on Carss Street to the west of the Ottawa Valley Recreational Trail and travels north from Carss Street.

2.4 Transit

Currently there are no transit routes offered within the vicinity of the subject area.

2.5 Existing Traffic Volumes

Weekday traffic counts completed during the AM, mid-day, and PM peak periods (7:00-10:00AM, 11:30AM-1:30PM, and 3:00-7:00PM) were used to determine the existing pedestrian, cyclist, and vehicular traffic volumes at the study area intersections. The traffic count dates and observed AM, mid-day, and PM peak hours are summarized in the following table.

Table 1: Traffic Count Summary

Intersection	Date	Peak Hours
Union Street/Brookdale Street	March 27, 2024	7:00-10:00AM, 11:30AM-1:30PM, and 3:00-7:00PM
Martin Street/Carss Street	March 26, 2024	7:00-10:00AM, 11:30AM-1:30PM, and 3:00-7:00PM

Observed weekday AM and PM peak hour traffic volumes at the study area intersections are shown in **Figure 2**. Peak hour summary sheets of the above traffic counts are included in **Appendix B**.

3.0 PLANNED CONDITIONS

Within vicinity of the study area the Hilan Village subdivision is planned to the north of the subject site. The subdivision will be built out in phases and have access to Carss Street. The subdivision will have 36 single family detached units, 46 semi detached units, and 57 mid-rise multifamily housing units. Phase 1 is expected to be completed in 2025 and full buildout is expected in 2028. Per the TIA completed for the Hilan Village subdivision the first phase does not include a significant amount of trips and the TIA only includes traffic analysis of 2028 conditions for site traffic. Site traffic from Hilan Village has been included in 2032 traffic conditions within this report.

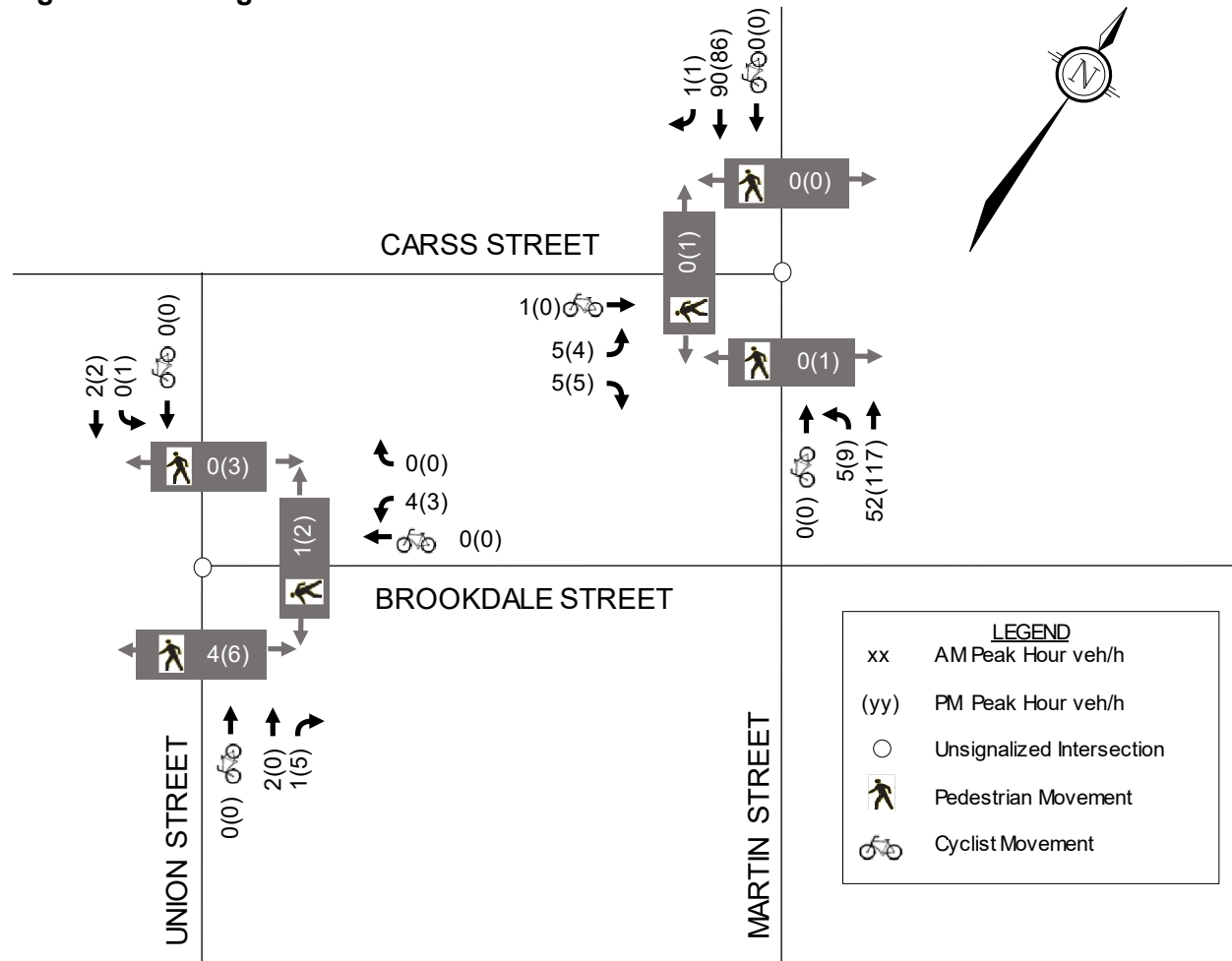
Per Schedule 9 of the 2024 MMTMP, new concrete sidewalks are proposed on Brookdale Street and Carss Street between Union Street and Martin Street. The sidewalks on Brookdale Street and Carss Street are classified as “Low Priority – Rural Context”.

Per Table 38/Schedule 11 of the 2024 MMTMP, as part of the Interim Cycling Plan existing bike lanes are proposed to be widened on Martin Street between Ottawa Street and Stephen Street.

Additionally, on Martin Street between Stephen Street to the future north collector road, pathways are planned to be converted to sidewalks and Shared Road pavement markings and signage will be added.

Per Table 38/Schedule 12 of the 2024 MMTMP, as part of the Ultimate Cycling full urbanization with cycle tracks and sidewalks are proposed on Martin Street.

Figure 2: Existing Traffic Volumes



4.0 SITE TRAFFIC

4.1 Trip Generation – Site A

Site A includes a variety of different non-residential uses including: 4,800 ft² spa/hotel, a 1,905 ft² restaurant addition to the existing Pinehurst Manor, a banquet hall, and 27 private cabins. Hotel spaces within the subject site include the 12 guest rooms within the spa and hotel, the 8 guest rooms within the two-storey hotel, the 8 guest rooms within the existing Pinehurst Manor, the 7 guest rooms within the banquet hall, and the 27 private cabins.

Trips generated by the proposed development have been estimated based on a combination of 'first principles' and trip generation rates from the Institute of Transportation Engineers (ITE) Trip

Generation Manual, 11th Edition. For the purposes of this report, three analysis scenarios have been reviewed for Site A.

4.1.1 Scenario One – Site A

Scenario One studies the impacts that typical day-to-day operations would have on the study area. Day-to-day uses include trips associated with the planned hotel, restaurant, and spa uses. This scenario assumes site generated traffic arriving and leaving during the AM and PM peak hours and that there will be some internal capture between the three different land uses.

The boutique hotel and spa are envisioned as an extended stay resort with guests staying multiple days at the hotel and walking throughout the site to access the spa, restaurant, and other amenities during their stay. The spa is expected to provide day passes to customers not staying at the boutique hotel. While each of the principle uses are expected to be open to the public the majority of the time, it is assumed that roughly 30% of all trips generated by the development can be reduced due to internal capture.

Trips generated by the proposed hotel and restaurant have been estimated using the ITE code 310 (Hotel) and 931 (Fine Dining Restaurant). As an applicable land use is not included within ITE for a spa, first principles methodology was used to generate trips. The proposed concept plan assigns 14 parking spaces to spa land use. For the purposes of this analysis, it is assumed that 70% of the parking lot will fill when the spa opens and then turn over during the PM peak hour. **Table 3** outlines the trip generation results using the relevant rates for the proposed development.

Table 2: Trip Generation – Site A

Use Description	Land Use Code	ITE Code	Units	AM Peak			PM Peak		
				IN	OUT	TOT	IN	OUT	TOT
Hotel	Hotel	310	62	16	13	29	19	18	37
Restaurant	Fine Dining Restaurant	931	3,605ft ²	2	1	3	19	9	28
Spa	N/A	N/A	14	10	0	10	10	10	20
TOTAL				28	14	42	48	37	85
<i>Internal Reduction (30%)</i>				<i>-8</i>	<i>-4</i>	<i>-12</i>	<i>-14</i>	<i>-11</i>	<i>-25</i>
External Trips				20	10	30	34	26	60

The subject site is expected to generate 30 vehicle trips (20 in and 10 out) during the AM peak hour and 60 vehicle trips (34 in and 26 out) during the PM peak hour.

4.1.2 Scenario Two – Site A

Scenario Two studies the impacts that a wedding or similar event would have on the study area. During a wedding it is assumed that all guests would arrive during a discrete time period prior to the start of the wedding. Although it is assumed most wedding would have a start time during the afternoon on a Friday, Saturday, or Sunday, it has been conservatively assumed that all vehicles would arrive during the weekday PM peak hour. It is assumed that staff will arrive periodically throughout the day during off-peak time periods to set up the event. All site traffic is assumed to depart gradually throughout the evening during off-peak time periods. It is assumed that during a wedding or similar event that all, or a majority, of the entire site will be reserved for the event and closed to the public.

Per discussions with the client, a maximum capacity wedding is expected to be roughly 175 people. Of the 175 people expected at a wedding type event, 75 are expected to arrive during non-peak times and stay within the cabins and hotel lodgings while the other 100 guests will arrive during the PM peak hour. Assuming an average vehicle capacity of two persons per car, a wedding with 100 guests arriving during the PM peak hour would generate roughly 50 vehicle trips.

4.1.3 Scenario Three – Site A

Scenario Three studies the impacts that a corporate retreat, banquet, or similar type event would have on the study area. During this scenario it is assumed that vehicles would arrive during a discrete time period prior to the start time of the event and would leave the site during a discrete time period upon the conclusion of the event. Although some of these events could occur during the weekend or during other off-peak periods all incoming traffic has been assumed to occur during the weekday AM peak hour and all outgoing traffic has been assumed to occur during the PM peak hour. It is assumed that during a corporate retreat, banquet, or similar event that all, or a majority, of the entire site will be reserved for the event and closed to the public.

A maximum capacity corporate retreat is expected to be roughly 175 people. Of the 175 people expected at a corporate retreat type event, 75 are expected to arrive during non-peak times and stay within the cabins and hotel lodgings while the other 100 guests will arrive during the AM peak hour and leave during the PM peak. Assuming an average vehicle capacity of two persons per car, a corporate event with 100 guests would generate roughly 50 trips arriving during the AM peak hour and leaving during the PM peak hour.

4.2 Trip Generation – Site B

Site B includes a four-storey senior apartment building with 45 dwelling units.

Trip generation assumptions have been made for the proposed development and are based on the Institute of Transportation Engineers' (ITE) *Trip Generation Manual* (11th Edition). The proposed development was estimated using the ITE code 252 (Senior Adult Housing - Multifamily).

Table 3: Trip Generation – Site B

Dwelling Type	Land Use Code	ITE Code	Units	AM Peak			PM Peak		
				IN	OUT	TOT	IN	OUT	TOT
Senior Apartment	Senior Adult Housing - Multifamily	252	45	3	6	9	6	5	11

The subject site is expected to generate 9 vehicle trips (3 in and 6 out) during the AM peak hour and 11 vehicle trips (6 in and 5 out) during the PM peak hour.

Trips from Site B have been applied to all Site A scenarios that have been identified.

4.3 Trip Distribution

The distribution of apartment trips has been derived based on the existing residential commuter traffic patterns of traffic leaving the study area during the AM peak hour and entering the study area during the PM peak hour and is described as follows:

- 15% to/from the north via Martin Street
- 50% to/from the south via Martin Street
- 35% to/from the south via Union Street

Trips generated by weddings or other large events are expected to enter the site using the above distribution during the AM and PM peak hours.

4.4 Trip Assignment

Based on the layout of the site and logical routing assumptions all trips generated by the proposed development have been assigned to the accesses at Carss Street and Union Street. All traffic generated by Site B has been assigned to the access on Carss Street. A summary of the percentage of trips assigned to each access for Site A can be seen in the following table.

Table 4: Trip Assignment Summary

Distribution	Access Assigned To	
	Carss Street	Union Street
North via Martin Street	100%	0%
South via Martin Street	0%	100%
South via Union Street		

Traffic generated by the proposed site for all scenarios during the 2027 build-out year is shown in **Figures 3, 4, and 5**.

