



**SAFETY**  
**FIRST PRIORITY**

# Transportation Impact Assessment (TIA) For

**Mosque at 65 Carleton Drive, St. Albert**

## Submitted to

**Muslim Association of St. Albert**

**December 2, 2025**

**Revision-2**

**Prepared by:**

**MR Engineering Ltd.**

#112, 1803-97 Street SW,  
Edmonton, AB, T6X0W8

Ph: 780-807-0016, Fax: 1-888-805-2652


info@mrengineering.ca ||| [www.mrengineering.ca](http://www.mrengineering.ca)



# Transportation Impact Assessment For

**Mosque at 65 Carleton Drive, St. Albert**

**PERMIT TO PRACTICE**  
**MR ENGINEERING LTD.**

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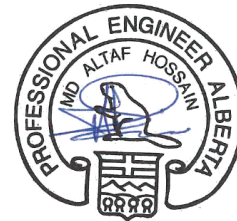
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DATE: 2025-12-02

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The Association of Professional  
Engineers and Geoscientists of Alberta

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**APEGA Corporate Permit**



2025-12-02  
APEGA ID # 117293

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**Engineer's Stamp**



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## **1 INTRODUCTION**

### **1.1 Background**

Muslim Association of St. Albert has submitted a development permit application for the construction of a mosque located at 65 Carleton Drive within the City of St. Albert. In support of the City's review process, and to evaluate the transportation-related implications of the proposed development, MR Engineering Ltd. was retained to undertake a Transportation Impact Assessment (TIA).

### **1.2 Study Objectives**

A Transportation Impact Assessment (TIA) provides a framework to evaluate, understand, and mitigate potential transportation and traffic-related impacts resulting from new development.

The primary objective of this TIA is to identify roadway and intersection geometry requirements, along with any supporting transportation improvements, that may be necessary to accommodate additional traffic anticipated from the proposed mosque development.

### **1.3 Study Methodology**

The assessment presented in this report reflects a comprehensive review of the development context, site access requirements, and surrounding transportation network considerations. The TIA was undertaken using the following methodology:

- Reviewing existing site conditions, including surrounding land uses, roadway characteristics, and existing traffic conditions.
- Estimating future vehicular trip generation associated with the proposed development based on applicable land use assumptions.
- Distributing and assigning the projected traffic volumes onto adjacent roadways in accordance with the proposed access strategy and anticipated trip origins and destinations.
- Reviewing the development site plan to identify potential modifications or design considerations required to ensure safe and efficient traffic circulation.
- Identifying peak parking periods and estimating parking demand generated by the development.
- Assessing on-street parking opportunities through an analysis of current on-street parking characteristics and those anticipated to be generated by the proposed development.

- Determining the appropriate on-site parking supply to meet anticipated needs.
- Conducting a detailed capacity analysis at study intersections to identify possible constraints, as well as roadway, traffic control, or geometric improvements required to maintain safe and acceptable levels of service.

#### **1.4 Study Intersections and Assessment Horizons**

Traffic generated by the proposed development is expected to primarily affect operations along Centre Street. Based on consultation with the City of St. Albert, the following intersections were selected for assessment:

- Centre Street / Carleton Drive
- Centre Street / Circle Drive
- Centre Street / Site Access
- Carleton Drive / Site Access

The mosque is anticipated to be fully constructed and operational by the end of 2026. Accordingly, the year 2026 has been identified as the build-out horizon year for this analysis. In alignment with the City of St. Albert's TIA Guidelines, the development requires a Type C TIA; therefore, the year 2031 has been selected for long-term horizon assessment.

## 2 EXISTING CONDITIONS AND PROPOSED DEVELOPMENT

### 2.1 Site Location and Context

The development site is located within Campbell Business Park in City of St. Albert and is generally bounded by Centre Street to the north, Circle Drive to the east, Carleton Drive to the west and private developments to the south. The municipal address of the site is 65 Carleton Drive. The site location is shown in **Exhibit 2-1**.

The site is currently vacant. The surrounding land uses primarily includes business and business industrial land uses. Vacant land located immediately east is designated as business park use and vacant land located immediately west is designated as Public and Private Services in Campbell Business Park North Area Structure Plan.

### 2.2 Roadway Network

- Centre Street is 2-lane undivided industrial/employment road. The existing pavement width along the development site is about 11.0m. No active transportation facility is currently available on either side of Centre Street. Parking is permitted on both sides of Centre Street. The speed limit on Centre Street is 50km/h and street lights are available.
- Carleton Drive is 2-lane undivided industrial/employment road. The existing pavement width along the development site is about 11.0m. No active transportation facility is currently available on either side of Carleton Drive. Parking is permitted on both sides of Carleton Drive. The speed limit is 50km/h and street lights are available.
- Circle Drive is 2-lane undivided industrial/employment road. The existing pavement width along the development site is about 11.0m. No active transportation facility is currently available on either side of Circle Drive. Parking is permitted on both sides of Circle Drive. The speed limit is 50km/h and street lights are available.
- Centre Street/Carleton Drive intersection is a 4-way intersection with stop sign on the north and south approaches (Carleton Drive approaches). All the intersection approaches include a single shared left-turn, through and right turn lane. Lighting is available at the intersection and sightlines are not limited.



Exhibit 2-1: Site Location



TIA for Mosque at 65 Carleton Drive,  
St. Albert

- Centre Street/Circle Drive intersection is a 3-way intersection with stop sign on the east and west approaches. The east approach of the intersection is private access. All the intersection approaches include a shared lane. Lighting is available at the intersection and sightlines are not limited. .

### **2.3 Alternative Transportation Network**

There is currently no active transportation facility available on roadways abutting the site. The closest active transportation facility is located along Campbell Road about 200m away from proposed site accesses. All the roadways except the boundary/arterial roads within Campbell Business Park lack sidewalks. Pedestrian and cyclists currently shares public roads with vehicular traffic. The Campbell Business Park is currently served by two transit routes. Route A12 provides service generally in about every 15-30 minutes in the AM period from 6:00 AM to 8:30 AM on weekdays. Route A13 provides service generally in about every 20 minutes in the PM period from 4:00 PM to 7:00 PM on weekdays. No transit service is available on weekends. The transit routes provide connection with Naki Transit Centre and Park and Ride, where transit riders can take other connecting routes to travel in other areas of St. Albert.

The nearest transit stop for both Route A12 and Route A13 is located adjacent to planned site access off Carleton Drive.

### **2.4 Existing Traffic Volume**

Traffic counts were completed at the Centre Street/Carleton Drive and Center Street/Circle Drive intersections on Friday, August 15, 2025 between 12:00 PM and 3:00 PM as suggested by City of St. Albert to capture background traffic condition for Friday prayer peak hour. In addition, traffic volumes in and out of the private access located on the north side of Centre Street immediately west of Circle Drive were also recorded. The proposed site access off Carleton Drive will align with this private access. The peak hour occurred between 12:30 PM and 1:30 PM. The 2025 Friday afternoon peak hour traffic volumes are shown in **Exhibit 2-2**. No pedestrian or cyclist was observed during traffic counts period. Detailed traffic counts are included in **Appendix A**.