Figure 3: Site Generated Trips – Scenario 1

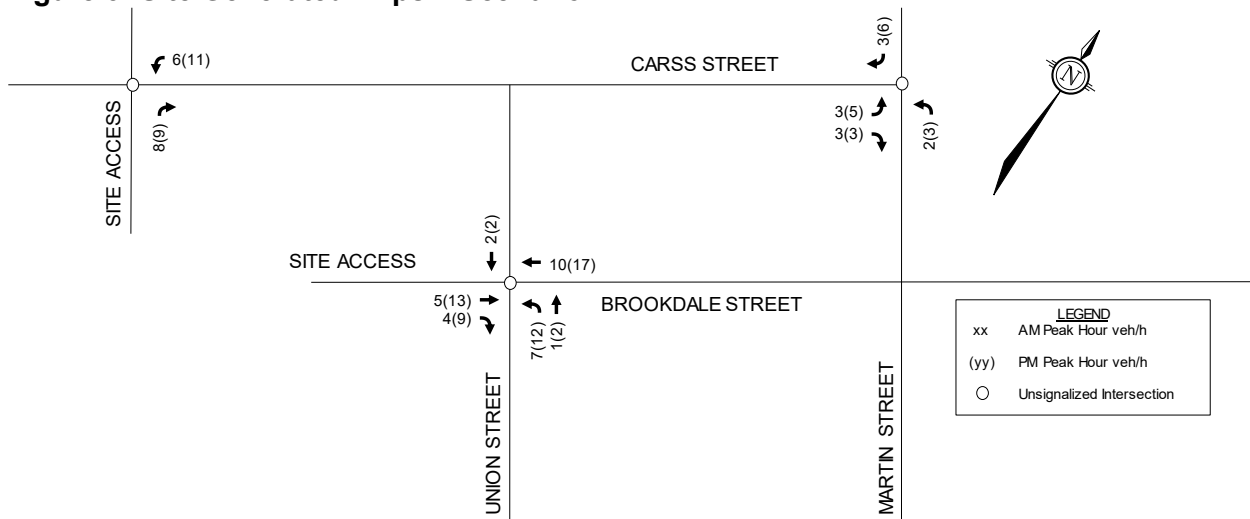
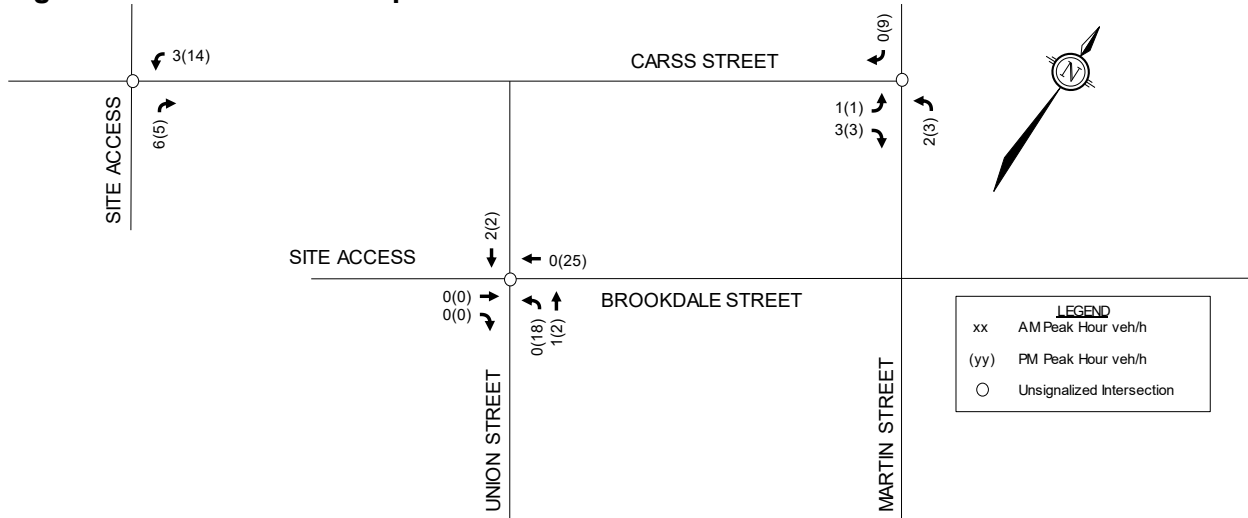
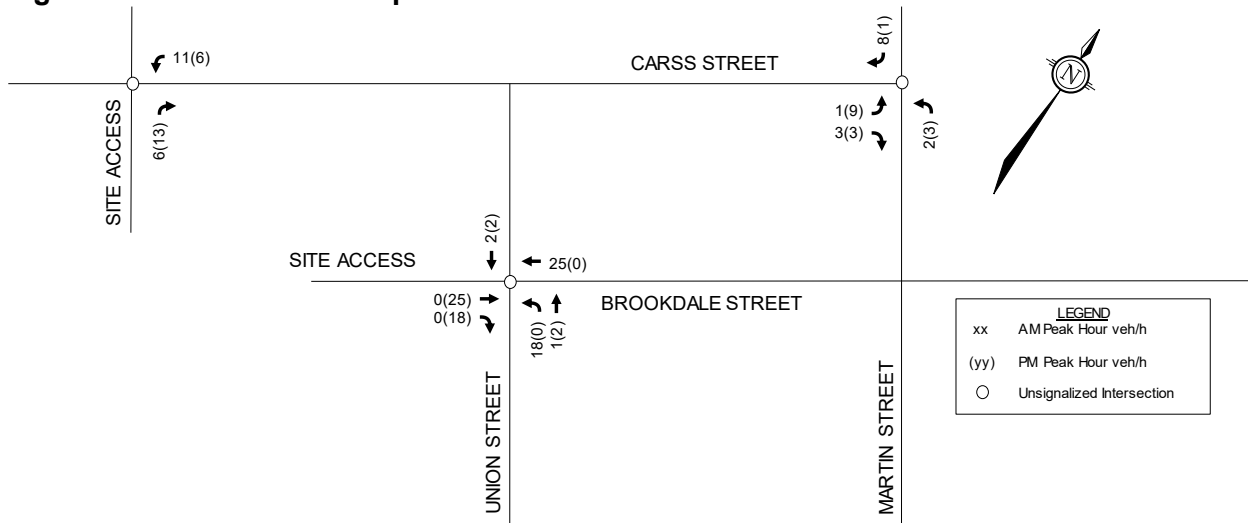


Figure 4: Site Generated Trips – Scenario 2**Figure 5: Site Generated Trips – Scenario 3**

5.0 BACKGROUND TRAFFIC CONDITIONS

5.1 Historic Growth

From the 2024 MMTMP the population of Mississippi Mills is expected to increase by approximately 2% per year. From Appendix E of the 2024 MMTMP, Martin Street, north of Almonte has an existing mid-block AADT of 1,200 veh/day and a long term (15-25 years) AADT of 1,250.

To provide a conservative analysis, a growth rate of 2% was applied to through traffic along Martin Street and a growth rate of 1% was applied to Carss Street and Union Street.

5.2 Other Area Developments

A review of other area development traffic has been conducted, per the developments listed in Section 3.0. Traffic generated by the Hilan Village development have been included in the 2032

background traffic volumes. Relevant excerpts of the traffic studies associated with the developments below are included in **Appendix C**.

Background traffic volumes for the 2027 buildout year and the 2032 horizon year can be found in **Figures 6** and **7**, respectively.

Figure 6: 2027 Background Traffic Volumes

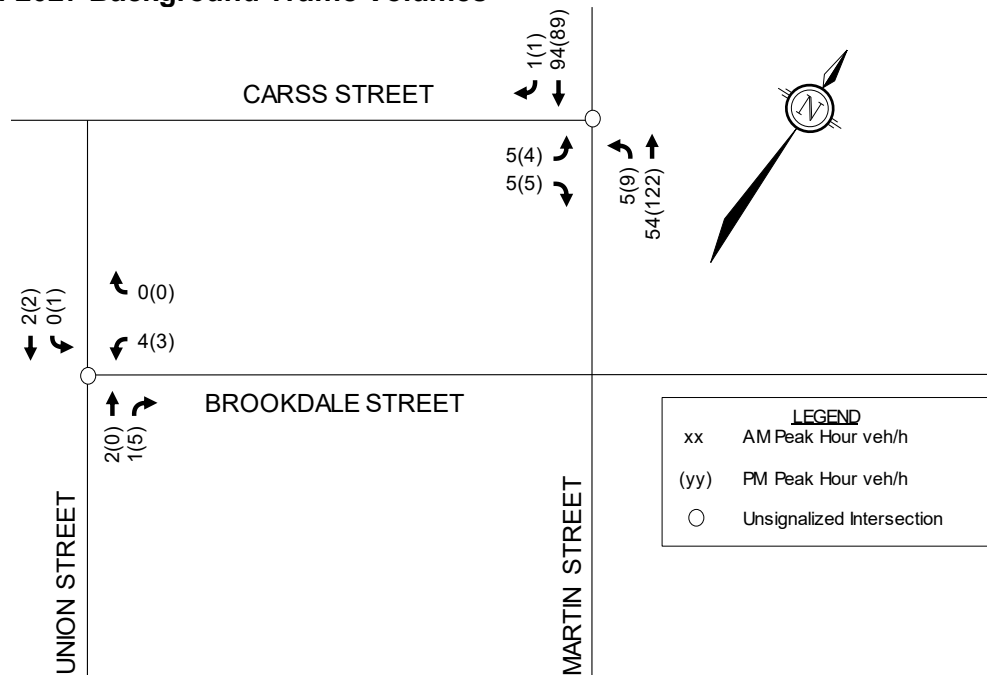
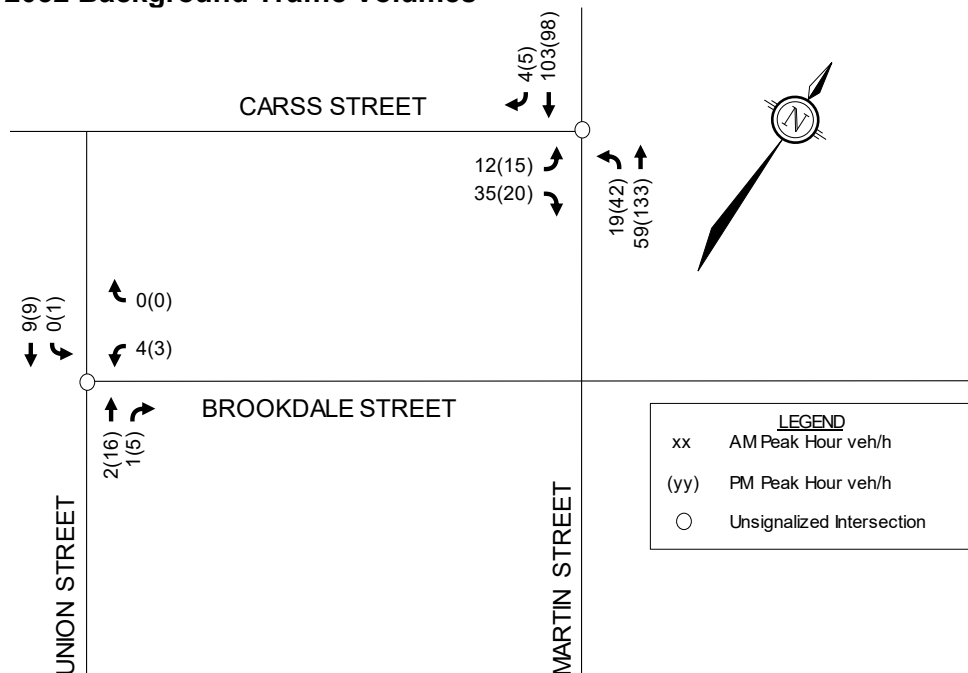


Figure 7: 2032 Background Traffic Volumes



Total traffic volumes for the 2027 build out year and 2032 horizon year have been calculated by adding the site generated traffic volume scenarios with the projected background traffic volumes. Total traffic volumes for 2027 and 2032 are shown in **Figures 8 to 13**.

Figure 8: 2027 Total Traffic – Scenario 1

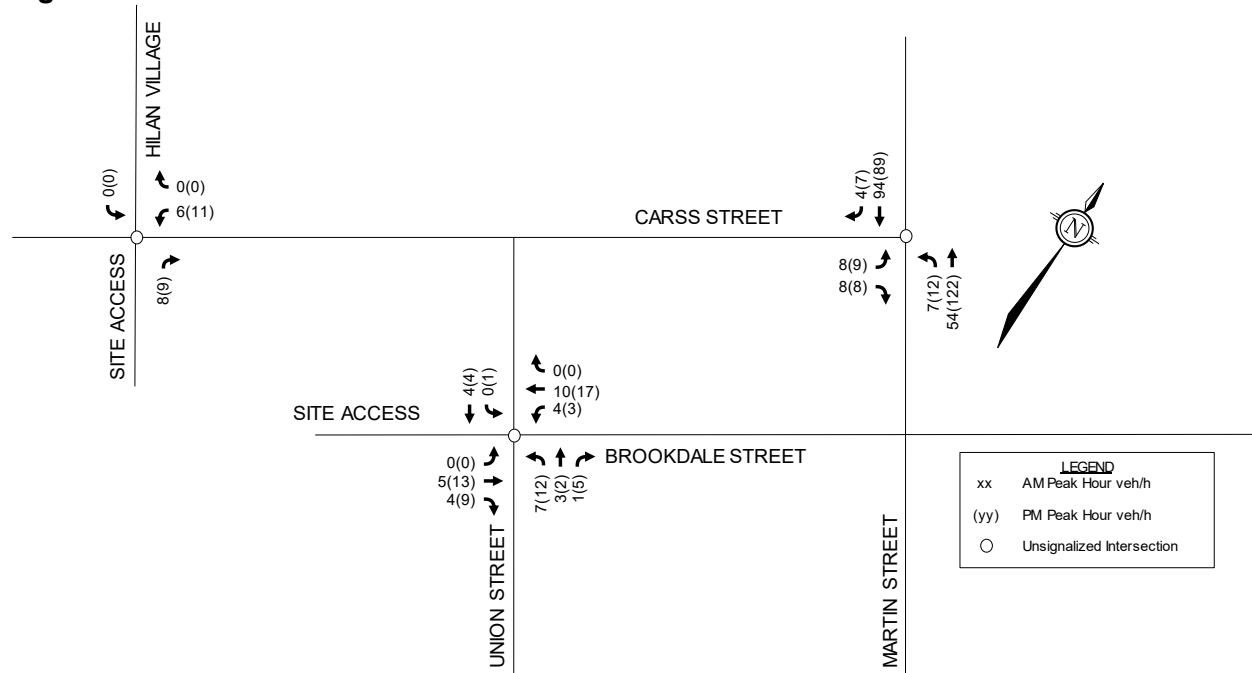


Figure 9: 2027 Total Traffic – Scenario 2



The map illustrates the intersection area with the following details:

- Streets:** Carss Street (horizontal), Brookdale Street (horizontal), Hilan Village (vertical), Site Access (vertical), Union Street (vertical), and Martin Street (vertical).
- Intersections:**
 - Carss Street & Hilan Village:** Unsignaled intersection. Traffic flow data: Left turn 0(0), Through/Right turn 11(6).
 - Carss Street & Martin Street:** Unsignaled intersection. Traffic flow data: Left turn 9(2), Through/Right turn 94(89).
 - Brookdale Street & Union Street:** Unsignaled intersection. Traffic flow data: Left turn 0(0), Through/Right turn 25(0), 4(3).
 - Brookdale Street & Martin Street:** Unsignaled intersection. Traffic flow data: Left turn 0(0), Through/Right turn 18(0), 3(2), 1(5).
- Legend:**
 - xx AM Peak Hour veh/h
 - (yy) PM Peak Hour veh/h
 - Unsignaled Intersection
- North Arrow:** Located in the upper right corner, pointing towards the top right of the map.

The map illustrates the intersection area for the proposed development. Key streets include Carss Street, Brookdale Street, Hilan Village, Site Access, Union Street, and Martin Street. Traffic volume data is provided for various intersections, showing AM Peak Hour and PM Peak Hour vehicle counts. A legend defines the symbols used for the legend, including AM Peak Hour veh/h, PM Peak Hour veh/h, and Unsignalized Intersection.

Location	Direction	AM Peak Hour (veh/h)	PM Peak Hour (veh/h)
Carss Street / Hilan Village	Left	44	33
	Right	17	52
Carss Street / Site Access	Left	6	11
	Right	8	9
Carss Street / Union Street	Left	11	11
	Right	0	1
Carss Street / Brookdale Street	Left	0	0
	Right	10	17
Carss Street / Martin Street	Left	4	3
	Right	15	20
Carss Street / Martin Street	Left	38	23
	Right	7	11
Carss Street / Martin Street	Left	103	98
	Right	21	45
Brookdale Street / Union Street	Left	0	0
	Right	5	13
Brookdale Street / Union Street	Left	4	9
	Right	7	12
Brookdale Street / Martin Street	Left	3	18
	Right	1	5

Figure 12: 2032 Total Traffic – Scenario 2

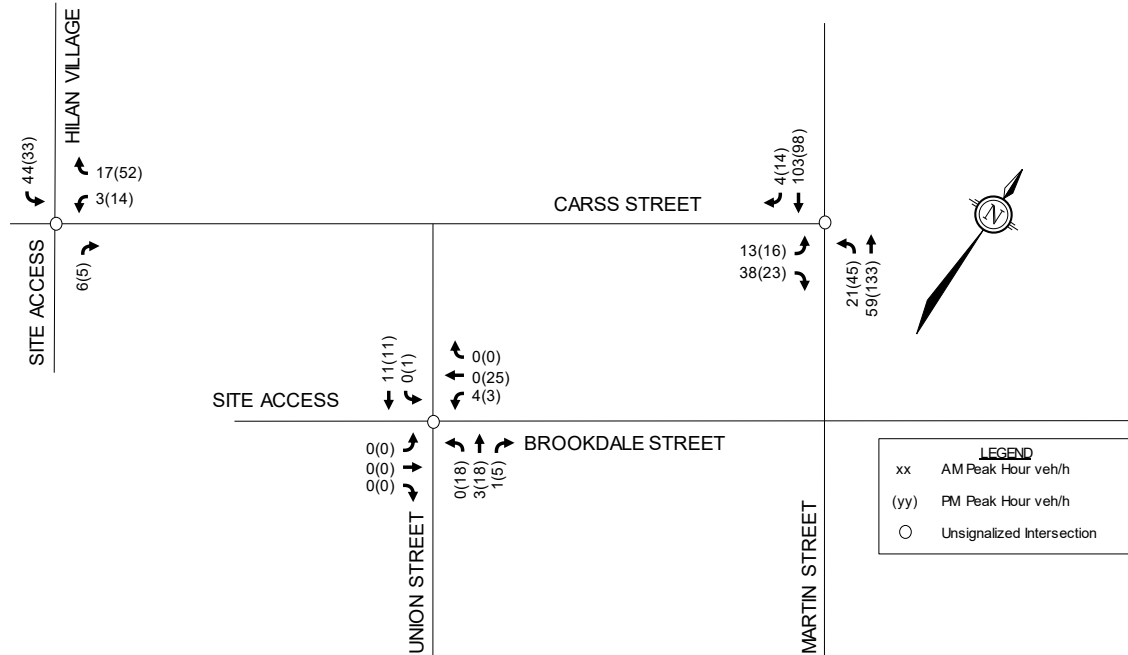
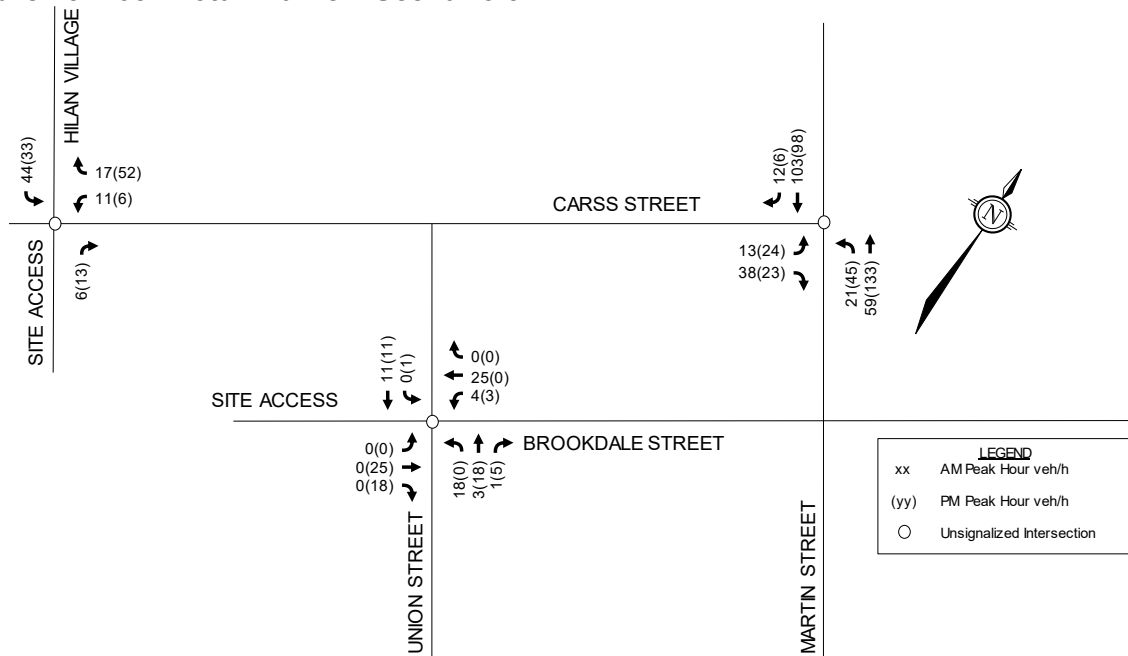


Figure 13: 2032 Total Traffic – Scenario 3



6.0 INTERSECTION OPERATING CONDITIONS

6.1 Existing Traffic Operations

Intersection capacity analysis has been completed for the existing traffic conditions. The results of the analysis are summarized in the following table for the weekday AM and PM peak hours. Detailed synchro reports are included in **Appendix C**.

Table 5: Analysis Results - Existing Traffic Conditions

Intersection	AM Peak			PM Peak		
	Delay	LOS	Mvmt	Delay	LOS	Mvmt
Union Street/Brookdale Street	7 sec	A	All	7 sec	A	All
Martin Street/Carss Street	9 sec	A	EB	9 sec	A	EB

All movements at study area intersections are currently operating with an acceptable LOS.

6.2 Background Traffic Operations

Operating conditions at the study area intersections are summarized in **Table 8** for the 2027 and 2032 weekday AM and PM peak periods. Detailed reports are included in **Appendix C**.

Table 6: Analysis Results - Background Traffic Conditions

Intersection	AM Peak			PM Peak		
	Delay	LOS	Mvmt	Delay	LOS	Mvmt
<i>2027 Background Traffic</i>						
Union Street/Brookdale Street	7 sec	A	All	7 sec	A	All
Martin Street/Carss Street	9 sec	A	EB	9 sec	A	EB
<i>2032 Background Traffic</i>						
Union Street/Brookdale Street	7 sec	A	All	7 sec	A	All
Martin Street/Carss Street	9 sec	A	EB	10 sec	A	EB

All movements at study area intersections continue to operate with an acceptable LOS under 2027 and 2032 background traffic conditions.

6.3 Total Traffic Operations

Operations at the study area intersections and the proposed accesses have been evaluated for the 2027 and 2032 total traffic scenarios for all three scenarios, as summarized in the following tables. Detailed reports are included in **Appendix C**.

Table 7: Analysis Results - Total Traffic Conditions – Scenario 1

Intersection	AM Peak			PM Peak		
	Delay or V/C	LOS	Mvmt	Delay or V/C	LOS	Mvmt
<i>2027 Total Traffic</i>						
Union Street/Brookdale Street/Site Access	7 sec	A	All	7 sec	A	All
Martin Street/Carss Street	9 sec	A	EB	10 sec	A	EB
Carss Street/Site Access/Hilan Village	8 sec	A	NB	8 sec	A	NB
<i>2032 Total Traffic</i>						
Union Street/Brookdale Street/Site Access	7 sec	A	All	8 sec	A	NB
Martin Street/Carss Street	9 sec	A	EB	10 sec	B	EB
Carss Street/Site Access/Hilan Village	9 sec	A	SB	9 sec	A	SB

Table 8: Analysis Results - Total Traffic Conditions – Scenario 2

Intersection	AM Peak			PM Peak		
	Delay or V/C	LOS	Mvmt	Delay or V/C	LOS	Mvmt
2027 Total Traffic						
Union Street/Brookdale Street/Site Access	7 sec	A	All	7 sec	A	All
Martin Street/Carss Street	9 sec	A	EB	9 sec	A	EB
Carss Street/Site Access/Hilan Village	8 sec	A	NB	8 sec	A	NB
2032 Total Traffic						
Union Street/Brookdale Street/Site Access	7 sec	A	All	8 sec	A	NB
Martin Street/Carss Street	9 sec	A	EB	10 sec	A	EB
Carss Street/Site Access/Hilan Village	9 sec	A	SB	9 sec	A	SB

Table 9: Analysis Results - Total Traffic Conditions – Scenario 3

Intersection	AM Peak			PM Peak		
	Delay or V/C	LOS	Mvmt	Delay or V/C	LOS	Mvmt
2027 Total Traffic						
Union Street/Brookdale Street/Site Access	7 sec	A	All	7 sec	A	All
Martin Street/Carss Street	9 sec	A	EB	10 sec	A	EB
Carss Street/Site Access/Hilan Village	8 sec	A	NB	8 sec	A	NB
2032 Total Traffic						
Union Street/Brookdale Street/Site Access	7 sec	A	All	8 sec	A	NB
Martin Street/Carss Street	9 sec	A	EB	10 sec	B	EB
Carss Street/Site Access/Hilan Village	9 sec	A	SB	9 sec	A	SB

All movements at all study area intersections are expected to operate with acceptable LOS during all scenarios during the 2027 and 2032 total traffic scenarios. Site generated traffic is not anticipated to have a significant impact on the operating conditions within the study area.

A left turn lane warrant analysis was conducted to confirm if a northbound left turn lane would be required at the Martin Street/Carss Street intersection under 2032 total traffic conditions from all three scenarios. Based on a design speed of 70km/hr, the left turn lane warrants indicated that a northbound left turn lane at the Martin Street/Carss Street intersection would not be required. It is noteworthy that due to low traffic volumes on Martin Street, a left turn lane is also not anticipated to be warranted at the Martin Street/Brookdale Street intersection. Left turn lane warrants are included in **Appendix D**.

Per Table 21 of the 2024 MMTMP, a typical local road has an optimal traffic volume of less than 120 vehicles per hour. All local roadways (Brookdale Street, Carss Street, and Union Street)

within proximity of the subject site are expected to have less than 120 vehicles per hour during the peak hours.

7.0 ON-SITE DESIGN

7.1 Site Access

The access to Site A along Carss Street will be located at the existing access to the Pinehurst Manor. Two accesses along Carss Street are proposed as part of Site B, one access will be for underground parking and the other to an at-grade parking lot. One access is proposed to Union Street as part of Site A opposite Brookdale Street.

Intersection sight distance (ISD) at the proposed accesses have been determined using the Transportation Association of Canada (TAC) *Geometric Design Guidelines for Canadian Roads*. The ISD requirements, based on a design speed of 60km/h, is as follows:

- Left Turn from Minor Road 130 metres
- Right Turn from Minor Road 110 metres

As the proposed Union Street access meets Union Street at a perpendicular angle and no sightline obstruction have been identified based on a desktop review, available sightlines are within recommended guidelines to allow safe all directional access to the development.

As the proposed and existing Carss Street accesses meets Carss Street at a perpendicular angle and no sightline obstruction have been identified based on a desktop review, available sightlines are within recommended guidelines to allow safe all directional access to the development.

Along Carss Street the proposed accesses to Site B are spaced roughly 10m away from each other. Based on Table 8.9.2 of the TAC guidelines a property with 51m-151m of frontage is permitted three accesses. As Site B has greater than 50m of frontage, the proposed two accesses are acceptable. Along local roadways, adjacent low volume driveways for residential properties are recommended to have a 1m minimum spacing per TAC guidelines. As the driveways are not expected to handle a significant amount of traffic and are spaced 10m away this is assumed to be sufficient. A further review of the access design will be completed as part of a future Site Plan application.

The proposed Union Street access to Site A intersects with the Ottawa Valley Rec Trail, approximately 15-20m west of Union Street. To ensure pedestrian and cyclist safety stop signs and street lighting along the access are recommended on both sides of the Ottawa Valley Rec Trail. Further details of the access design will be provided as part of a future Site Plan application.

7.2 Circulation

All streets within the site have a proposed platform width of 6.0m. Pathways will be provided throughout the site connecting the various uses. Lay-by's will be provided in front of the restaurant and spa uses.

Fire route access is provided throughout the proposed development.

7.3 Parking

The subject site is located in the Almonte area of the Municipalities Zoning By-law. Table 9.2 of the Municipalities Zoning By-law was used to determine the minimum spaces for each of the applicable land uses for vehicle parking and Table 9.5 was used for bicycle parking.

An evaluation of the proposed parking versus the requirements are summarized in **Table 9**.

Table 10: Parking Requirements

Land Use	Rate	Units/GFA	Required
Minimum Vehicle Parking Requirements			
Apartment – Low Rise	1.2 per dwelling unit (residents) 0.2 per dwelling unit (visitor)	45	63
Hotel	1.0 per guest unit	62	62
Accessory Dwelling	0.5 per unit	1	1
Restaurant – Full Service	3 for first 50m ² of gross floor area plus 10 per 100m ² of gross floor area over 50m ² of gross floor area	335m ²	32
Spa (Personal Service Business)	2.5 per 100m ² of gross floor area	560m ²	14
Place of Assembly	10 per 100m ² of gross floor area of assembly area	520m ²	53
Total			225
Minimum Bicycle Parking Requirements			
Apartment – Low Rise	0.5 per dwelling unit	45	23
Restaurant	1 per 250m ² of GFA	177m ²	1
Spa (Personal Service Business)	1 per 500m ² of GFA	560m ²	1
Hotel and Cabins	1 per 1,000m ² of GFA	1,800m ²	2
Total			27

Based on the Concept Plan, the proposed development includes 184 vehicle parking spaces for the non-residential uses and 63 vehicle parking spaces for the future seniors apartments meeting the ZBL requirements.

Bicycle parking for the proposed development will be confirmed as the Concept Plan is further refined for a future Site Plan application.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the foregoing analysis, the main conclusions and recommendations of this report are as follows:

Forecasting

- Scenario One studies the impacts that typical day-to-day operations would have on the study area. Day-to-day uses include trips associated with the planned hotel, restaurant, and spa uses. This scenario assumes site generated traffic arriving and leaving during the AM and PM peak hours and that there will be some internal capture between the three different land uses. Under Scenario One, the development is expected to generate 30 vehicle trips (20 in and 10 out) during the AM peak hour and 60 vehicle trips (34 in and 26 out) during the PM peak hour.