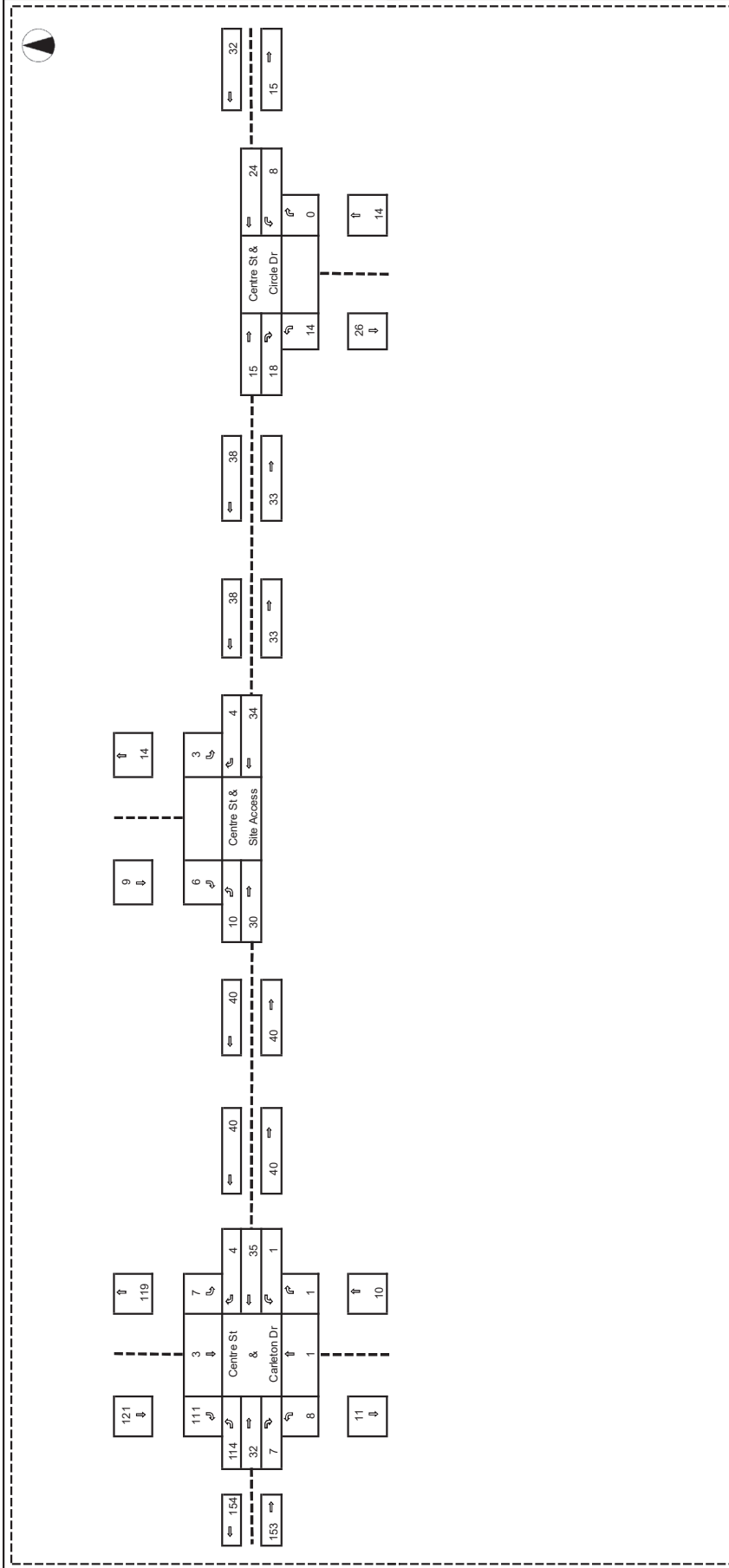


Exhibit 2-2: 2025 (Existing) Traffic Volumes – Friday Prayer Peak Hour



TIA for Mosque at 65 Carleton Drive, St. Albert

## 2.5 Background Traffic Volume

The 2026 and 2031 background traffic volume was estimated by applying a 1.5% growth rate on 2025 traffic volume. The growth rate was based on St. Albert population growth rate between 2018 and 2024.

The resulting 2026 and 2031 Friday prayer peak hour background traffic volumes are illustrated in **Exhibits 2-3** and **2-4** respectively.