- Scenario Two studies the impacts that a wedding or similar event would have on the study area. Assuming an average vehicle capacity of two persons per car, a wedding with 100 guests arriving during the PM peak hour would generate roughly 50 inbound vehicle trips.
- Scenario Three studies the impacts that a corporate retreat, banquet, or similar type event would have on the study area. During this scenario it is assumed that vehicles would arrive during a discrete time period prior to the start time of the event and would leave the site during a discrete time period upon the conclusion of the event. Assuming an average vehicle capacity of two persons per car, a corporate event with 100 guests would generate roughly 50 trips arriving during the AM peak hour and leaving during the PM peak hour.
- Site B includes a four-storey senior apartment building with 45 dwelling units. The subject site is expected to generate 9 vehicle trips (3 in and 6 out) during the AM peak hour and 11 vehicle trips (6 in and 5 out) during the PM peak hour. Trips from Site B have been applied to all Site A scenarios that have been identified.

Total Traffic Operations

- All movements at all study area intersections are expected to operate with acceptable LOS during all scenarios during the 2027 and 2032 total traffic scenarios. Site generated traffic is not anticipated to have a significant impact on the operating conditions within the study area.
- A left turn lane warrant analysis was conducted to confirm if a northbound left turn lane would be required at the Martin Street/Carss Street intersection under 2032 total traffic conditions from all three scenarios. Based on a design speed of 70km/hr, the left turn lane warrants indicated that a northbound left turn lane at the Martin Street/Carss Street intersection would not be required.
- The total traffic volumes on all roadways within the study area are expected to be within the optimal thresholds for a local road identified in the 2024 MMTMP.

Development Design

- As the proposed Union Street access meets Union Street at a perpendicular angle and no sightline obstruction have been identified based on a desktop review, available sightlines are within recommended guidelines to allow safe all directional access to the development.
- As the proposed and existing Carss Street accesses meets Carss Street at a perpendicular angle and no sightline obstruction have been identified based on a desktop review, available sightlines are within recommended guidelines to allow safe all directional access to the development.
- As the proposed driveways to Carss Street are not expected to handle a significant amount of traffic and are spaced 10m away this is assumed to be sufficient.
- The proposed Union Street access to Site A intersects with the Ottawa Valley Rec Trail, approximately 15-20m west of Union Street. To ensure pedestrian and cyclist safety stop signs and street lighting along the access are recommended on both sides of the Ottawa Valley Rec Trail.

- All streets within the site have a proposed platform width of 6.0m. Pathways will be provided throughout the site connecting the various uses. Lay-by's will be provided in front of the restaurant and spa uses.
- Fire route access is provided throughout the proposed development.

Parking

- The proposed development includes 184 vehicle parking spaces for the non-residential uses and 63 vehicle parking spaces for the future seniors apartments meeting the ZBL requirements.

Based on the foregoing, the proposed development can be recommended from a transportation perspective.

NOVATECH

Prepared by:



Trevor Van Wiechen, P.Eng.
Project Engineer | Transportation

Reviewed by:



Brad Byvelds, P.Eng.
Senior Project Manager | Transportation

APPENDIX A

Proposed Site Plan

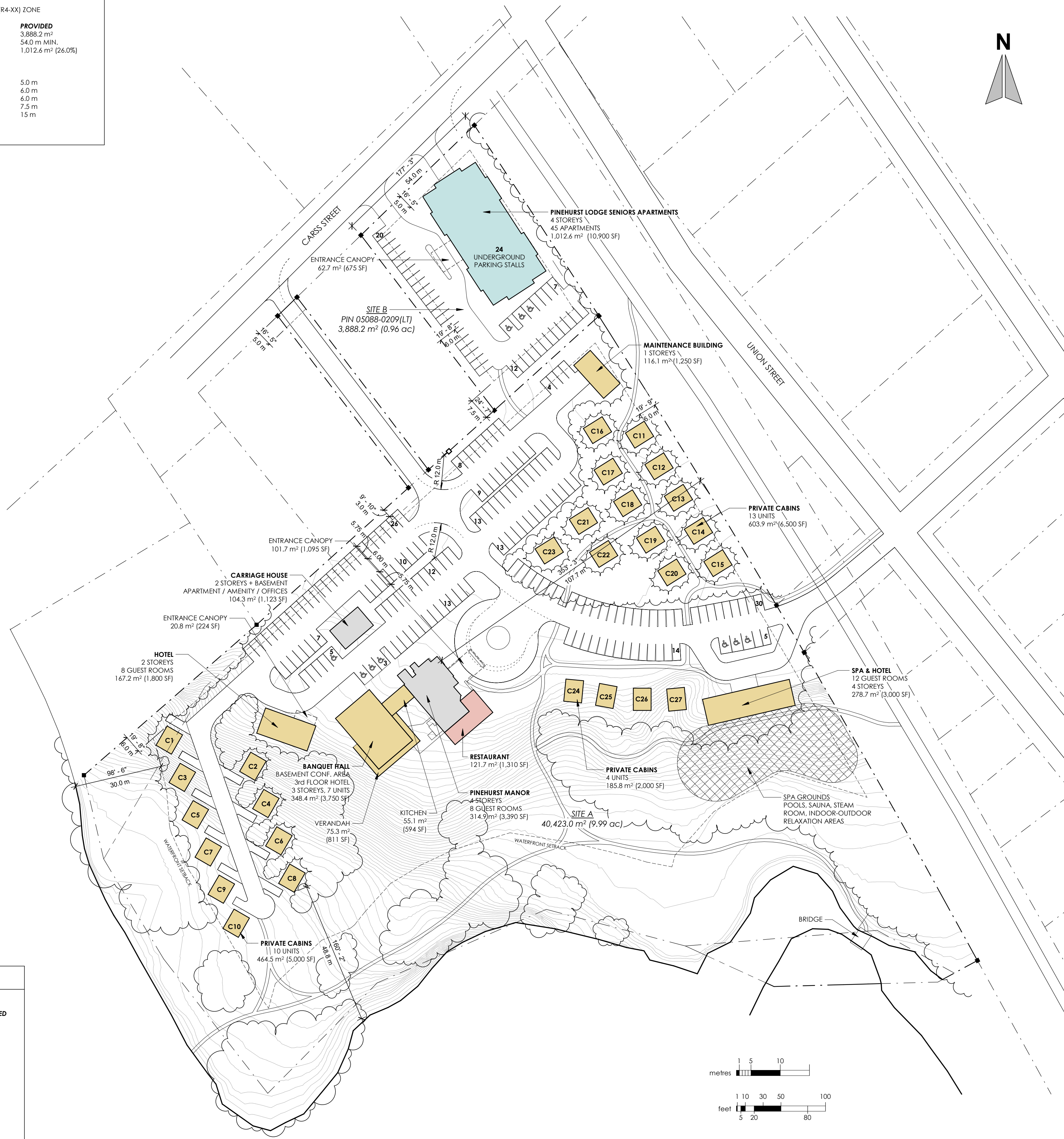
SITE A CALCULATIONS			SITE B CALCULATIONS		
ZONE: RESIDENTIAL FOURTH DENSITY, SPECIAL PROVISIONS [R4-YY] ZONE			ZONE: RESIDENTIAL FOURTH DENSITY, SPECIAL PROVISIONS [R4-XX] ZONE		
BY-LAW CATEGORY	REQUIREMENT	PROVIDED	BY-LAW CATEGORY	REQUIREMENT	PROVIDED
LOT AREA	600 m ² MIN.	40,423.0 m ²	LOT AREA	600 m ² MIN.	3,888.2 m ²
LOT FRONTAGE	30 m MIN.	-	LOT FRONTAGE	30.0 m MIN.	54.0 m MIN.
LOT COV. - BUILDING	-	2,835.9 m ²	LOT COVERAGE	40% (1,750 m ²) MAX.	1,012.6 m ² (26.0%)
LOT COV. - CANOPY	-	122.5 m ²	AMENITY SPACE	-	-
LOT COV. TOTAL	-	7.3% (2,958.4 m ²)	LANDSCAPED AREA	-	-
LANDSCAPED AREA	45% (18,167 m ²) MAX.	-			
FRONT YARD [NW]	5.0 m	6.0 m	FRONT YARD	5.0 m	5.0 m
REAR YARD [WE]	6.0 m	6.0 m	INTERIOR YARD [N]	6.0 m	6.0 m
INTERIOR YARD [SE-EP ZONE]	30.0 m	30.0 m	INTERIOR YARD [S]	6.0 m	6.0 m
REAR YARD [SE-EP ZONE]	30.0 m	30.0 m	REAR YARD	7.5 m	7.5 m
MAX. BLD. HEIGHT	11 m	14 m	MAX. BLD. HEIGHT	11 m	15 m

GENERAL SITE INFORMATION

PROPERTY AREA: 44,312 m² (476,966 SF)

LEGAL DESCRIPTION: PART OF LOTS 16 AND 17 CONCESSION 9 GEOGRAPHIC
TOWNSHIP OF RAMSAY, FORMERLY TOWN OF ALMONTE, NOW
IN THE TOWN OF MISSISSIPPI MILLS, COUNTY OF LANARK

SURVEY: DRAWING BASED ON SURVEY BY MCINTOSH PERRY
SURVEYING INC. DATED MARCH 4, 2019, JOB NUMBER
18-4381, DRAWING D18-4381



PARKING CALCULATIONS

BUILDING (SITE PART)	USE TYPE	UNIT RATE	UNITS / AREA (m ²)	REQ'D SPACES	SPACES PROVIDED
PART A					
PINEHURST MANOR	BED & BREAKFAST	1.0x / GUEST ROOM	8 GUEST ROOMS	8	10
RESTAURANT	RESTAURANT	3x / 50m ² + 10x /100m ²		176.8 m ² GFA	18
RESTAUR. WITHIN MANOR	RESTAURANT	10x /100m ²		158 m ² GFA	16
RESTAURANT BASEMENT	B&B AMENITY SPACE	NO PARKING LOAD	N/A	0	18
CARRIAGE HOUSE	ACCESSORY DWELLING	0.5x / DWELLING	1x UNIT (MANAGER SPA)	0.5	3
WELLNESS SPA	WELLNESS SPA	2.5x / 100 m ²		557.4 m ² GFA	14
SPA HOTEL	RENTAL SUITE (HOTEL)	1x / GUEST ROOM	12 UNITS	12	16
BANQUET BASEMENT	PLACE OF ASSEMBLY	10x / 100 m ² GFA	174.2 m ²		18
BANQUET HALL	PLACE OF ASSEMBLY	10x / 100 m ² GFA	348.4 m ²	35	38
BANQUET VERANDAH	PLACE OF ASSEMBLY	NO PARKING LOAD	N/A	0	0
BANQUET HOTEL	RENTAL SUITE (HOTEL)	1x / GUEST ROOM	7 UNITS	7	8
HOTEL	RENTAL SUITE (HOTEL)	1x / GUEST ROOM	8 UNITS	8	12
CABINS	RENTAL SUITE (HOTEL)	1x / GUEST ROOM	27 UNITS	27	27
MAINTENANCE BUILDING	ACCESSORY USE	NO PARKING LOAD	N/A	0	0
			TOTAL	162	182

NOTE: SOME ITEMS LISTED WITH MULTIPLE ENTRIES (RESTAURANT / BANQUET HALL) ARE CONTIGUOUS SUITES AND NOT TO BE INTERPRETED AS SEPARATE ENTITIES.

1 SITE PLAN
A1.00 1 : 800



ISSUED FOR

- | | | |
|---|------------|----------------------------|
| 1 | 2024-10-29 | CONCEPT SITE PLAN (ver.6) |
| 2 | 2024-02-18 | CONCEPT SITE PLAN (ver.7) |
| 3 | 2025-03-10 | CONCEPT SITE PLAN (ver.8) |
| 4 | 2025-03-24 | CONCEPT SITE PLAN (ver.9) |
| 5 | 2025-04-11 | CONCEPT SITE PLAN (ver.10) |
| 6 | 2025-08-07 | CONCEPT SITE PLAN (ver.11) |

METRIC

THIS DRAWING IS COPYRIGHTED AND MUST NOT BE USED,
REPRODUCED, OR REVISED WITHOUT WRITTEN PERMISSION.

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED
VERIFY DIMENSIONS.
DO NOT SCALE THIS DRAWING.

REPORT INCONSISTENCIES AND OMISSIONS TO THE CONSULTANT FOR CLARIFICATION BEFORE COMMENCING WITH THE WORK.

DEVIATIONS FROM THE CONTRACT DOCUMENTS WITHOUT WRITTEN APPROVAL FROM THE CONSULTANT ARE SUBJECT TO CORRECTION AT THE CONTRACTOR'S EXPENSE.

ARCHITECT & PRIME CONSULTANT

GRAFF ARCHITECTURE
1358 RIDEAU FERRY ROAD
PERTH, ONTARIO K7H 3C7
Tel: (613)-900-1963

KEYPLAN

SEAL

PINEHURST DEVELOPMENT

39 CARSS STREET
ALMONTE, ON K0A 1A0

CONCEPT SITE PLAN

DRAWN: GJG
PLOT DATE: 2025-08-27 3:02:20 PM

A1.00

24012P01

APPENDIX B

Traffic Count Data



Turning Movement Count Summary, AM and PM Peak Hour Flow Diagrams All Vehicles Except Bicycles



Brookdale Street & Union Street (N)

Almonte, ON

All Vehicles

(Except Bicycles & Electric Scooters)

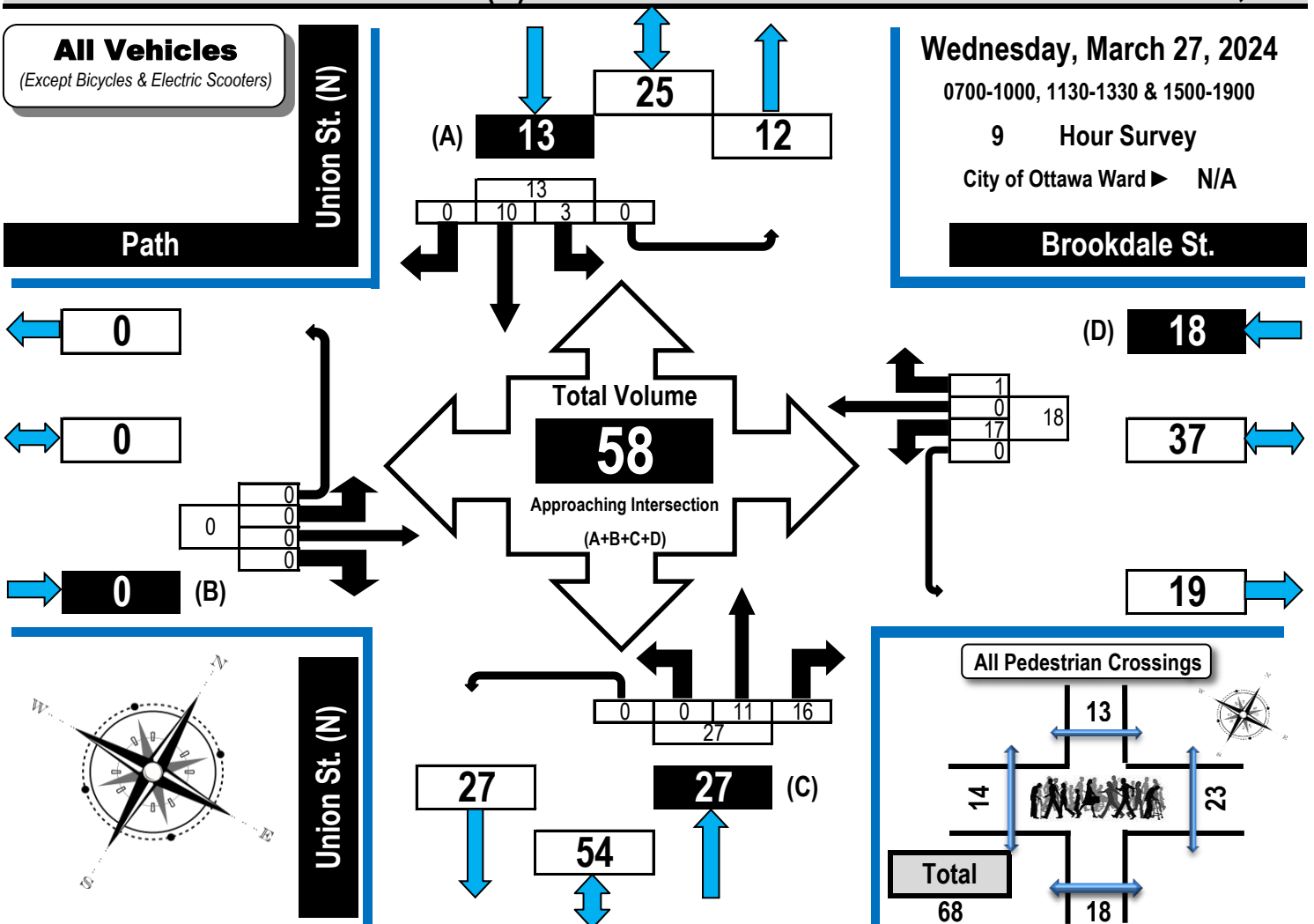
Wednesday, March 27, 2024

0700-1000, 1130-1330 & 1500-1900

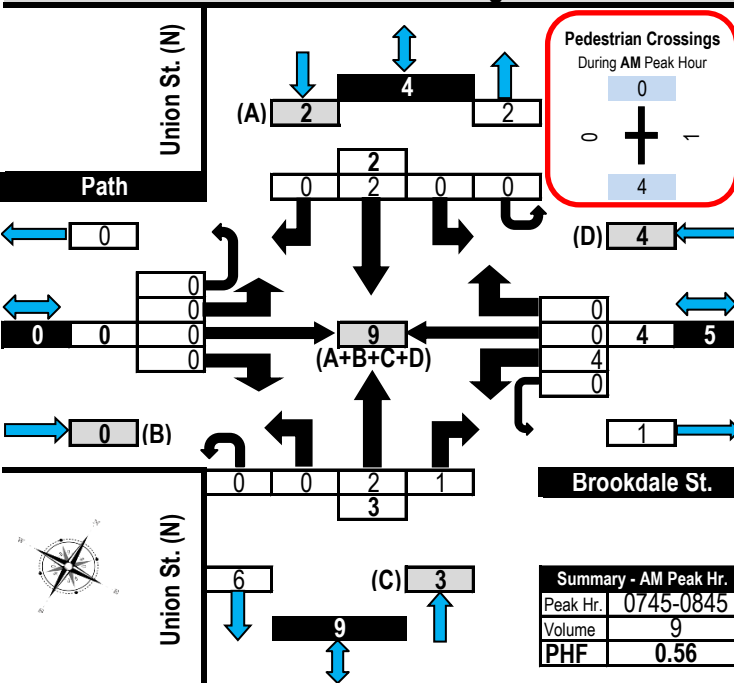
9 Hour Survey

City of Ottawa Ward ► N/A

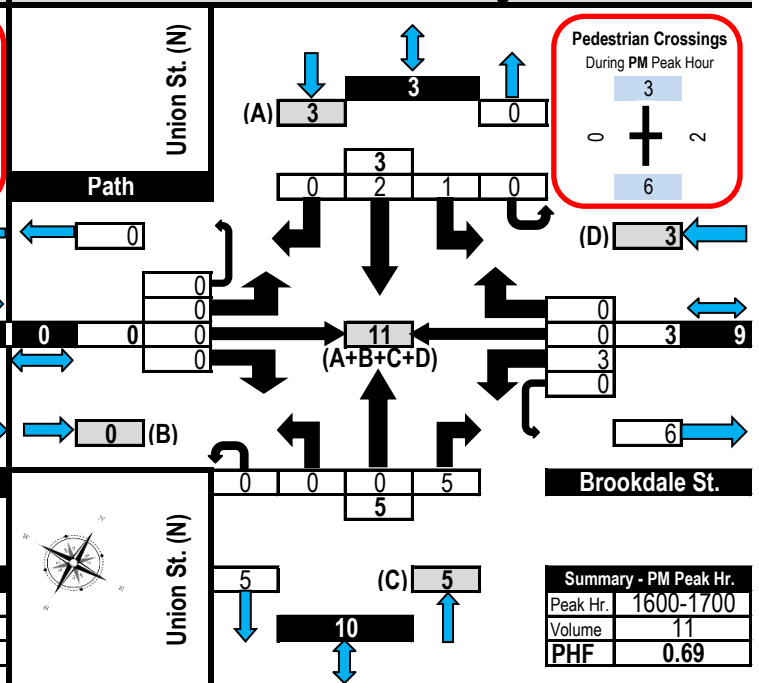
Brookdale St.



AM Peak Hour Flow Diagram



PM Peak Hour Flow Diagram





APPENDIX C

Synchro Reports

2: Martin Street & Carss Street

1 Existing AM

08/18/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	5	5	52	90	1
Future Volume (Veh/h)	5	5	5	52	90	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	6	6	58	100	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	170	100	101			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	170	100	101			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	798	933	1479			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	12	64	101			
Volume Left	6	6	0			
Volume Right	6	0	1			
cSH	861	1479	1700			
Volume to Capacity	0.01	0.00	0.06			
Queue Length 95th (m)	0.3	0.1	0.0			
Control Delay (s)	9.2	0.7	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.2	0.7	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization		17.3%		ICU Level of Service		A
Analysis Period (min)		15				

7: Union Street & Site Access/Brookdale Street

1 Existing AM

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	4	0	0	0	2	1	0	2	0
Future Volume (vph)	0	0	0	4	0	0	0	2	1	0	2	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)	0	0	0	4	0	0	0	2	1	0	2	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	4	3	2								
Volume Left (vph)	0	4	0	0								
Volume Right (vph)	0	0	1	0								
Hadj (s)	0.00	0.23	0.31	0.03								
Departure Headway (s)	3.9	4.1	4.2	3.9								
Degree Utilization, x	0.00	0.00	0.00	0.00								
Capacity (veh/h)	914	862	839	906								
Control Delay (s)	6.9	7.2	7.2	7.0								
Approach Delay (s)	0.0	7.2	7.2	7.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.1								
Level of Service				A								
Intersection Capacity Utilization				14.9%	ICU Level of Service	A						
Analysis Period (min)				15								

2: Martin Street & Carss Street

2 Existing PM

08/18/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	5	9	117	90	1
Future Volume (Veh/h)	4	5	9	117	90	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	6	10	130	100	1
Pedestrians	1			1		
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)						
pX, platoon unblocked						
vC, conflicting volume	252	102	102			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	252	102	102			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	714	929	1476			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	10	140	101			
Volume Left	4	10	0			
Volume Right	6	0	1			
cSH	830	1476	1700			
Volume to Capacity	0.01	0.01	0.06			
Queue Length 95th (m)	0.3	0.2	0.0			
Control Delay (s)	9.4	0.6	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.4	0.6	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization		24.0%		ICU Level of Service		A
Analysis Period (min)		15				

7: Union Street & Site Access/Brookdale Street

2 Existing PM

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	3	0	0	0	0	5	1	2	0
Future Volume (vph)	0	0	0	3	0	0	0	0	5	1	2	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)	0	0	0	3	0	0	0	0	6	1	2	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	3	6	3								
Volume Left (vph)	0	3	0	1								
Volume Right (vph)	0	0	6	0								
Hadj (s)	0.00	0.23	-0.09	0.10								
Departure Headway (s)	3.9	4.2	3.8	4.0								
Degree Utilization, x	0.00	0.00	0.01	0.00								
Capacity (veh/h)	912	860	938	891								
Control Delay (s)	6.9	7.2	6.8	7.0								
Approach Delay (s)	0.0	7.2	6.8	7.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.0								
Level of Service				A								
Intersection Capacity Utilization				15.8%	ICU Level of Service	A						
Analysis Period (min)				15								

2: Martin Street & Carss Street
21 Background AM 2027

08/18/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	5	5	54	94	1
Future Volume (Veh/h)	5	5	5	54	94	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	5	5	54	94	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	158	94	95			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	158	94	95			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	812	941	1486			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	10	59	95			
Volume Left	5	5	0			
Volume Right	5	0	1			
cSH	871	1486	1700			
Volume to Capacity	0.01	0.00	0.06			
Queue Length 95th (m)	0.3	0.1	0.0			
Control Delay (s)	9.2	0.7	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.2	0.7	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			17.4%	ICU Level of Service		A
Analysis Period (min)			15			

7: Union Street & Site Access/Brookdale Street

21 Background AM 2027

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	4	0	0	0	2	1	0	2	0
Future Volume (vph)	0	0	0	4	0	0	0	2	1	0	2	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)	0	0	0	4	0	0	0	2	1	0	2	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	4	3	2								
Volume Left (vph)	0	4	0	0								
Volume Right (vph)	0	0	1	0								
Hadj (s)	0.00	0.23	0.31	0.03								
Departure Headway (s)	3.9	4.1	4.2	3.9								
Degree Utilization, x	0.00	0.00	0.00	0.00								
Capacity (veh/h)	914	862	839	906								
Control Delay (s)	6.9	7.2	7.2	7.0								
Approach Delay (s)	0.0	7.2	7.2	7.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.1									
Level of Service			A									
Intersection Capacity Utilization			14.9%		ICU Level of Service				A			
Analysis Period (min)			15									

2: Martin Street & Carss Street
22 Background PM 2027

08/18/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	5	9	122	89	1
Future Volume (Veh/h)	4	5	9	122	89	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	5	9	122	89	1
Pedestrians	1			1		
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)						
pX, platoon unblocked						
vC, conflicting volume	230	92	91			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	230	92	91			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	735	943	1490			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	9	131	90			
Volume Left	4	9	0			
Volume Right	5	0	1			
cSH	838	1490	1700			
Volume to Capacity	0.01	0.01	0.05			
Queue Length 95th (m)	0.2	0.1	0.0			
Control Delay (s)	9.3	0.6	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.3	0.6	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization		24.3%		ICU Level of Service		A
Analysis Period (min)		15				

7: Union Street & Site Access/Brookdale Street

22 Background PM 2027

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	3	0	0	0	0	5	1	2	0
Future Volume (vph)	0	0	0	3	0	0	0	0	5	1	2	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)	0	0	0	3	0	0	0	0	5	1	2	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	3	5	3								
Volume Left (vph)	0	3	0	1								
Volume Right (vph)	0	0	5	0								
Hadj (s)	0.00	0.23	-0.09	0.10								
Departure Headway (s)	3.9	4.2	3.8	4.0								
Degree Utilization, x	0.00	0.00	0.01	0.00								
Capacity (veh/h)	912	861	938	891								
Control Delay (s)	6.9	7.2	6.8	7.0								
Approach Delay (s)	0.0	7.2	6.8	7.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.0								
Level of Service				A								
Intersection Capacity Utilization				15.8%	ICU Level of Service	A						
Analysis Period (min)				15								



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	35	19	59	103	4
Future Volume (Veh/h)	12	35	19	59	103	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	35	19	59	103	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	202	105	107			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	202	105	107			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	98	96	99			
cM capacity (veh/h)	759	928	1471			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	47	78	107			
Volume Left	12	19	0			
Volume Right	35	0	4			
cSH	878	1471	1700			
Volume to Capacity	0.05	0.01	0.06			
Queue Length 95th (m)	1.3	0.3	0.0			
Control Delay (s)	9.3	1.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.3	1.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			21.1%	ICU Level of Service		A
Analysis Period (min)			15			

7: Union Street & Site Access/Brookdale Street

23 Background AM 2032

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	4	0	0	0	2	1	0	9	0
Future Volume (vph)	0	0	0	4	0	0	0	2	1	0	9	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)	0	0	0	4	0	0	0	2	1	0	9	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	4	3	9								
Volume Left (vph)	0	4	0	0								
Volume Right (vph)	0	0	1	0								
Hadj (s)	0.00	0.23	0.31	0.03								
Departure Headway (s)	3.9	4.2	4.2	3.9								
Degree Utilization, x	0.00	0.00	0.00	0.01								
Capacity (veh/h)	900	858	837	906								
Control Delay (s)	6.9	7.2	7.2	7.0								
Approach Delay (s)	0.0	7.2	7.2	7.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.1									
Level of Service			A									
Intersection Capacity Utilization			14.9%		ICU Level of Service				A			
Analysis Period (min)			15									

2: Martin Street & Carss Street
24 Background PM 2032

08/18/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	20	10	42	98	5
Future Volume (Veh/h)	15	20	10	42	98	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	20	10	42	98	5
Pedestrians	1			1		
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)						
pX, platoon unblocked						
vC, conflicting volume	164	102	104			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	164	102	104			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	98	98	99			
cM capacity (veh/h)	803	929	1474			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	35	52	103			
Volume Left	15	10	0			
Volume Right	20	0	5			
cSH	870	1474	1700			
Volume to Capacity	0.04	0.01	0.06			
Queue Length 95th (m)	1.0	0.2	0.0			
Control Delay (s)	9.3	1.5	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.3	1.5	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			19.9%	ICU Level of Service		A
Analysis Period (min)			15			