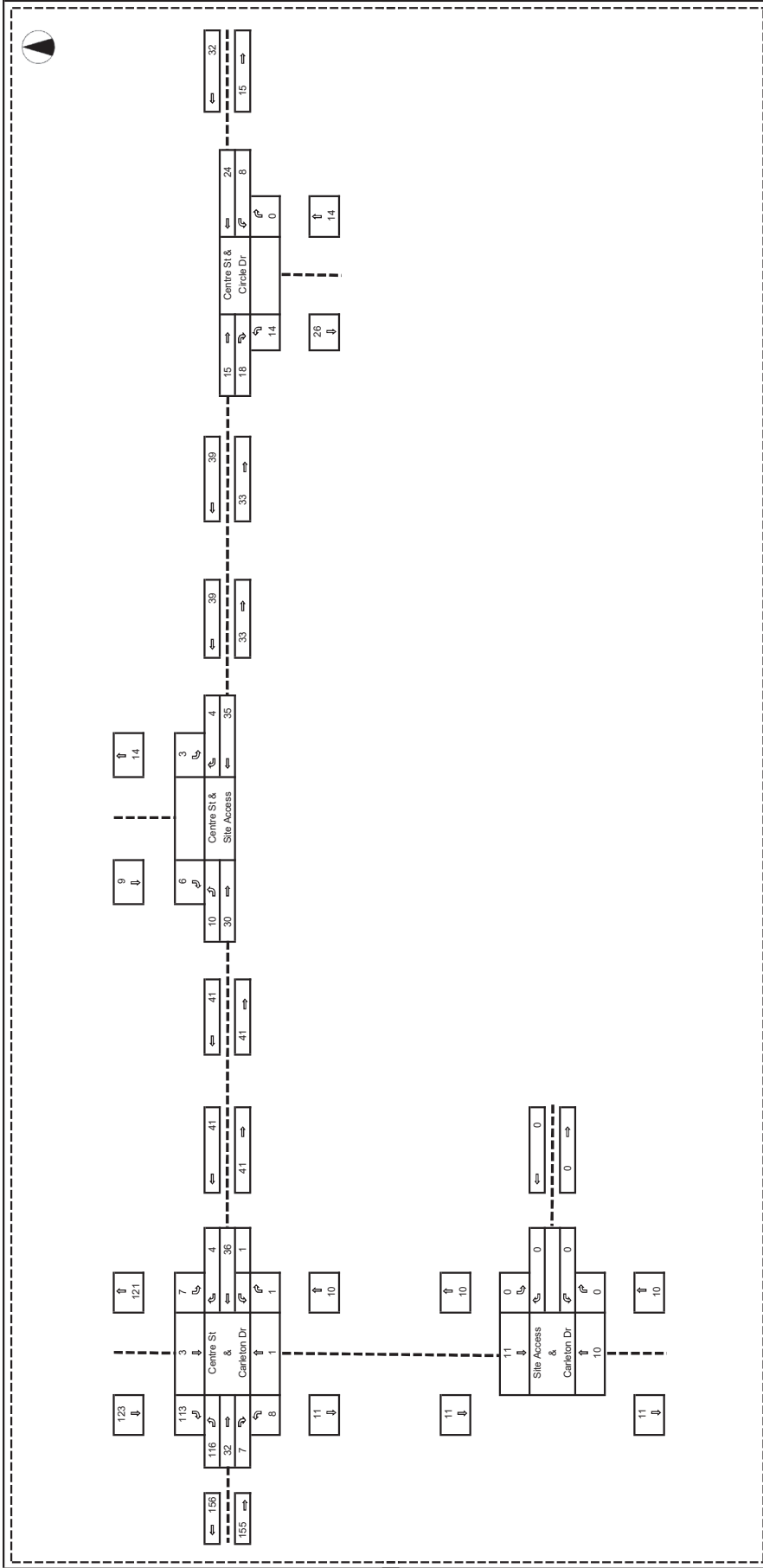


Exhibit 2-3: 2026 Background Traffic Volumes – Friday Prayer Peak Hour



TIA for Mosque at 65 Carleton Drive, St. Albert

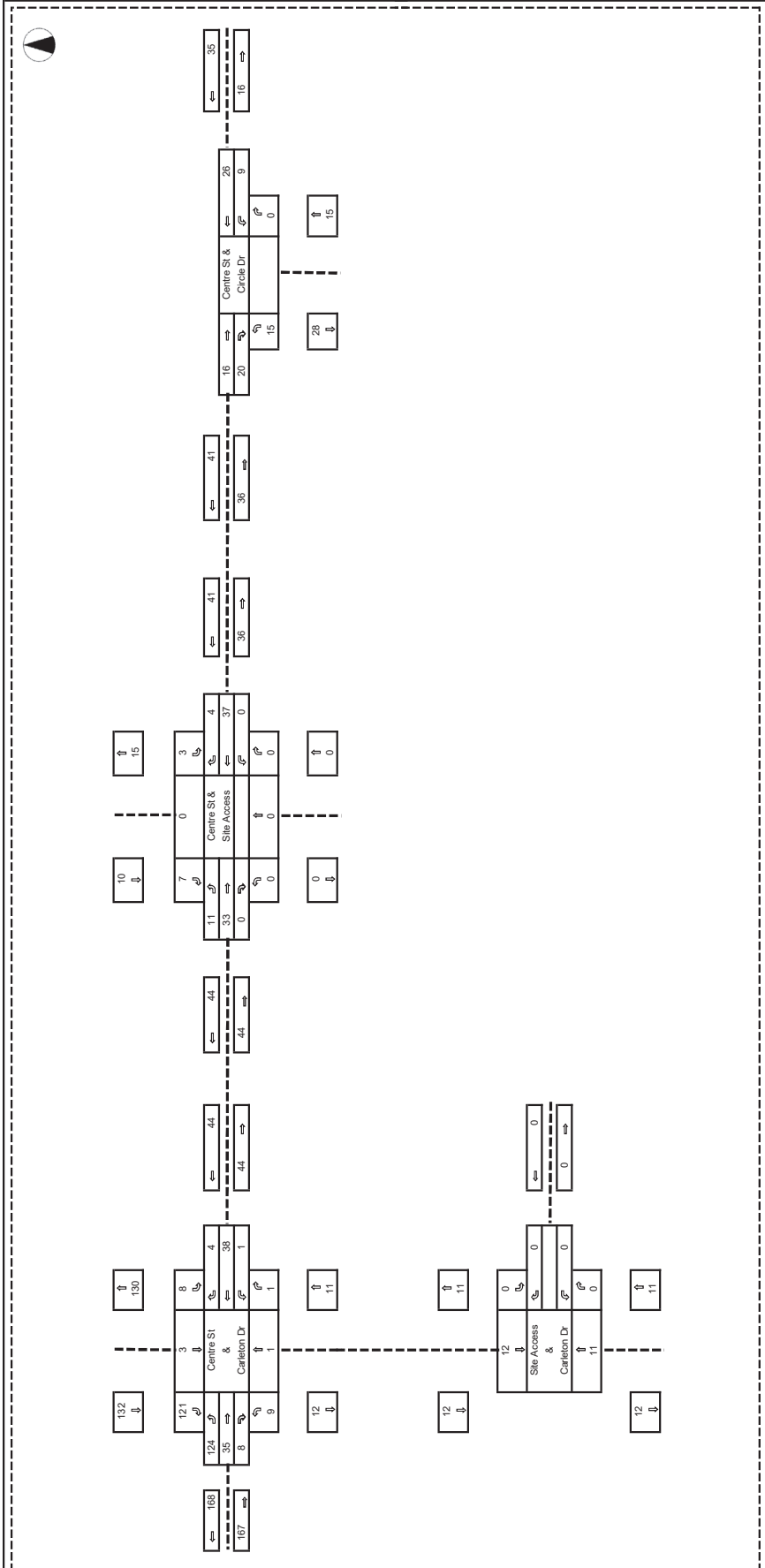


Exhibit 2-4: 2031 Background Traffic Volumes – Friday Prayer Peak Hour



TIA for Mosque at 65 Carleton Drive, St. Albert

## 2.6 Proposed Development Characteristics

The proposed development consists of the construction of a two-storey mosque located on the northern portion of the site. The gross floor area (GFA) of the main floor is approximately 9,475 ft<sup>2</sup>, which will primarily accommodate the principal prayer hall (congregation area). The second floor, with a GFA of approximately 3,925 ft<sup>2</sup>, will largely be open to the space below to form part of the main prayer hall, while also providing an additional prayer area. Overall, the mosque is designed to accommodate a maximum occupancy of 530 persons.

The mosque will be used for five daily prayers; however, attendance at these prayers is expected to remain well below the maximum design capacity. In addition to daily use, the mosque will host Jum'ah prayer on Fridays, which are anticipated to attract significantly higher attendance than regular prayers. These services are generally held between 12:00 PM and 3:00 PM, depending on the time of year. While the activities for Jum'ah prayers can last between 30 minutes to 1 hour, most congregants are expected to arrive shortly before the service and depart immediately afterward, creating a concentrated arrival and departure window of approximately 10 to 15 minutes.

Based on the development site plan, the proposed mosque will provide the following:

- 141 on-site parking stalls, including 6 accessible stalls;
- 6 bicycle parking spaces;
- 1 loading space; and
- A 2.5 m wide paved walkway connecting Centre Street and Carleton Drive to the building entrance.

Vehicular access to the site will be provided as follows:

- A primary access from Centre Street, approximately 11.0 m wide, aligned with the existing private access on the north side of Centre Street; and
- A secondary access from Carleton Drive, approximately 9.0 m wide.

Both accesses will be designed as commercial crossings to accommodate two-way traffic and will be stop-controlled at their intersections with Centre Street and Carleton Drive.

The proposed development plan is illustrated in **Exhibit 2-5**.

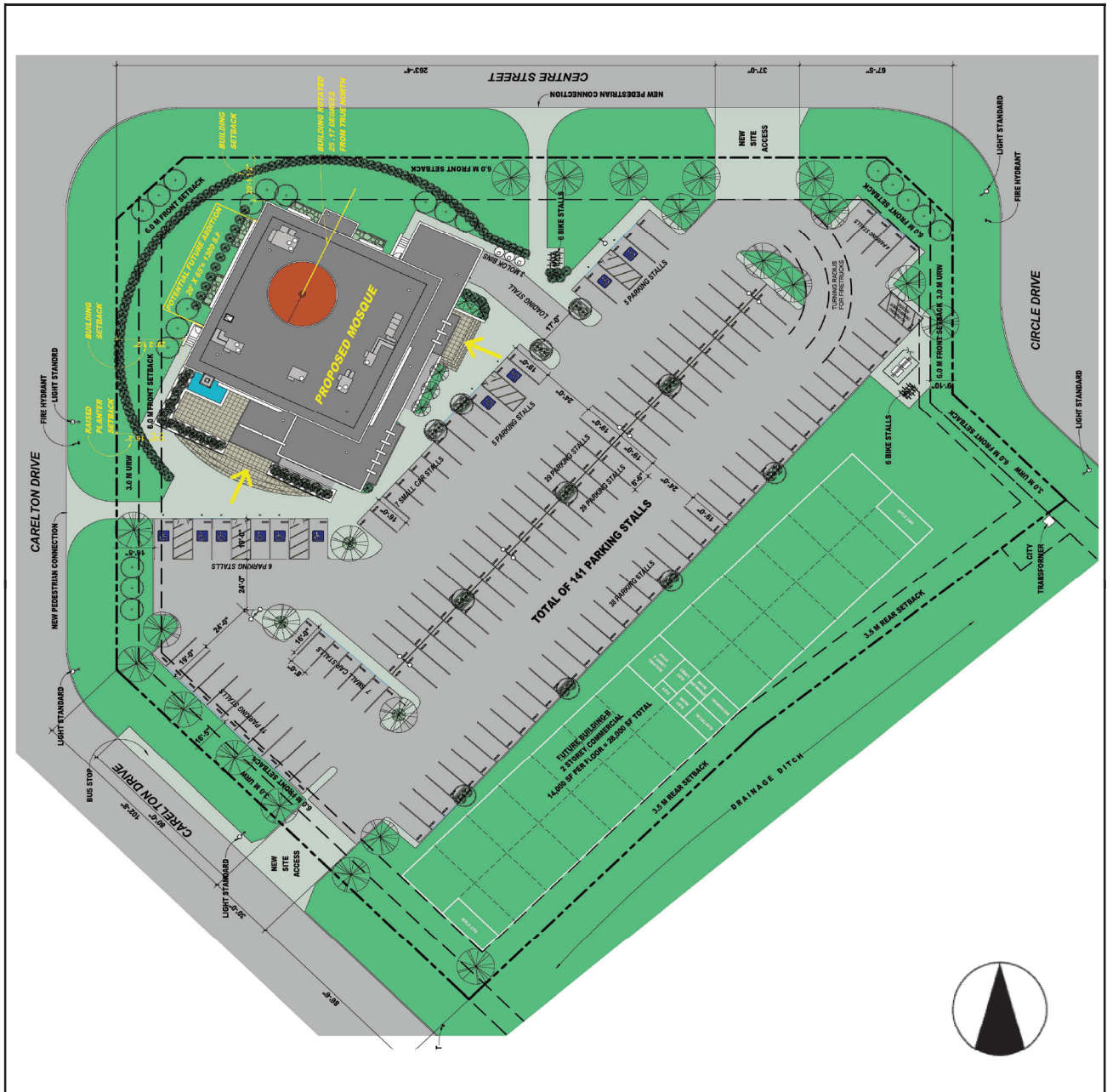


Exhibit 2-5: Proposed Development Concept (Site Plan)



TIA for Mosque at 65 Carleton Drive,  
St. Albert

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### 3 SITE TRAFFIC CHARACTERISTICS

#### 3.1 Trip Generation

The trip generation rates used in the assessment are based on Institute of Transportation Engineers (ITE) Land Use Code 562 – Mosque. The trip generation is based on per 1,000 ft<sup>2</sup> of GFA as ITE Trip Generation Manual doesn't include mosque trip rate based on person capacity. A mosque generates about 23.55 trips per 1,000 ft<sup>2</sup> of floor area during Friday prayer (Jum'ah) peak hour with 43% traffic entering and 57% traffic exiting the site.

**Table 3-1** summarizes the development generated trip estimate.

**Table 3-1: Site Generated Trip Estimate**

Mosque Gross Floor Area (in 1,000 ft <sup>2</sup> )	Friday Prayer Peak Hour	
	In	Out
13.40	136	180
<b>Total</b>	<b>316</b>	

As presented in Table 3-1, the proposed mosque is expected to generate about 136 inbound trips and 180 outbound trips resulting in 316 total trips during Friday prayer peak hour.

#### 3.2 Trip Distribution and Assignment

Trip distribution was based on a review of land uses in City of St. Albert and surrounding areas. It is assumed that about 75% of the site trips will travel west on Centre Street to take Campbell Road and about 25% of the site trips will travel east on Circle Drive to take Veness Road. Trip assignment was based on availability of site access points and convenience to access the site. **Exhibit 3-1** illustrates the resulting Friday prayer peak hour site generated traffic volumes.

#### 3.3 Total Traffic Estimates

The site generated traffic volume estimate was superimposed on the background traffic volume estimate to generate total traffic volume estimate for use in this assessment. **Exhibits 3-2** and **3-3** illustrate the 2026 and 2031 Friday prayer peak hour total traffic volumes respectively.