7: Union Street & Site Access/Brookdale Street

24 Background PM 2032

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	3	0	0	0	16	5	1	9	0
Future Volume (vph)	0	0	0	3	0	0	0	16	5	1	9	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)	0	0	0	3	0	0	0	16	5	1	9	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	3	21	10								
Volume Left (vph)	0	3	0	1								
Volume Right (vph)	0	0	5	0								
Hadj (s)	0.00	0.23	0.37	0.05								
Departure Headway (s)	4.0	4.2	4.3	4.0								
Degree Utilization, x	0.00	0.00	0.02	0.01								
Capacity (veh/h)	900	845	827	897								
Control Delay (s)	7.0	7.2	7.4	7.0								
Approach Delay (s)	0.0	7.2	7.4	7.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.3									
Level of Service			A									
Intersection Capacity Utilization			15.8%		ICU Level of Service				A			
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	8	7	54	94	4
Future Volume (Veh/h)	8	8	7	54	94	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	8	8	7	54	94	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	164	96	98			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	164	96	98			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	805	939	1483			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	16	61	98			
Volume Left	8	7	0			
Volume Right	8	0	4			
cSH	867	1483	1700			
Volume to Capacity	0.02	0.00	0.06			
Queue Length 95th (m)	0.4	0.1	0.0			
Control Delay (s)	9.2	0.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.2	0.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			19.2%	ICU Level of Service		A
Analysis Period (min)			15			

7: Union Street & Site Access/Brookdale Street

31_Tot AM 2027 - Scenario 1

08/28/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	5	4	4	10	0	7	3	1	0	4	0
Future Volume (vph)	0	5	4	4	10	0	7	3	1	0	4	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)	0	5	4	4	10	0	7	3	1	0	4	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	9	14	11	4								
Volume Left (vph)	0	4	7	0								
Volume Right (vph)	4	0	1	0								
Hadj (s)	-0.23	0.09	0.28	0.03								
Departure Headway (s)	3.7	4.0	4.2	4.0								
Degree Utilization, x	0.01	0.02	0.01	0.00								
Capacity (veh/h)	957	884	833	891								
Control Delay (s)	6.7	7.1	7.3	7.0								
Approach Delay (s)	6.7	7.1	7.3	7.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.1									
Level of Service			A									
Intersection Capacity Utilization			18.3%	ICU Level of Service				A				
Analysis Period (min)			15									

11: Site Access/Hilan Village & Carss Street

31_Tot AM 2027 - Scenario 1

08/28/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	6	0	0	0	0	8	0	0	0
Future Volume (Veh/h)	0	0	0	6	0	0	0	0	8	0	0	0
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)	0	0	0	6	0	0	0	0	8	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			12	12	0	20	12	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			12	12	0	20	12	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			100			100	100	99	100	100	100
cM capacity (veh/h)	1623			1623			1002	879	1085	983	879	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	6	8	0								
Volume Left	0	6	0	0								
Volume Right	0	0	8	0								
cSH	1700	1623	1085	1700								
Volume to Capacity	0.00	0.00	0.01	0.04								
Queue Length 95th (m)	0.0	0.1	0.2	0.0								
Control Delay (s)	0.0	7.2	8.3	0.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	7.2	8.3	0.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			7.9									
Intersection Capacity Utilization			13.3%		ICU Level of Service				A			
Analysis Period (min)			15									

2: Martin Street & Carss Street

32 Tot PM 2027 - Scenario 1

08/28/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	8	12	122	89	7
Future Volume (Veh/h)	9	8	12	122	89	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	8	12	122	89	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	238	92	96			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	238	92	96			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	727	943	1485			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	17	134	96			
Volume Left	9	12	0			
Volume Right	8	0	7			
cSH	815	1485	1700			
Volume to Capacity	0.02	0.01	0.06			
Queue Length 95th (m)	0.5	0.2	0.0			
Control Delay (s)	9.5	0.7	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.5	0.7	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization		24.1%		ICU Level of Service		A
Analysis Period (min)			15			

7: Union Street & Site Access/Brookdale Street

32 Tot PM 2027 - Scenario 1

08/28/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	13	9	3	17	0	12	2	5	1	4	0
Future Volume (vph)	0	13	9	3	17	0	12	2	5	1	4	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)	0	13	9	3	17	0	12	2	5	1	4	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	20	19	5								
Volume Left (vph)	0	3	12	1								
Volume Right (vph)	9	0	5	0								
Hadj (s)	-0.21	0.06	0.18	0.07								
Departure Headway (s)	3.8	4.0	4.2	4.1								
Degree Utilization, x	0.02	0.02	0.02	0.01								
Capacity (veh/h)	943	881	843	868								
Control Delay (s)	6.8	7.1	7.3	7.1								
Approach Delay (s)	6.8	7.1	7.3	7.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.1									
Level of Service			A									
Intersection Capacity Utilization			14.9%		ICU Level of Service				A			
Analysis Period (min)			15									

11: Site Access/Hilan Village & Carss Street

32 Tot PM 2027 - Scenario 1

08/28/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	11	0	0	0	0	9	0	0	0
Future Volume (Veh/h)	0	0	0	11	0	0	0	0	9	0	0	0
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)	0	0	0	11	0	0	0	0	9	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			22	22	0	31	22	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			22	22	0	31	22	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			100	100	99	100	100	100
cM capacity (veh/h)	1623			1623			985	866	1085	964	866	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	11	9	0								
Volume Left	0	11	0	0								
Volume Right	0	0	9	0								
cSH	1700	1623	1085	1700								
Volume to Capacity	0.00	0.01	0.01	0.04								
Queue Length 95th (m)	0.0	0.2	0.2	0.0								
Control Delay (s)	0.0	7.2	8.3	0.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	7.2	8.3	0.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			7.7									
Intersection Capacity Utilization			13.3%		ICU Level of Service				A			
Analysis Period (min)			15									

2: Martin Street & Carss Street
33 Tot AM 2027 - Scenario 2

08/18/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	8	7	54	94	1
Future Volume (Veh/h)	6	8	7	54	94	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	8	7	54	94	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	162	94	95			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	162	94	95			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	806	941	1486			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	14	61	95			
Volume Left	6	7	0			
Volume Right	8	0	1			
cSH	878	1486	1700			
Volume to Capacity	0.02	0.00	0.06			
Queue Length 95th (m)	0.4	0.1	0.0			
Control Delay (s)	9.2	0.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.2	0.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization		19.2%		ICU Level of Service		A
Analysis Period (min)		15				

7: Union Street & Site Access/Brookdale Street

33 Tot AM 2027 - Scenario 2

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	4	0	0	0	3	1	0	4	0
Future Volume (vph)	0	0	0	4	0	0	0	3	1	0	4	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)	0	0	0	4	0	0	0	3	1	0	4	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	4	4	4								
Volume Left (vph)	0	4	0	0								
Volume Right (vph)	0	0	1	0								
Hadj (s)	0.00	0.23	0.36	0.03								
Departure Headway (s)	3.9	4.2	4.3	3.9								
Degree Utilization, x	0.00	0.00	0.00	0.00								
Capacity (veh/h)	912	860	829	906								
Control Delay (s)	6.9	7.2	7.3	7.0								
Approach Delay (s)	0.0	7.2	7.3	7.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.1									
Level of Service			A									
Intersection Capacity Utilization			14.9%		ICU Level of Service				A			
Analysis Period (min)			15									

11: Site Access/Hilan Village & Carss Street

33 Tot AM 2027 - Scenario 2

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	3	0	0	0	0	6	0	0	0
Future Volume (Veh/h)	0	0	0	3	0	0	0	0	6	0	0	0
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)	0	0	0	3	0	0	0	0	6	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			6	6	0	12	6	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			6	6	0	12	6	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			100			100	100	99	100	100	100
cM capacity (veh/h)	1623			1623			1013	888	1085	998	888	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	3	6	0								
Volume Left	0	3	0	0								
Volume Right	0	0	6	0								
cSH	1700	1623	1085	1700								
Volume to Capacity	0.00	0.00	0.01	0.00								
Queue Length 95th (m)	0.0	0.0	0.1	0.0								
Control Delay (s)	0.0	7.2	8.3	0.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	7.2	8.3	0.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			8.0									
Intersection Capacity Utilization			13.3%	ICU Level of Service					A			
Analysis Period (min)			15									

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	8	12	122	89	10
Future Volume (Veh/h)	5	8	12	122	89	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	8	12	122	89	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	240	94	99			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	240	94	99			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	725	941	1481			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	13	134	99			
Volume Left	5	12	0			
Volume Right	8	0	10			
cSH	844	1481	1700			
Volume to Capacity	0.02	0.01	0.06			
Queue Length 95th (m)	0.4	0.2	0.0			
Control Delay (s)	9.3	0.7	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.3	0.7	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization		24.1%		ICU Level of Service		A
Analysis Period (min)		15				

7: Union Street & Site Access/Brookdale Street

34 Tot PM 2027 - Scenario 2

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	3	25	0	18	2	5	1	4	0
Future Volume (vph)	0	0	0	3	25	0	18	2	5	1	4	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)	0	0	0	3	25	0	18	2	5	1	4	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	28	25	5								
Volume Left (vph)	0	3	18	1								
Volume Right (vph)	0	0	5	0								
Hadj (s)	0.00	0.06	0.19	0.07								
Departure Headway (s)	4.0	4.0	4.2	4.1								
Degree Utilization, x	0.00	0.03	0.03	0.01								
Capacity (veh/h)	900	884	848	875								
Control Delay (s)	7.0	7.2	7.3	7.1								
Approach Delay (s)	0.0	7.2	7.3	7.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.2									
Level of Service			A									
Intersection Capacity Utilization			15.8%		ICU Level of Service				A			
Analysis Period (min)			15									

11: Site Access/Hilan Village & Carss Street

34 Tot PM 2027 - Scenario 2

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	14	0	0	0	0	5	0	0	0
Future Volume (Veh/h)	0	0	0	14	0	0	0	0	5	0	0	0
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)	0	0	0	14	0	0	0	0	5	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			28	28	0	33	28	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			28	28	0	33	28	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			100	100	100	100	100	100
cM capacity (veh/h)	1623			1623			975	858	1085	963	858	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	14	5	0								
Volume Left	0	14	0	0								
Volume Right	0	0	5	0								
cSH	1700	1623	1085	1700								
Volume to Capacity	0.00	0.01	0.00	0.00								
Queue Length 95th (m)	0.0	0.2	0.1	0.0								
Control Delay (s)	0.0	7.2	8.3	0.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	7.2	8.3	0.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			7.5									
Intersection Capacity Utilization			13.3%		ICU Level of Service				A			
Analysis Period (min)			15									

2: Martin Street & Carss Street
35 Tot AM 2027 - Scenario 3

08/18/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	8	7	54	94	9
Future Volume (Veh/h)	6	8	7	54	94	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	8	7	54	94	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	166	98	103			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	166	98	103			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	802	936	1476			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	14	61	103			
Volume Left	6	7	0			
Volume Right	8	0	9			
cSH	873	1476	1700			
Volume to Capacity	0.02	0.00	0.06			
Queue Length 95th (m)	0.4	0.1	0.0			
Control Delay (s)	9.2	0.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.2	0.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization		19.2%		ICU Level of Service		A
Analysis Period (min)		15				

7: Union Street & Site Access/Brookdale Street

35 Tot AM 2027 - Scenario 3

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	4	25	0	18	3	1	0	4	0
Future Volume (vph)	0	0	0	4	25	0	18	3	1	0	4	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)	0	0	0	4	25	0	18	3	1	0	4	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	29	22	4								
Volume Left (vph)	0	4	18	0								
Volume Right (vph)	0	0	1	0								
Hadj (s)	0.00	0.06	0.26	0.03								
Departure Headway (s)	4.0	4.0	4.2	4.0								
Degree Utilization, x	0.00	0.03	0.03	0.00								
Capacity (veh/h)	900	885	834	883								
Control Delay (s)	7.0	7.2	7.3	7.0								
Approach Delay (s)	0.0	7.2	7.3	7.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.2									
Level of Service			A									
Intersection Capacity Utilization			19.4%		ICU Level of Service					A		
Analysis Period (min)			15									

11: Site Access/Hilan Village & Carss Street

35 Tot AM 2027 - Scenario 3

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	11	0	0	0	0	6	0	0	0
Future Volume (Veh/h)	0	0	0	11	0	0	0	0	6	0	0	0
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)	0	0	0	11	0	0	0	0	6	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			22	22	0	28	22	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			22	22	0	28	22	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			100	100	99	100	100	100
cM capacity (veh/h)	1623			1623			985	866	1085	971	866	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	11	6	0								
Volume Left	0	11	0	0								
Volume Right	0	0	6	0								
cSH	1700	1623	1085	1700								
Volume to Capacity	0.00	0.01	0.01	0.00								
Queue Length 95th (m)	0.0	0.2	0.1	0.0								
Control Delay (s)	0.0	7.2	8.3	0.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	7.2	8.3	0.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			7.6									
Intersection Capacity Utilization			13.3%		ICU Level of Service				A			
Analysis Period (min)			15									

2: Martin Street & Carss Street
36 Tot PM 2027 - Scenario 3

08/18/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	8	12	122	89	2
Future Volume (Veh/h)	13	8	12	122	89	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	13	8	12	122	89	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	236	90	91			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	236	90	91			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	98	99	99			
cM capacity (veh/h)	729	946	1491			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	21	134	91			
Volume Left	13	12	0			
Volume Right	8	0	2			
cSH	799	1491	1700			
Volume to Capacity	0.03	0.01	0.05			
Queue Length 95th (m)	0.6	0.2	0.0			
Control Delay (s)	9.6	0.7	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.6	0.7	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization		24.1%		ICU Level of Service		A
Analysis Period (min)			15			

7: Union Street & Site Access/Brookdale Street

36 Tot PM 2027 - Scenario 3

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	25	18	3	0	0	0	2	5	1	4	0
Future Volume (vph)	0	25	18	3	0	0	0	2	5	1	4	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)	0	25	18	3	0	0	0	2	5	1	4	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	43	3	7	5								
Volume Left (vph)	0	3	0	1								
Volume Right (vph)	18	0	5	0								
Hadj (s)	-0.22	0.23	0.08	0.07								
Departure Headway (s)	3.7	4.2	4.1	4.1								
Degree Utilization, x	0.04	0.00	0.01	0.01								
Capacity (veh/h)	959	849	860	869								
Control Delay (s)	6.9	7.2	7.1	7.1								
Approach Delay (s)	6.9	7.2	7.1	7.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			6.9									
Level of Service			A									
Intersection Capacity Utilization			14.9%	ICU Level of Service		A						
Analysis Period (min)			15									