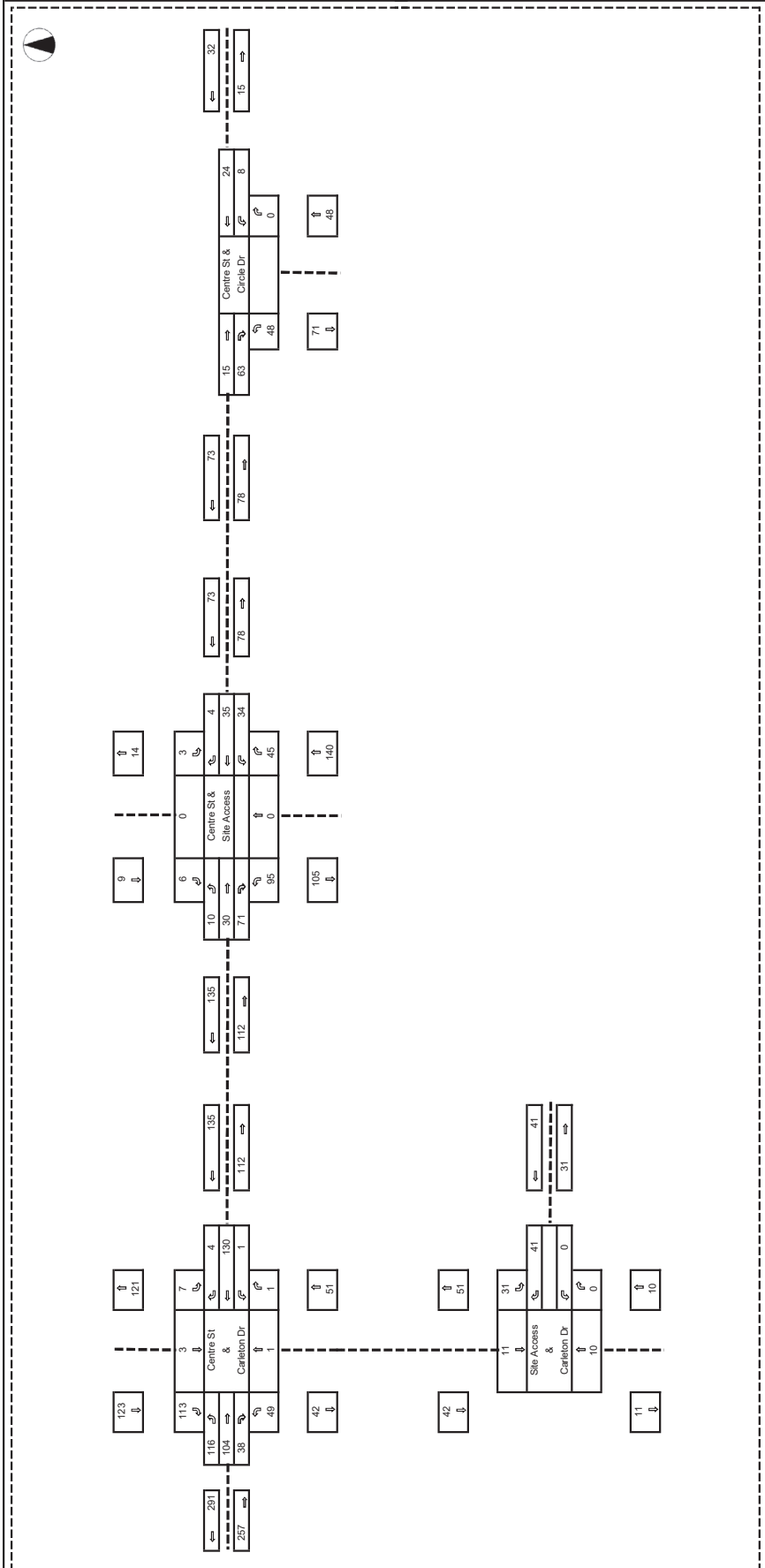


Exhibit 3-2: 2026 Total Traffic Volumes – Friday Prayer Peak Hour



TIA for Mosque at 65 Carleton Drive, St. Albert

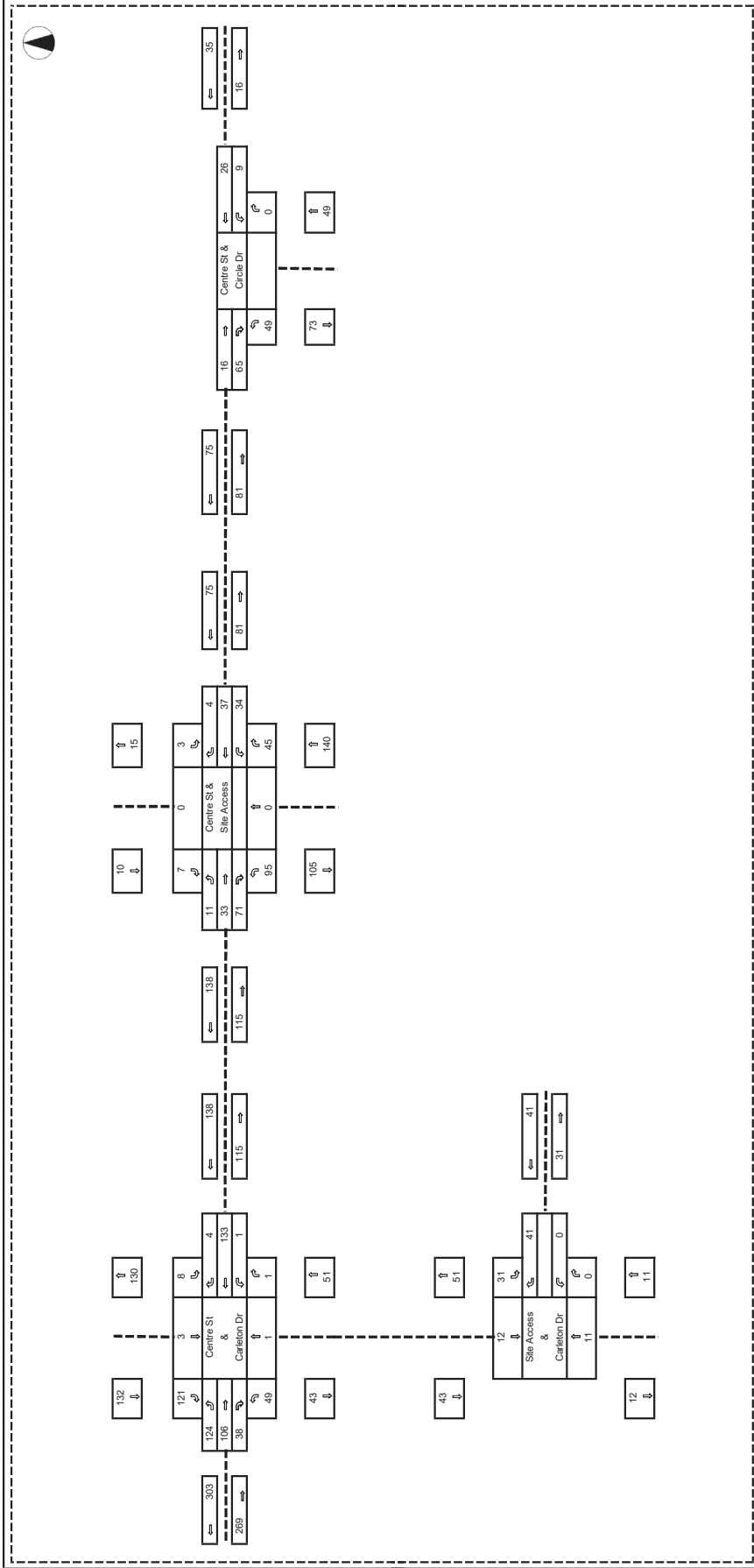


Exhibit 3-3: 2031 Total Traffic Volumes – Friday Prayer Peak Hour

## 4 TRANSPORTATION ASSESSMENT

### 4.1 Capacity Analysis

Intersection capacity analyses were completed based on Highway Capacity Manual (HCM) methodology and using Synchro software.

Intersection performance is commonly evaluated using volume-to-capacity (v/c) ratios and Level of Service (LOS). The v/c ratio represents the degree to which traffic demand approaches or exceeds the available roadway and traffic control capacity, while LOS is based on the average delay per vehicle experienced by all traffic at the intersection.

A low average delay corresponds to a LOS A rating, indicating very good operating conditions. At signalized intersections, LOS F occurs when average delays exceed 80 seconds per vehicle, whereas at unsignalized intersections, LOS F is reached when delays exceed 50 seconds per vehicle. In addition, a calculated v/c ratio greater than 1.0 indicates that traffic demand is exceeding the theoretical capacity of the intersection.

**Table 4-1** summarizes the levels of service and their respective delay ranges.

**Table 4-1: Level of Service Delay Ranges**

LOS	Control Delay per Vehicle (seconds)	
	Signalized Intersection	Stop-Control Intersection
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

The geometry assumed for study intersection is based on existing condition and is included in the assessment tables. Left turn movements, through movements, and right turn movements are represented by “L”, “T”, and “R” respectively in the assessment tables.

Intersection assessments for study intersections were completed under the existing, background and total traffic scenarios. Detailed Synchro printouts are included in **Appendix B**.

#### 4.1.1 Existing Traffic Condition

The results of the existing condition assessment based on existing intersection geometry and control are presented in **Table 4-2** through **Table 4-4**.