11: Site Access/Hilan Village & Carss Street

36 Tot PM 2027 - Scenario 3

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	6	0	0	0	0	13	0	0	0
Future Volume (Veh/h)	0	0	0	6	0	0	0	0	13	0	0	0
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)	0	0	0	6	0	0	0	0	13	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	0			0			12	12	0	25	12	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			12	12	0	25	12	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			100			100	100	99	100	100	100
cM capacity (veh/h)	1623			1623			1002	879	1085	971	879	1085
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	6	13	0								
Volume Left	0	6	0	0								
Volume Right	0	0	13	0								
cSH	1700	1623	1085	1700								
Volume to Capacity	0.00	0.00	0.01	0.00								
Queue Length 95th (m)	0.0	0.1	0.3	0.0								
Control Delay (s)	0.0	7.2	8.4	0.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	7.2	8.4	0.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay				8.0								
Intersection Capacity Utilization				13.3%	ICU Level of Service				A			
Analysis Period (min)				15								



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	38	21	59	103	7
Future Volume (Veh/h)	15	38	21	59	103	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	38	21	59	103	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	208	106	110			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	208	106	110			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	98	96	99			
cM capacity (veh/h)	752	926	1468			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	53	80	110			
Volume Left	15	21	0			
Volume Right	38	0	7			
cSH	869	1468	1700			
Volume to Capacity	0.06	0.01	0.06			
Queue Length 95th (m)	1.5	0.3	0.0			
Control Delay (s)	9.4	2.0	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.4	2.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization		21.2%		ICU Level of Service		A
Analysis Period (min)		15				

7: Union Street & Site Access/Brookdale Street

41 Tot AM 2032 - Scenario 1

08/28/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	5	4	4	10	0	7	3	1	0	11	0
Future Volume (vph)	0	5	4	4	10	0	7	3	1	0	11	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)	0	5	4	4	10	0	7	3	1	0	11	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	9	14	11	11								
Volume Left (vph)	0	4	7	0								
Volume Right (vph)	4	0	1	0								
Hadj (s)	-0.23	0.09	0.28	0.03								
Departure Headway (s)	3.7	4.0	4.2	4.0								
Degree Utilization, x	0.01	0.02	0.01	0.01								
Capacity (veh/h)	952	879	832	891								
Control Delay (s)	6.8	7.1	7.3	7.0								
Approach Delay (s)	6.8	7.1	7.3	7.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.1									
Level of Service			A									
Intersection Capacity Utilization			18.3%		ICU Level of Service				A			
Analysis Period (min)			15									

11: Site Access/Hilan Village & Carss Street

41 Tot AM 2032 - Scenario 1

08/28/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	6	0	17	0	0	8	44	0	0
Future Volume (Veh/h)	0	0	0	6	0	17	0	0	8	44	0	0
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)	0	0	0	6	0	17	0	0	8	44	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	17			0			20	29	0	28	20	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			0			20	29	0	28	20	8
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			100			100	100	99	95	100	100
cM capacity (veh/h)	1600			1623			990	861	1085	971	870	1073
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	23	8	44								
Volume Left	0	6	0	44								
Volume Right	0	17	8	0								
cSH	1700	1623	1085	971								
Volume to Capacity	0.00	0.00	0.01	0.05								
Queue Length 95th (m)	0.0	0.1	0.2	1.1								
Control Delay (s)	0.0	1.9	8.3	8.9								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	1.9	8.3	8.9								
Approach LOS			A	A								
Intersection Summary												
Average Delay	6.7											
Intersection Capacity Utilization	19.2%			ICU Level of Service					A			
Analysis Period (min)	15											

2: Martin Street & Carss Street
42 Tot PM 2032 - Scenario 1

08/28/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	23	45	133	98	11
Future Volume (Veh/h)	20	23	45	133	98	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	23	45	133	98	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	326	104	109			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	326	104	109			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	97	98	97			
cM capacity (veh/h)	632	930	1469			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	43	178	109			
Volume Left	20	45	0			
Volume Right	23	0	11			
cSH	762	1469	1700			
Volume to Capacity	0.06	0.03	0.06			
Queue Length 95th (m)	1.4	0.7	0.0			
Control Delay (s)	10.0	2.1	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.0	2.1	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		2.4				
Intersection Capacity Utilization		26.7%		ICU Level of Service		A
Analysis Period (min)		15				

7: Union Street & Site Access/Brookdale Street

42 Tot PM 2032 - Scenario 1

08/28/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	13	9	3	17	0	12	18	5	1	11	0
Future Volume (vph)	0	13	9	3	17	0	12	18	5	1	11	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)	0	13	9	3	17	0	12	18	5	1	11	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	20	35	12								
Volume Left (vph)	0	3	12	1								
Volume Right (vph)	9	0	5	0								
Hadj (s)	-0.21	0.06	0.33	0.05								
Departure Headway (s)	3.8	4.1	4.3	4.1								
Degree Utilization, x	0.02	0.02	0.04	0.01								
Capacity (veh/h)	925	865	812	868								
Control Delay (s)	6.9	7.2	7.5	7.1								
Approach Delay (s)	6.9	7.2	7.5	7.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.2								
Level of Service				A								
Intersection Capacity Utilization				16.9%	ICU Level of Service	A						
Analysis Period (min)				15								

11: Site Access/Hilan Village & Carss Street

42 Tot PM 2032 - Scenario 1

08/28/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	11	0	52	0	0	9	33	0	0
Future Volume (Veh/h)	0	0	0	11	0	52	0	0	9	33	0	0
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)	0	0	0	11	0	52	0	0	9	33	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	52			0			48	74	0	57	48	26
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	52			0			48	74	0	57	48	26
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			100	100	99	96	100	100
cM capacity (veh/h)	1554			1623			948	811	1085	927	838	1050
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	63	9	33								
Volume Left	0	11	0	33								
Volume Right	0	52	9	0								
cSH	1700	1623	1085	927								
Volume to Capacity	0.00	0.01	0.01	0.04								
Queue Length 95th (m)	0.0	0.2	0.2	0.8								
Control Delay (s)	0.0	1.3	8.3	9.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	1.3	8.3	9.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay	4.3											
Intersection Capacity Utilization	19.3%			ICU Level of Service					A			
Analysis Period (min)	15											

2: Martin Street & Carss Street
43 Tot AM 2032 - Scenario 2

08/18/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	38	21	59	103	4
Future Volume (Veh/h)	13	38	21	59	103	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	13	38	21	59	103	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	206	105	107			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	206	105	107			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	98	96	99			
cM capacity (veh/h)	754	928	1471			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	51	80	107			
Volume Left	13	21	0			
Volume Right	38	0	4			
cSH	876	1471	1700			
Volume to Capacity	0.06	0.01	0.06			
Queue Length 95th (m)	1.4	0.3	0.0			
Control Delay (s)	9.4	2.0	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.4	2.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization		21.2%		ICU Level of Service		A
Analysis Period (min)			15			

7: Union Street & Site Access/Brookdale Street

43 Tot AM 2032 - Scenario 2

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	4	0	0	0	3	1	0	11	0
Future Volume (vph)	0	0	0	4	0	0	0	3	1	0	11	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)	0	0	0	4	0	0	0	3	1	0	11	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	4	4	11								
Volume Left (vph)	0	4	0	0								
Volume Right (vph)	0	0	1	0								
Hadj (s)	0.00	0.23	0.36	0.03								
Departure Headway (s)	3.9	4.2	4.3	3.9								
Degree Utilization, x	0.00	0.00	0.00	0.01								
Capacity (veh/h)	900	856	827	906								
Control Delay (s)	6.9	7.2	7.3	7.0								
Approach Delay (s)	0.0	7.2	7.3	7.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.1									
Level of Service			A									
Intersection Capacity Utilization			14.9%		ICU Level of Service				A			
Analysis Period (min)			15									

11: Site Access/Hilan Village & Carss Street

43 Tot AM 2032 - Scenario 2

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	3	0	17	0	0	6	44	0	0
Future Volume (Veh/h)	0	0	0	3	0	17	0	0	6	44	0	0
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)	0	0	0	3	0	17	0	0	6	44	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	17			0			14	23	0	20	14	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			0			14	23	0	20	14	8
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			100			100	100	99	96	100	100
cM capacity (veh/h)	1600			1623			1000	869	1085	986	878	1073
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	20	6	44								
Volume Left	0	3	0	44								
Volume Right	0	17	6	0								
cSH	1700	1623	1085	986								
Volume to Capacity	0.00	0.00	0.01	0.04								
Queue Length 95th (m)	0.0	0.0	0.1	1.1								
Control Delay (s)	0.0	1.1	8.3	8.8								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	1.1	8.3	8.8								
Approach LOS			A	A								
Intersection Summary												
Average Delay			6.6									
Intersection Capacity Utilization			19.2%	ICU Level of Service					A			
Analysis Period (min)			15									

2: Martin Street & Carss Street
44 Tot PM 2032 - Scenario 2

08/18/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	23	45	133	98	14
Future Volume (Veh/h)	16	23	45	133	98	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	23	45	133	98	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	328	105	112			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	328	105	112			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	97	98	97			
cM capacity (veh/h)	630	928	1465			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	39	178	112			
Volume Left	16	45	0			
Volume Right	23	0	14			
cSH	777	1465	1700			
Volume to Capacity	0.05	0.03	0.07			
Queue Length 95th (m)	1.2	0.7	0.0			
Control Delay (s)	9.9	2.1	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.9	2.1	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.3				
Intersection Capacity Utilization		26.7%		ICU Level of Service		A
Analysis Period (min)		15				

7: Union Street & Site Access/Brookdale Street

44 Tot PM 2032 - Scenario 2

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	3	25	0	18	18	5	1	11	0
Future Volume (vph)	0	0	0	3	25	0	18	18	5	1	11	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)	0	0	0	3	25	0	18	18	5	1	11	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	28	41	12								
Volume Left (vph)	0	3	18	1								
Volume Right (vph)	0	0	5	0								
Hadj (s)	0.00	0.06	0.32	0.05								
Departure Headway (s)	4.0	4.1	4.3	4.1								
Degree Utilization, x	0.00	0.03	0.05	0.01								
Capacity (veh/h)	883	868	822	875								
Control Delay (s)	7.0	7.2	7.5	7.1								
Approach Delay (s)	0.0	7.2	7.5	7.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.3								
Level of Service				A								
Intersection Capacity Utilization				19.1%	ICU Level of Service	A						
Analysis Period (min)				15								

11: Site Access/Hilan Village & Carss Street

44 Tot PM 2032 - Scenario 2

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	14	0	52	0	0	5	33	0	0
Future Volume (Veh/h)	0	0	0	14	0	52	0	0	5	33	0	0
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)	0	0	0	14	0	52	0	0	5	33	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	52			0			54	80	0	59	54	26
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	52			0			54	80	0	59	54	26
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			100	100	100	96	100	100
cM capacity (veh/h)	1554			1623			938	803	1085	927	830	1050
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	66	5	33								
Volume Left	0	14	0	33								
Volume Right	0	52	5	0								
cSH	1700	1623	1085	927								
Volume to Capacity	0.00	0.01	0.00	0.04								
Queue Length 95th (m)	0.0	0.2	0.1	0.8								
Control Delay (s)	0.0	1.6	8.3	9.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	1.6	8.3	9.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay				4.3								
Intersection Capacity Utilization				19.5%	ICU Level of Service				A			
Analysis Period (min)				15								

2: Martin Street & Carss Street
45 Tot AM 2032 - Scenario 3

08/18/2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	38	21	59	103	12
Future Volume (Veh/h)	13	38	21	59	103	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	13	38	21	59	103	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	210	109	115			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	210	109	115			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	98	96	99			
cM capacity (veh/h)	750	923	1462			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	51	80	115			
Volume Left	13	21	0			
Volume Right	38	0	12			
cSH	872	1462	1700			
Volume to Capacity	0.06	0.01	0.07			
Queue Length 95th (m)	1.4	0.3	0.0			
Control Delay (s)	9.4	2.1	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.4	2.1	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization		21.2%		ICU Level of Service		A
Analysis Period (min)			15			

7: Union Street & Site Access/Brookdale Street

45 Tot AM 2032 - Scenario 3

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	4	25	0	18	3	1	0	11	0
Future Volume (vph)	0	0	0	4	25	0	18	3	1	0	11	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)	0	0	0	4	25	0	18	3	1	0	11	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	29	22	11								
Volume Left (vph)	0	4	18	0								
Volume Right (vph)	0	0	1	0								
Hadj (s)	0.00	0.06	0.26	0.03								
Departure Headway (s)	4.0	4.0	4.2	4.0								
Degree Utilization, x	0.00	0.03	0.03	0.01								
Capacity (veh/h)	900	880	833	883								
Control Delay (s)	7.0	7.2	7.3	7.1								
Approach Delay (s)	0.0	7.2	7.3	7.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.2									
Level of Service			A									
Intersection Capacity Utilization			19.4%		ICU Level of Service				A			
Analysis Period (min)			15									

11: Site Access/Hilan Village & Carss Street

45 Tot AM 2032 - Scenario 3

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	11	0	17	0	0	6	44	0	0
Future Volume (Veh/h)	0	0	0	11	0	17	0	0	6	44	0	0
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)	0	0	0	11	0	17	0	0	6	44	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	17			0			30	39	0	36	30	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			0			30	39	0	36	30	8
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			100	100	99	95	100	100
cM capacity (veh/h)	1600			1623			973	847	1085	959	856	1073
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	28	6	44								
Volume Left	0	11	0	44								
Volume Right	0	17	6	0								
cSH	1700	1623	1085	959								
Volume to Capacity	0.00	0.01	0.01	0.05								
Queue Length 95th (m)	0.0	0.2	0.1	1.1								
Control Delay (s)	0.0	2.9	8.3	8.9								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	2.9	8.3	8.9								
Approach LOS			A	A								
Intersection Summary												
Average Delay			6.7									
Intersection Capacity Utilization			19.2%		ICU Level of Service				A			
Analysis Period (min)			15									

2: Martin Street & Carss Street
46 Tot PM 2032 - Scenario 3

08/18/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	23	45	133	98	6
Future Volume (Veh/h)	24	23	45	133	98	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	24	23	45	133	98	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	324	101	104			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	324	101	104			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	96	98	97			
cM capacity (veh/h)	634	933	1475			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	47	178	104			
Volume Left	24	45	0			
Volume Right	23	0	6			
cSH	752	1475	1700			
Volume to Capacity	0.06	0.03	0.06			
Queue Length 95th (m)	1.5	0.7	0.0			
Control Delay (s)	10.1	2.1	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.1	2.1	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization		26.7%		ICU Level of Service		A
Analysis Period (min)			15			