**Table 4-2: Centre Street and Carleton Drive – Existing Traffic**

Movement	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Geometry	One Shared Lane			One Shared Lane			One Shared Lane			One Shared Lane		
Traffic Control: Stop sign on the north and south approaches												
Volume (vph)	114	32	7	1	35	4	8	1	1	7	3	111
v/c	0.09			0.0			0.03			0.15		
Delay (s)	6			0			14			9		
LOS	A			A			B			A		
95 <sup>th</sup> Queue (m)	2			0			1			4		
Intersection Delay (s)				6.7			Intersection LOS				A	

**Table 4-3: Centre Street & Circle Drive – Existing Traffic**

Movement	Eastbound		Westbound		Northbound		
	T	R	L	T	L	R	
Geometry	One Shared Lane		One Shared Lane		One Shared Lane		
Traffic Control: Stop sign on the east and west approaches							
Volume (vph)	15	18	8	24	14	0	
v/c	0.04		0.04		0.01		
Delay (s)	9		9		7		
LOS	A		A		A		
95 <sup>th</sup> Queue (m)	1		1		0		
Overall Intersection Delay (s)			8.8		Overall Intersection LOS		A

**Table 4-4: Centre Street & Private Access – Existing Traffic**

Movement	Eastbound		Westbound		Southbound		
	L	T	T	R	L	R	
Geometry	One Shared Lane		One Shared Lane		One Shared Lane		
Traffic Control: Stop sign on the north approach (Assumed)							
Volume (vph)	10	30	34	4	3	6	
v/c	0.01		0.03		0.01		
Delay (s)	2		0		9		
LOS	A		A		A		
95 <sup>th</sup> Queue (m)	0		0		0		
Overall Intersection Delay (s)			1.8		Overall Intersection LOS		A

As shown in Table 4-2 through Table 4-4, the Centre Street / Carleton Drive, the Centre Street / Circle Drive and the Centre Street / Private Access intersections currently operate at an acceptable Level of Service (LOS) under existing traffic conditions with the present geometry and traffic control measures in place.

#### 4.1.2 2026 Traffic Condition

The results of the 2026 traffic condition assessment for the Centre Street / Carleton Drive and Centre Street / Circle Drive are presented in **Table 4-5** and **Table 4-6** respectively.

**Table 4-5: Centre Street and Carleton Drive – 2026 Traffic Condition**

Movement	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Geometry	One Shared Lane			One Shared Lane			One Shared Lane			One Shared Lane		
Traffic Control: Stop sign on the north and south approaches												
2026 Background Traffic												
Volume (vph)	116	32	7	1	36	4	8	1	1	7	3	113
v/c	0.09			0.0			0.03			0.15		
Delay (s)	6			0			14			9		
LOS	A			A			B			A		
95 <sup>th</sup> Queue (m)	2			0			1			4		
Intersection Delay (s)			6.7			Intersection LOS			A			
2026 Total Traffic												
Volume (vph)	116	104	38	1	130	4	49	1	1	7	3	113
v/c	0.10			0.0			0.23			0.18		
Delay (s)	4			0			22			11		
LOS	A			A			C			B		
95 <sup>th</sup> Queue (m)	2			0			6			5		
Overall Intersection Delay (s)			6.1			Overall Intersection LOS			A			

As shown in Table 4-5 and Table 4-6, both the Centre Street / Carleton Drive and Centre Street / Circle Drive intersections are expected to operate at an acceptable Level of Service (LOS) under 2026 background and total traffic conditions with the present geometry and traffic control measures in place.

**Table 4-6: Centre Street & Circle Drive – 2026 Traffic Condition**

	Eastbound		Westbound		Northbound	
Movement	T	R	L	T	L	R
Geometry	One Shared Lane		One Shared Lane		One Shared Lane	
<b>Traffic Control: Stop sign on the east and west approaches</b>						
<b>2026 Background Traffic</b>						
Volume (vph)	15	18	8	24	14	0
v/c	0.04		0.04		0.01	
Delay (s)	9		9		7	
LOS	A		A		A	
95 <sup>th</sup> Queue (m)	1		1		0	
Overall Intersection Delay (s)	8		Overall Intersection LOS			A
<b>2026 Total Traffic</b>						
Volume (vph)	15	63	8	24	48	0
v/c	0.09		0.05		0.03	
Delay (s)	9		10		7	
LOS	A		B		A	
95 <sup>th</sup> Queue (m)	2		1		1	
Overall Intersection Delay (s)	8.7		Overall Intersection LOS			A

The results of the 2026 total traffic assessment for the Centre Street / Site Access and Site Access / Carleton Drive are presented in **Table 4-7** and **Table 4-8** respectively. It was assumed the site access approaches will have stop sign control.

**Table 4-7: Centre Street and Site Access – 2026 Total Traffic**

	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Geometry	One Shared Lane			One Shared Lane			One Shared Lane			One Shared Lane		
<b>Traffic Control: Stop sign on the north and south approaches</b>												
Volume (vph)	10	30	71	34	35	4	95	0	45	3	0	6
v/c	0.01			0.03			0.27			0.02		
Delay (s)	1			4			12			9		
LOS	A			A			B			A		
95 <sup>th</sup> Queue (m)	0			1			8			0		
Intersection Delay (s)	6.3			Intersection LOS						A		

**Table 4-8: Site Access & Carleton Drive – 2026 Total Traffic**

	Westbound		Northbound		Southbound	
Movement	L	R	T	R	L	T
Geometry	One Shared Lane		One Shared Lane		One Shared Lane	
<b>Traffic Control: Stop sign on the east approach</b>						
Volume (vph)	0	41	10	0	31	11
v/c	0.05		0.01		0.02	
Delay (s)	9		0		5	
LOS	A		A		A	
95 <sup>th</sup> Queue (m)	1		0		1	
<b>Overall Intersection Delay (s)</b>	<b>6.2</b>		<b>Overall Intersection LOS</b>		<b>A</b>	

As shown in Table 4-7 and Table 4-8, both the Centre Street / Site Access and Site Access / Carleton Drive intersections are expected to operate at an acceptable Level of Service (LOS) under 2026 total traffic condition with stop sign on the site access approaches.

#### 4.1.3 2031 Traffic Condition

The results of the 2031 traffic condition assessment for the Centre Street / Carleton Drive and Centre Street / Circle Drive are presented in **Table 4-9** and **Table 4-10** respectively.

**Table 4-9: Centre Street and Carleton Drive – 2031 Traffic Condition**

	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Geometry	One Shared Lane			One Shared Lane			One Shared Lane			One Shared Lane		
<b>Traffic Control: Stop sign on the north and south approaches</b>												
<b>2031 Background Traffic</b>												
Volume (vph)	124	35	8	1	38	4	9	1	1	8	3	121
v/c	0.11			0			0.04			0.19		
Delay (s)	6			0			16			9		
LOS	A			A			C			A		
95 <sup>th</sup> Queue (m)	3			0			1			5		
<b>Intersection Delay (s)</b>	<b>7.0</b>			<b>Intersection LOS</b>			<b>A</b>					
<b>2031 Total Traffic</b>												
Volume (vph)	124	106	38	1	133	4	49	1	1	8	3	121
v/c	0.11			0			0.24			0.20		
Delay (s)	4			0			24			11		
LOS	A			A			C			B		
95 <sup>th</sup> Queue (m)	3			0			7			5		
<b>Overall Intersection Delay (s)</b>	<b>6.4</b>			<b>Overall Intersection LOS</b>			<b>A</b>					

**Table 4-10: Centre Street & Circle Drive – 2031 Traffic Condition**

	Eastbound		Westbound		Northbound	
Movement	T	R	L	T	L	R
Geometry	One Shared Lane		One Shared Lane		One Shared Lane	
<b>Traffic Control: Stop sign on the east and west approaches</b>						
<b>2031 Background Traffic</b>						
Volume (vph)	16	20	9	26	15	0
v/c	0.05		0.06		0.01	
Delay (s)	9		9		7	
LOS	A		A		A	
95 <sup>th</sup> Queue (m)	1		1		0	
Overall Intersection Delay (s)	8.9		Overall Intersection LOS			A
<b>2031 Total Traffic</b>						
Volume (vph)	16	65	9	26	49	0
v/c	0.09		0.05		0.03	
Delay (s)	9		10		7	
LOS	A		B		A	
95 <sup>th</sup> Queue (m)	2		1		1	
Overall Intersection Delay (s)	8.8		Overall Intersection LOS			A

As shown in Table 4-9 and Table 4-10, both the Centre Street / Carleton Drive and Centre Street / Circle Drive intersections are expected to operate at an acceptable Level of Service (LOS) under 2031 background and total traffic conditions with the present geometry and traffic control measures in place.

The results of the 2031 total traffic assessment for the Centre Street / Site Access and Site Access / Carleton Drive are presented in **Table 4-11** and **Table 4-12** respectively. It was assumed the site access approaches will have stop sign control.