7: Union Street & Site Access/Brookdale Street

46 Tot PM 2032 - Scenario 3

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	25	18	3	0	0	0	18	5	1	11	0
Future Volume (vph)	0	25	18	3	0	0	0	18	5	1	11	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)	0	25	18	3	0	0	0	18	5	1	11	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	43	3	23	12								
Volume Left (vph)	0	3	0	1								
Volume Right (vph)	18	0	5	0								
Hadj (s)	-0.22	0.23	0.38	0.05								
Departure Headway (s)	3.8	4.3	4.4	4.1								
Degree Utilization, x	0.04	0.00	0.03	0.01								
Capacity (veh/h)	941	833	801	869								
Control Delay (s)	6.9	7.3	7.5	7.1								
Approach Delay (s)	6.9	7.3	7.5	7.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.1									
Level of Service			A									
Intersection Capacity Utilization			14.9%		ICU Level of Service				A			
Analysis Period (min)			15									

11: Site Access/Hilan Village & Carss Street

46 Tot PM 2032 - Scenario 3

08/18/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	6	0	52	0	0	13	33	0	0
Future Volume (Veh/h)	0	0	0	6	0	52	0	0	13	33	0	0
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)	0	0	0	6	0	52	0	0	13	33	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	52			0			38	64	0	51	38	26
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	52			0			38	64	0	51	38	26
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
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			100			100	100	99	96	100	100
cM capacity (veh/h)	1554			1623			964	824	1085	934	851	1050
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	58	13	33								
Volume Left	0	6	0	33								
Volume Right	0	52	13	0								
cSH	1700	1623	1085	934								
Volume to Capacity	0.00	0.00	0.01	0.04								
Queue Length 95th (m)	0.0	0.1	0.3	0.8								
Control Delay (s)	0.0	0.8	8.4	9.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	0.8	8.4	9.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			4.3									
Intersection Capacity Utilization			19.0%	ICU Level of Service					A			
Analysis Period (min)			15									

APPENDIX D

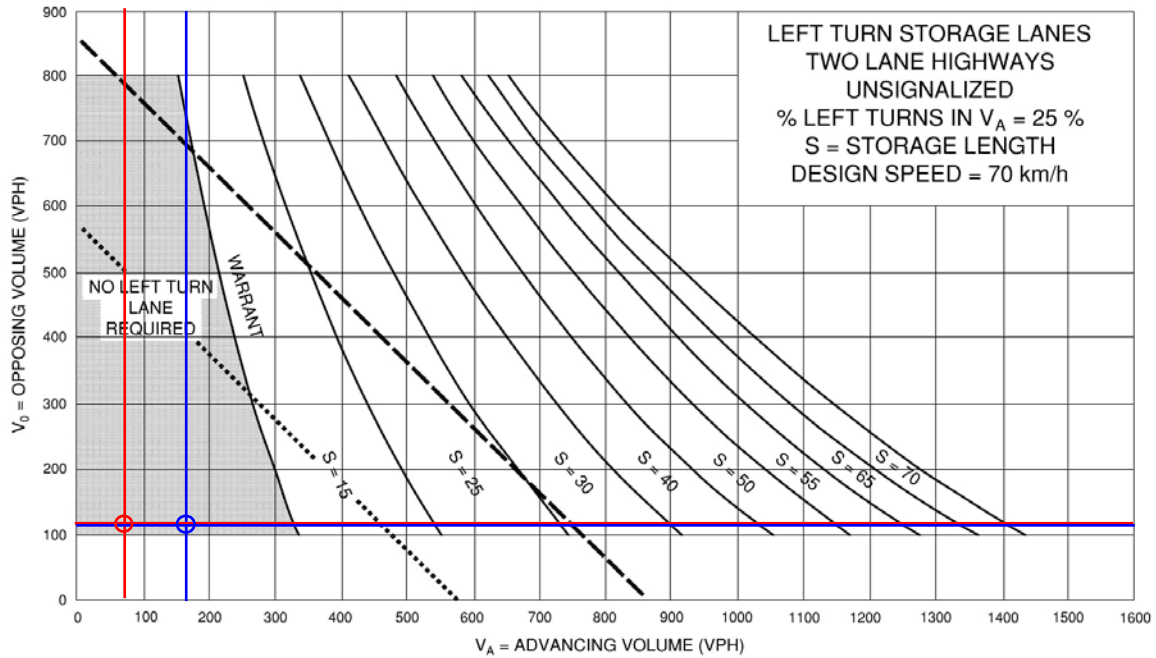
Left Turn Lane Graphs

2032 LTL Warrant
Total Traffic - Scenario 1

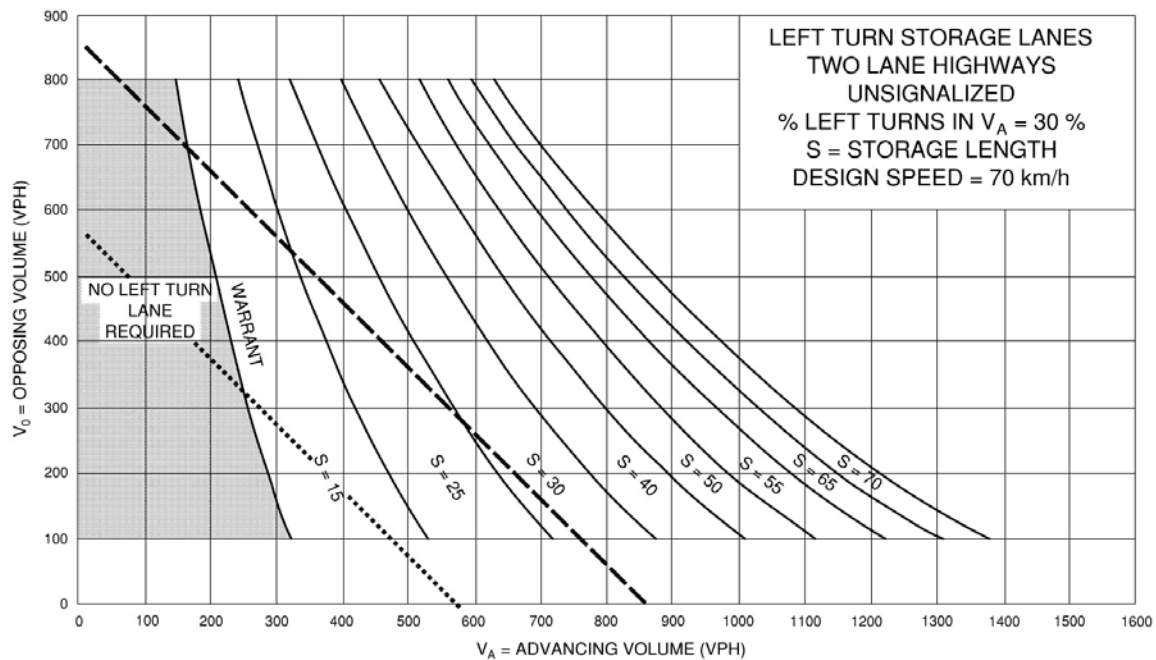
TAC GDG for Canadian Roads – June 2017

MTO Design Supplement, April 2020

Exhibit 9A-13



AM Peak: V_A : 80
 V_0 : 110
 PM peak: V_A : 178
 V_0 : 109

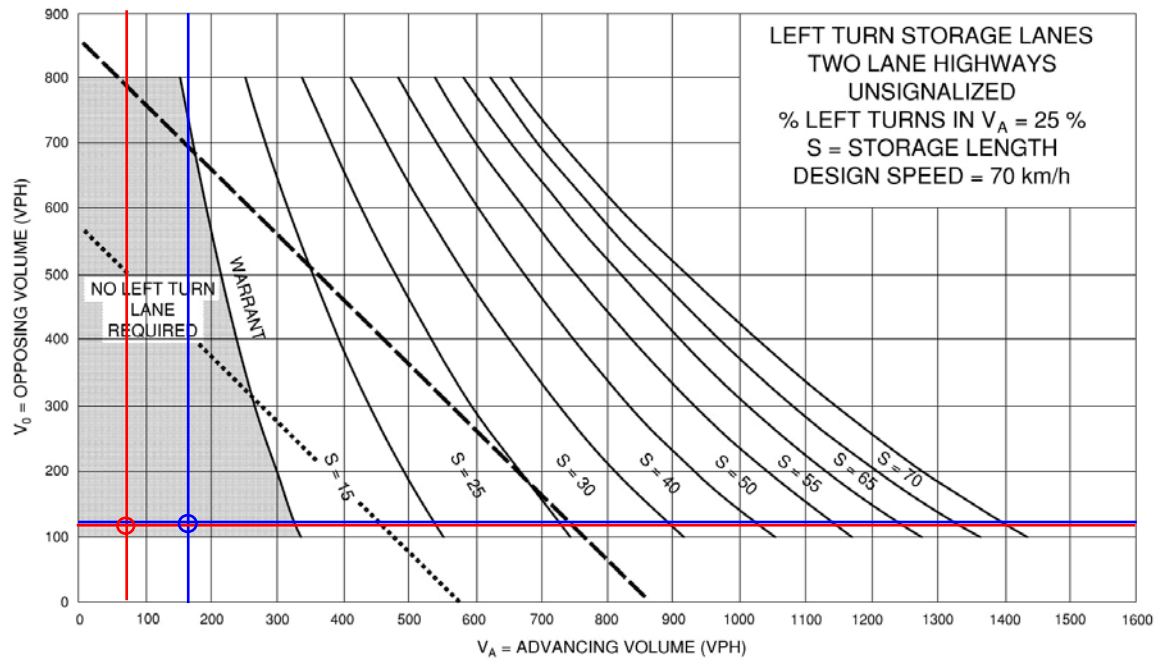


2032 LTL Warrant
Total Traffic - Scenario 2

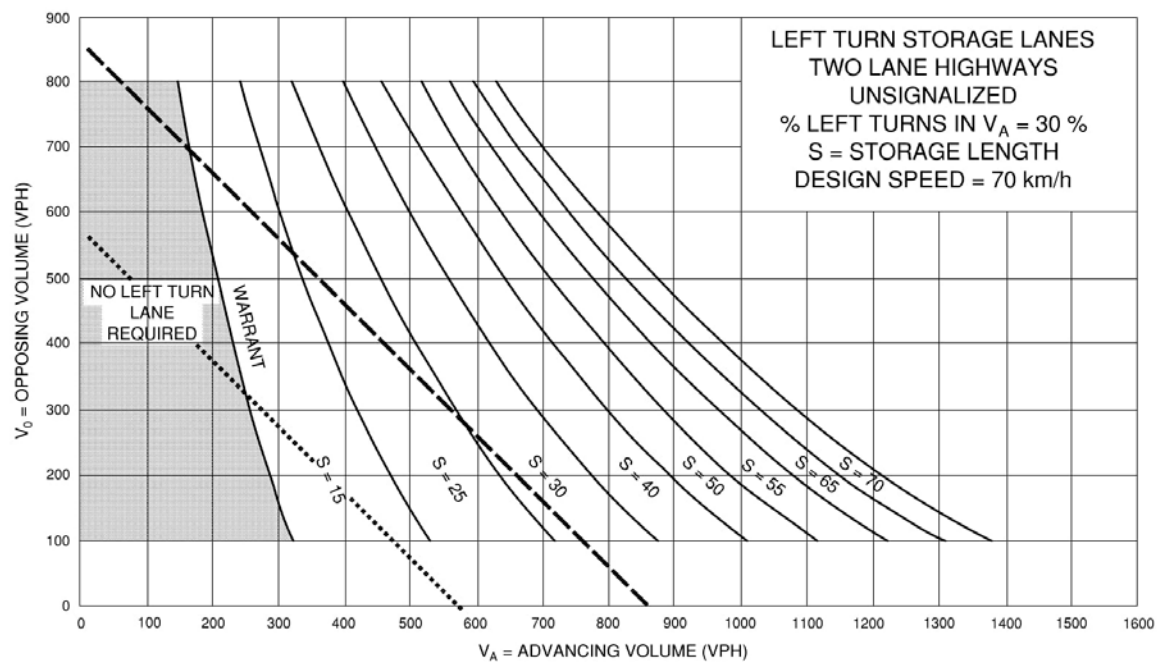
TAC GDG for Canadian Roads – June 2017

MTO Design Supplement, April 2020

Exhibit 9A-13



AM Peak: V_A : 80
 V_0 : 107
 PM peak: V_A : 178
 V_0 : 112

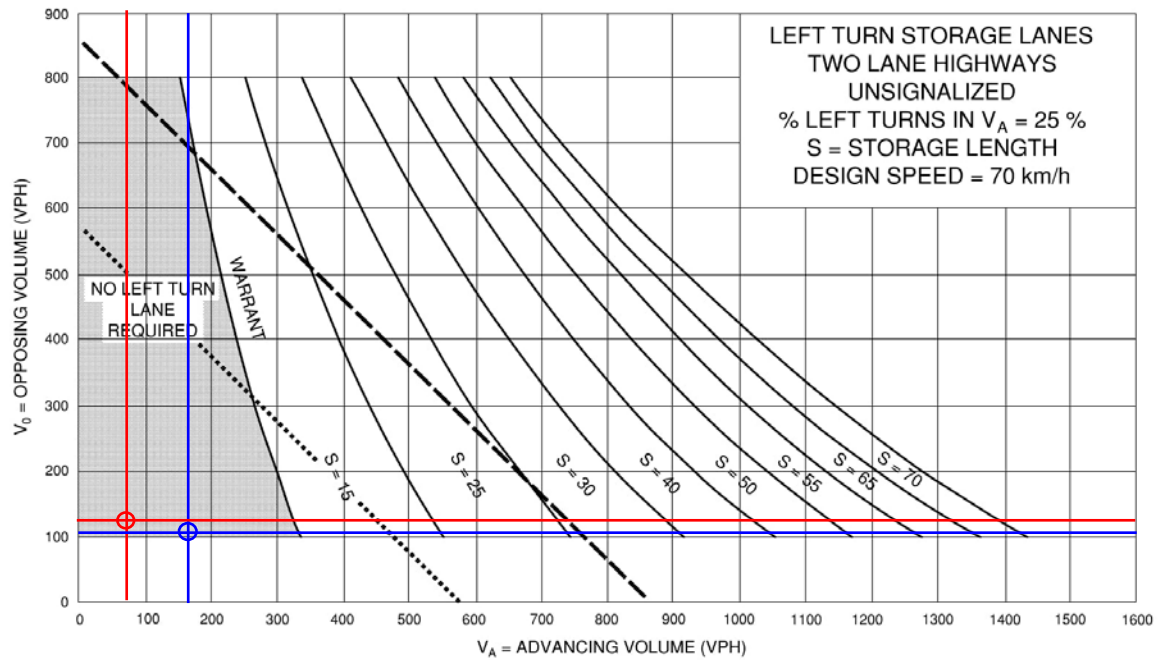


2032 LTL Warrant
Total Traffic - Scenario 3

TAC GDG for Canadian Roads – June 2017

MTO Design Supplement, April 2020

Exhibit 9A-13



AM Peak: V_A : 80
 V_0 : 115
PM peak: V_A : 178
 V_0 : 104