**Table 4-11: Centre Street and Site Access – 2031 Total Traffic**

	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Geometry	One Shared Lane			One Shared Lane			One Shared Lane			One Shared Lane		
<b>Traffic Control: Stop sign on the north and south approaches</b>												
Volume (vph)	11	33	71	34	37	4	95	0	45	3	0	7
v/c	0.01			0.03			0.27			0.02		
Delay (s)	1			4			12			9		
LOS	A			A			B			A		
95 <sup>th</sup> Queue (m)	0			1			8			0		
Intersection Delay (s)	6.3			Intersection LOS			A					

**Table 4-12: Site Access & Carleton Drive – 2031 Total Traffic**

	Westbound		Northbound		Southbound	
Movement	L	R	T	R	L	T
Geometry	One Shared Lane		One Shared Lane		One Shared Lane	
<b>Traffic Control: Stop sign on the east approach</b>						
Volume (vph)	0	41	11	0	31	12
v/c	0.05		0.01		0.02	
Delay (s)	9		0		5	
LOS	A		A		A	
95 <sup>th</sup> Queue (m)	1		0		1	
<b>Overall Intersection Delay (s)</b>	<b>6.1</b>		<b>Overall Intersection LOS</b>		<b>A</b>	

As shown in Table 4-11 and Table 4-12, both the Centre Street / Site Access and Site Access / Carleton Drive intersections are expected to operate at an acceptable Level of Service (LOS) under 2031 total traffic condition with stop sign on the site access approaches.

#### 4.2 Parking and Loading Review

Based on a review of the City of St. Albert Land Use Bylaw, the proposed mosque requires 67 on-site parking stalls (calculated based on a maximum occupancy of 530 persons). The development site plan identifies a total of 141 parking stalls, which exceeds the minimum bylaw requirement.

The planned provision of 6 bicycle parking stalls and 1 loading space also meet the bylaw requirements.

According to ITE Parking Generation rates, the peak parking demand for a mosque during Friday (Jum’ah) prayers is estimated at approximately 232 stalls (based on 17.32 stalls per 1,000 ft<sup>2</sup> of GFA).

While the planned on-site parking supply exceeds zoning requirements, it is anticipated that parking demand during Jum’ah prayers will exceed the on-site supply, with overflow expected to rely on adjacent on-street parking. On-street parking is currently permitted on both sides of Centre Street, Carleton Drive, Circle Drive, and Chevigny Street, with no restrictions other than a 2-hour limit along a short (40m) section on the east side of Chevigny Street south of Carleton Drive.

To better assess the availability and utilization of surrounding on-street parking, a parking accumulation survey was conducted on Friday, August 19, 2025, between 12:00 PM. and 3:00 PM.

Observations were collected at 15-minute intervals to capture short-term fluctuations, recognizing that peak demand for Friday prayers typically occurs within a concentrated 10–15 minute window. The survey area was defined based on an approximate 5-minute walking distance from the centre of the site.

For survey purposes, the surrounding on-street parking supply was divided into four zones (as illustrated in **Exhibit 4-1**). Available capacity was calculated based on effective curb frontage, with adjustments for private driveways, no-parking restrictions, fire hydrant clearances, and intersection setbacks. Bus stop frontages were not excluded, as transit service was not operating during the survey period. Based on this methodology, the estimated parking supply is as follows:

- Zone A: 61 stalls
- Zone B: 99 stalls
- Zone C: 94 stalls
- Zone D: 35 stalls

This results in a total estimated supply of 289 on-street parking stalls, assuming a standard 7.0 m parallel parking stall length. A detailed summary of observed occupancy levels is provided in **Table 4-13**.

**Table 4-13: On-Street Parking Occupancy Summary**

Time	Zone A		Zone B		Zone C		Zone D		Total	
	# Veh	% Occ	# Veh	% Occ	# Veh	% Occ	# Veh	% Occ	# Veh	% Occ
12:00 PM	16	26%	14	14%	47	50%	30	86%	107	37%
12:15 PM	26	43%	12	12%	42	45%	30	86%	110	38%
12:30 PM	18	30%	13	13%	40	43%	25	71%	96	33%
12:45 PM	23	38%	14	14%	42	45%	27	77%	106	37%
1:00 PM	19	31%	18	18%	41	44%	25	71%	103	36%
1:15 PM	20	33%	21	21%	42	45%	24	69%	107	37%
1:30 PM	17	28%	50	51%	42	45%	24	69%	133	46%
1:45 PM	16	26%	54	55%	45	48%	25	71%	140	48%
2:00 PM	17	28%	60	61%	49	52%	25	71%	151	52%
2:15 PM	17	28%	52	53%	48	51%	25	71%	142	49%
2:30 PM	17	28%	33	33%	37	39%	26	74%	113	39%
2:45 PM	19	31%	33	33%	37	39%	25	71%	114	39%

Based on the completed parking survey, peak parking demand was observed between 2:00 PM and 2:15 PM, during which approximately 151 vehicles were parked within the survey area. This represents 52% of the total available on-street parking supply, leaving approximately 138 stalls unused at peak demand.

The assessment indicates that the adjacent street network has sufficient spare capacity to accommodate the additional parking demand expected during Friday (Jum'ah) prayers. Nonetheless, there is an opportunity to provide supplementary parking by developing a temporary gravel lot within the southern portion of the site until that area is formally redeveloped. Additionally, the potential exists to establish shared parking agreements with adjacent properties to accommodate overflow demand, if required.

#### **4.2.1 Parking Management Strategy**

As parking demand during Friday prayers is expected to exceed the on-site supply, resulting in overflow onto adjacent on-street parking areas, there is potential for unnecessary vehicle circulation within the site when the lot reaches capacity. To mitigate this, the following parking management strategies may be implemented.

- Parking attendants stationed at the site entrances may monitor real-time stall availability and advise drivers when the lot is full, preventing vehicles from entering the site only to exit again without finding a space.
- Temporary “Lot Full” signage may be placed at key approach points to redirect motorists to on-street parking.
- Additional way-finding measures—such as cones, barricades, and traffic marshals—may help manage internal circulation.
- The mosque may also communicate parking limitations in advance through community channels, encouraging carpooling and the use of alternative transportation for nearby residents.

These measures are expected to reduce unnecessary trips in and out of the site and maintain efficient traffic operations during Friday prayer times.

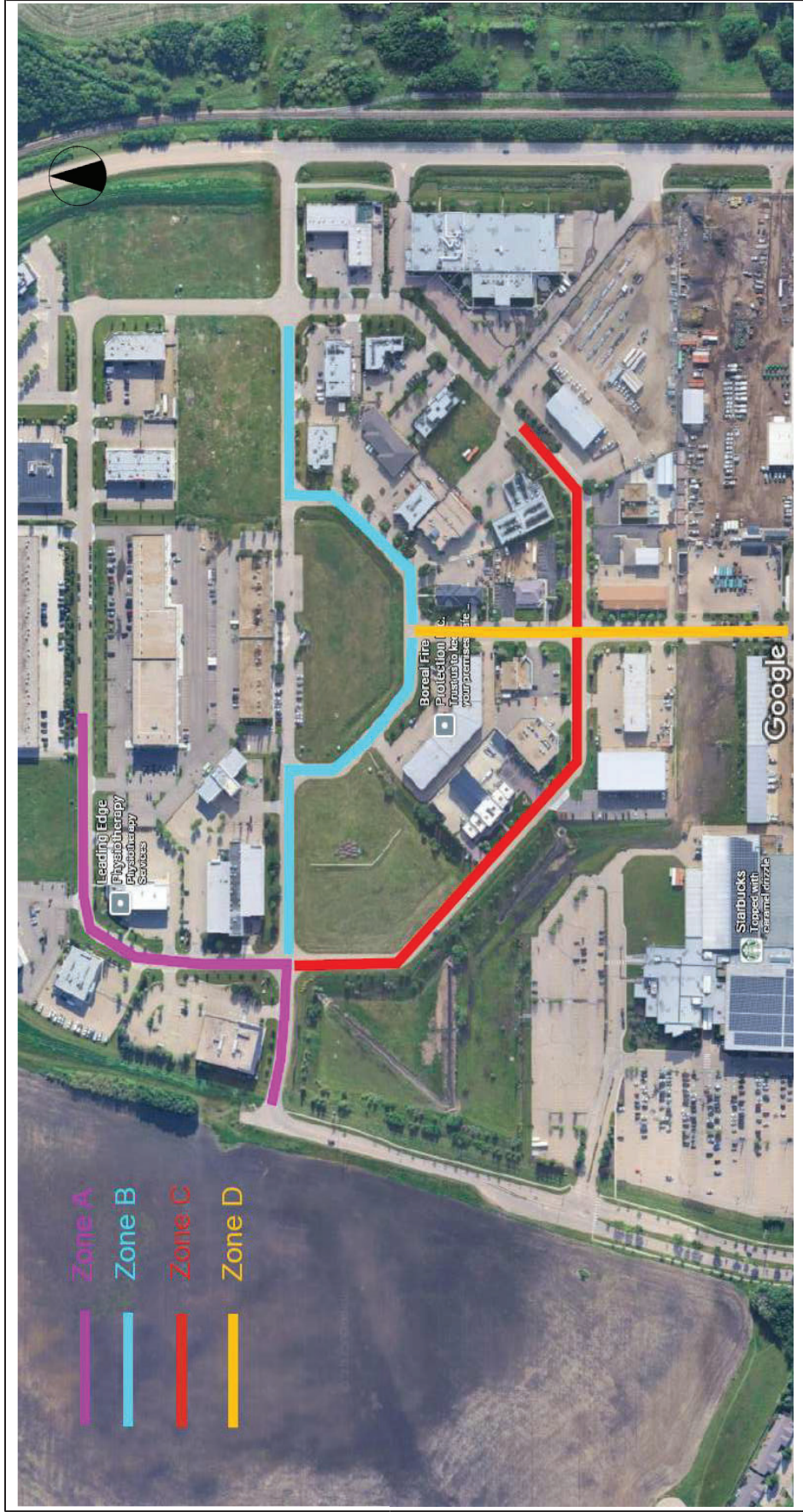


Exhibit 4-1: Parking Survey Zones

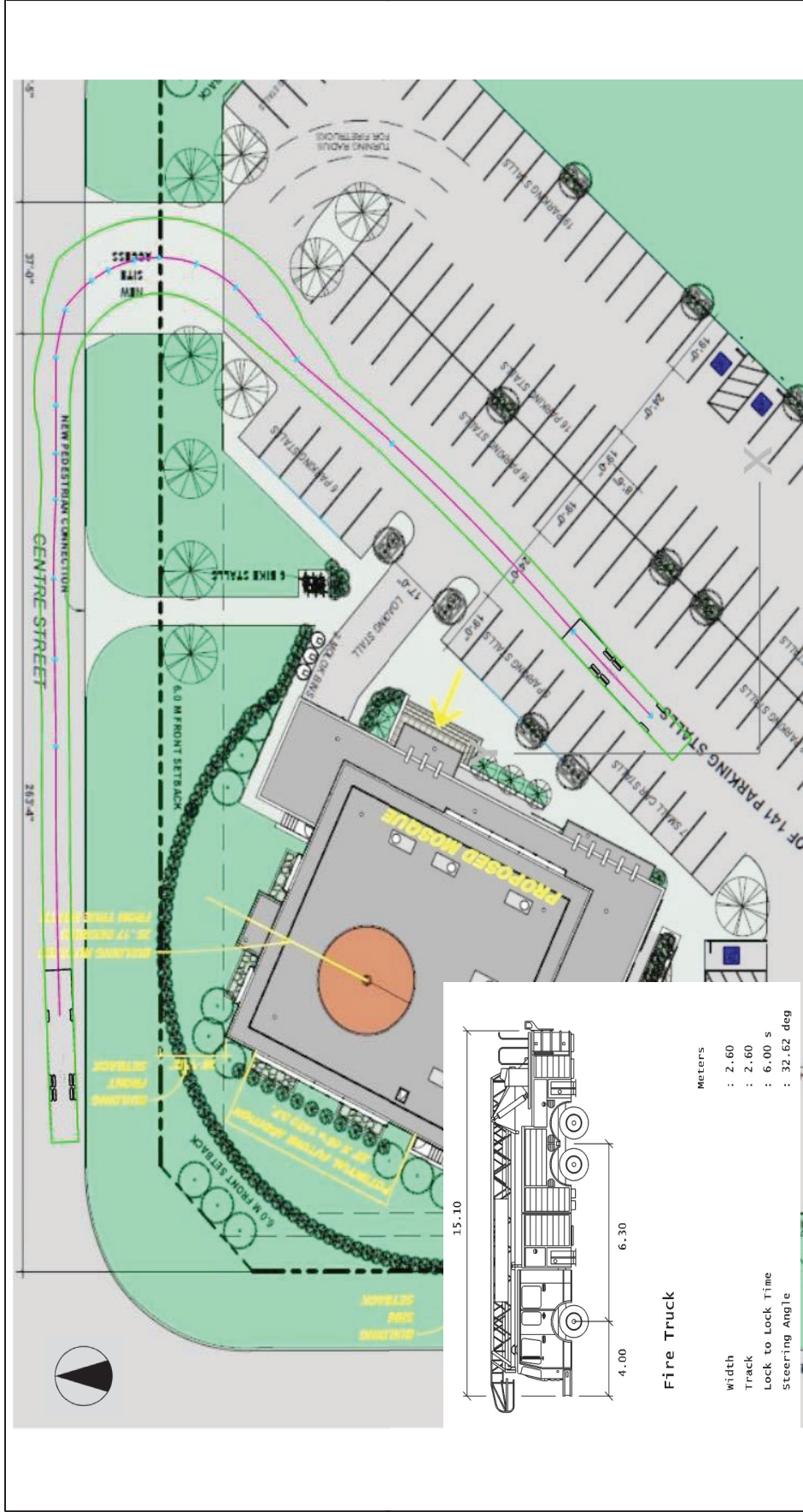
### 4.3 Site Circulation

Sight distance and turning radii are two key considerations in access design along major roadways. For safe operations, the driver of a stopped vehicle must have adequate visibility along the through roadway to complete a crossing or turning maneuver before an approaching vehicle reaches the intersection. Sight distance is primarily influenced by roadway design speed, driver perception–reaction time, and vehicle acceleration characteristics. Based on a review of the site plan, adequate sight distance is available at both proposed site accesses.

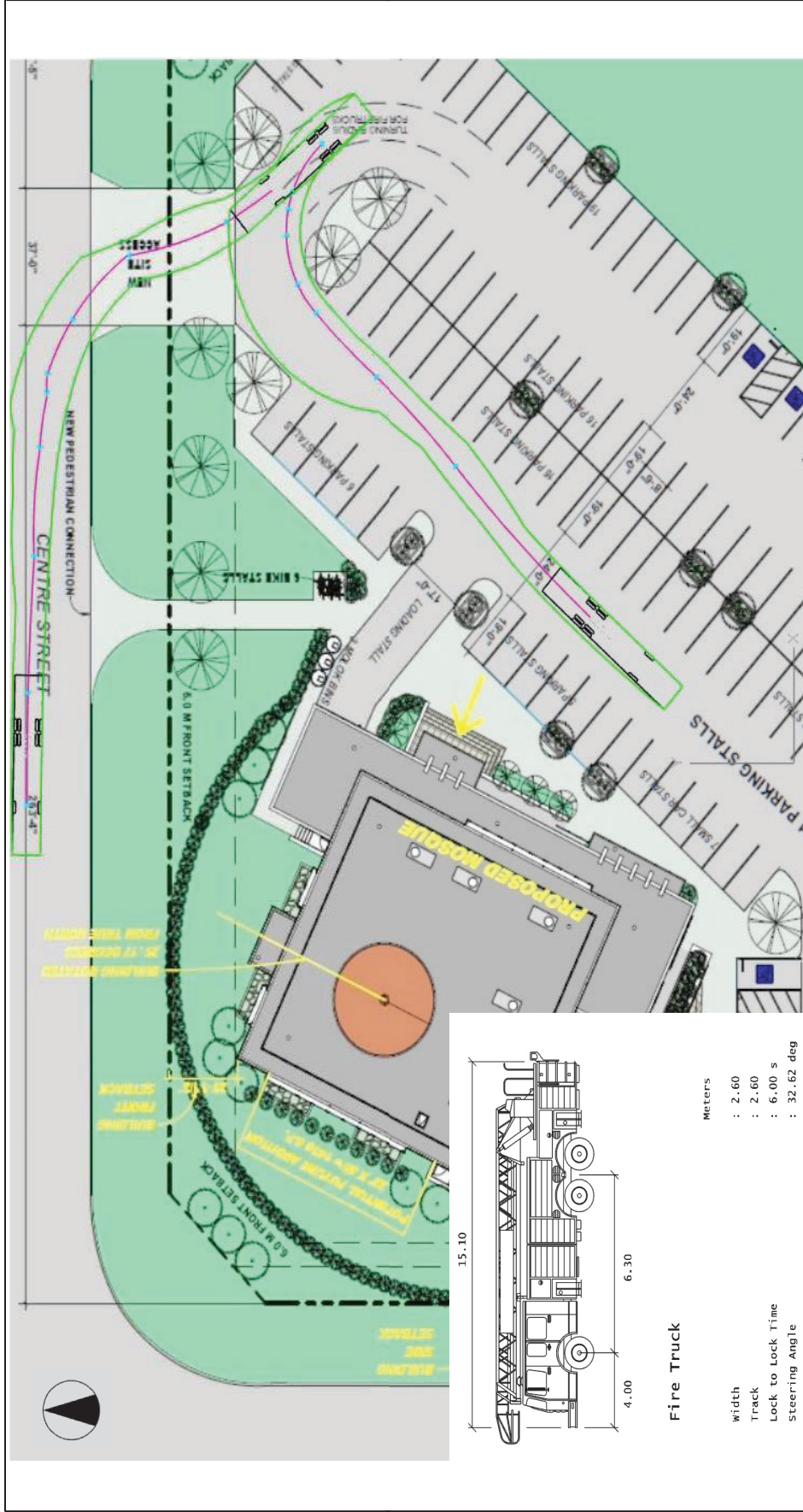
The largest vehicle expected to access the site is fire truck. To confirm safe maneuverability of the fire truck, a vehicle swept path analysis was conducted using AutoTURN software. The results, presented in **Exhibits 4-2** and **4-3**, demonstrate that the fire truck can safely enter, maneuver within, and exit the site.

Garbage collection will be accommodated via the Centre Street access and is not expected to significantly impact site circulation or operations, as collection activities are anticipated to occur outside of peak site usage periods.

The design of parking spaces, drive aisles, and the loading area appears consistent with best practice design standards and applicable land use bylaw requirements, thereby supporting safe and efficient on-site circulation. In addition, pedestrian walkways are planned, providing connections between the mosque and adjacent public roadways. These walkways are designed with sufficient width to accommodate both pedestrians and cyclists.



**Exhibit 4-2: Fire Truck Sweep Path - Inbound**



TIA for Mosque at 65 Carleton Drive,  
St. Albert

Exhibit 4-3: Fire Truck Sweep Path - Outbound

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## 5 CONCLUSIONS

### 5.1 Summary of Study Findings

This report evaluates the potential traffic impacts associated with the proposed mosque development at 65 Carleton Drive in City of St. Albert. The key findings of the assessment are summarized as follows:

- The proposed mosque is expected to generate about 136 inbound trips and 180 outbound trips resulting in 316 total trips during Friday (Jum'ah) prayer peak hour.
- The Centre Street/Carleton Drive and Centre Street/Circle Drive intersections will continue to operate at an acceptable level of service (LOS) with existing intersection geometry and traffic control upon the built-out of the mosque.
- The site access intersections will operate at an acceptable level of service (LOS) with stop sign control on the site access approaches.
- The planned on-site parking supply exceeds zoning requirements; however, it is anticipated that parking demand during Jum'ah prayers will exceed the on-site supply, with overflow expected to rely on adjacent on-street parking. The adjacent street network has sufficient spare capacity to accommodate the additional parking demand expected during Friday (Jum'ah) prayers.
- Stationing parking attendants at site entrances, along with the use of signage and way-finding measures, should be considered to prevent unnecessary vehicle circulation within the site when the parking lot reaches capacity.
- The design of parking spaces, drive aisles, and loading areas is consistent with best practice design standards and applicable land use bylaw requirements, thereby supporting safe and efficient on-site circulation.
- The proposed site accesses provide adequate sight distance and are designed to accommodate two-way traffic flow. The largest vehicle expected on-site—a fire truck—can safely maneuver into, through, and out of the site without impacting overall circulation or operations.

## 5.2 Recommendations

As the development generated traffic is not anticipated to have significant negative impact on the study intersections and on area roadways, it is recommended that the proposed development is approved.

# APPENDIX-A

## Detail Traffic Counts



		Centre St and Carleton Drive										Centre Street					PHF
		Carleton Drive					Centre Street					Total	Hourly Total				
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Total	Hourly Total	PHF	
Friday Peak Period	12:00 - 12:15	1			1		32	30	4	3		11	1	83			
	12:15 - 12:30	4	2		1	1	25	25	3	1		6		68			
	12:30 - 12:45	4	1		3	1	24	24	8	3		12	1	78			
	12:45 - 1:00	1	1		2	1	30	30	5	2	1	6	1	80	309	0.84	
	1:00 - 1:15	2		1	1	1	32	33	11	1		13	1	96	322		
	1:15 - 1:30	1			1	1	25	27	8	1		4	2	70	324		
	1:30 - 1:45		1		1	1	18	20	5	4	1	6	1	58	304		
	1:45 - 2:00	3		1	1	1	29	17	9	4		4		68	292		
	2:00 - 2:15	2			1	1	25	20	6	4		6		65	261		
	2:15 - 2:30	8	2	1	1	1	22	17	8	7		14		80	271		
2:30 - 2:45	2	2			1	33	18	6	2		17		81	294			
2:45 - 3:00	1					32	22	8	2		2	1	68	294			
Friday Peak Hour Volume		8	1	1	7	3	111	114	32	7	1	35	4	324			
Peak Hour Approach Volume			10			121			153			40					

Centre St and Circle Drive																
	Circle Drive						Centre Street						Total	Hourly Total	PHF	
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR				
12:00 - 12:15	5		1					1	3				7		17	
12:15 - 12:30			1					3					1		6	
12:30 - 12:45	3							5	3	5			6		22	
12:45 - 1:00	4							3	4	4			5		16	0.90
1:00 - 1:15	4							2	5	1			9		21	
1:15 - 1:30	3							5	6	2			4		20	
1:30 - 1:45	2							1	2				5		10	
1:45 - 2:00								6	5				1		12	
2:00 - 2:15	2							3	5				3		13	
2:15 - 2:30	8		1					5	5				4		23	
2:30 - 2:45	5								5				9		19	
2:45 - 3:00									1				2		4	
Friday Peak Hour Volume	14	0	0	0	0	0	0	15	18	8			24	0	79	
Peak Hour Approach Volume		14			0			33					32			

Centre St and Private Access															
	Private Access						Centre Street						PHF		
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR		Total	Hourly Total
12:00 - 12:15												2	2		
12:15 - 12:30				3		3						1	7		
12:30 - 12:45				1		1	2					1	5		
12:45 - 1:00				1		1	2					1	5	19	
1:00 - 1:15				0		1	3					1	5	22	
1:15 - 1:30				1		3	3					1	8	23	
1:30 - 1:45							1					2	3	21	
1:45 - 2:00												4	4	20	
2:00 - 2:15							1					2	3	18	
2:15 - 2:30												1	1	11	
2:30 - 2:45				2			1					1	4	12	
2:45 - 3:00													0	8	
Friday Peak Hour Volume	0	0	0	3	0	6	10	0	0	0	0	4	23		
Peak Hour Approach Volume	0						10						4		

Friday Peak  
Period

0.72



# **APPENDIX-B**

















## **Synchro Printouts**



# HCM Unsignalized Intersection Capacity Analysis

## 8: Centre Street & Carleton Drive

Existing Traffic  
FridayPrayerPeak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	114	32	7	1	35	4	8	1	1	7	3	111
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	136	38	8	1	42	5	10	1	1	8	4	132
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	46			46			494	362	42	362	364	44
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	46			46			494	362	42	362	364	44
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 %	91			100			98	100	100	98	99	87
cM capacity (veh/h)	1542			1542			388	511	1020	547	509	1018
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	182	48	12	144								
Volume Left	136	1	10	8								
Volume Right	8	5	1	132								
cSH	1542	1542	424	947								
Volume to Capacity	0.09	0.00	0.03	0.15								
Queue Length 95th (m)	2.0	0.0	0.6	3.7								
Control Delay (s)	5.8	0.2	13.7	9.5								
Lane LOS	A	A	B	A								
Approach Delay (s)	5.8	0.2	13.7	9.5								
Approach LOS			B	A								
<b>Intersection Summary</b>												
Average Delay			6.7									
Intersection Capacity Utilization			29.0%		ICU Level of Service				A			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 3: Centre Street & Circle Drive

Existing Traffic  
FridayPrayerPeak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	15	18	8	24	14	0
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	20	9	27	16	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
None						
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	31	0	59	31	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	31	0	59	31	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	98	98	99	97	99	
cM capacity (veh/h)	847	1076	892	847	1604	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	37	36	16			
Volume Left	0	9	16			
Volume Right	20	0	0			
cSH	959	858	1604			
Volume to Capacity	0.04	0.04	0.01			
Queue Length 95th (m)	0.8	0.9	0.2			
Control Delay (s)	8.9	9.4	7.3			
Lane LOS	A	A	A			
Approach Delay (s)	8.9	9.4	7.3			
Approach LOS	A	A				
Intersection Summary						
Average Delay			8.8			
Intersection Capacity Utilization			18.3%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 5: Centre Street & Private Access

















Existing Traffic  
FridayPrayerPeak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	10	30	34	4	3	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	14	42	47	6	4	8
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	53				119	50
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	53				119	50
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	99
cM capacity (veh/h)	1534				861	1010
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	56	53	12			
Volume Left	14	0	4			
Volume Right	0	6	8			
cSH	1534	1700	955			
Volume to Capacity	0.01	0.03	0.01			
Queue Length 95th (m)	0.2	0.0	0.3			
Control Delay (s)	1.9	0.0	8.8			
Lane LOS	A		A			
Approach Delay (s)	1.9	0.0	8.8			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			1.8			
Intersection Capacity Utilization			18.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
8: Centre Street & Carleton Drive

















2026 Background Traffic  
FridayPrayerPeak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	116	32	7	1	36	4	8	1	1	7	3	113
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	138	38	8	1	43	5	10	1	1	8	4	135
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	48			46			502	368	42	368	370	45
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	48			46			502	368	42	368	370	45
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 %	91			100			98	100	100	98	99	87
cM capacity (veh/h)	1541			1542			381	506	1020	541	505	1016
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	185	49	12	146								
Volume Left	138	1	10	8								
Volume Right	8	5	1	135								
cSH	1541	1542	418	945								
Volume to Capacity	0.09	0.00	0.03	0.15								
Queue Length 95th (m)	2.1	0.0	0.6	3.8								
Control Delay (s)	5.8	0.2	13.9	9.5								
Lane LOS	A	A	B	A								
Approach Delay (s)	5.8	0.2	13.9	9.5								
Approach LOS			B	A								
<b>Intersection Summary</b>												
Average Delay			6.7									
Intersection Capacity Utilization			29.2%		ICU Level of Service				A			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 8: Centre Street & Carleton Drive

2026 Total Traffic  
FridayPrayerPeak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	116	104	38	1	130	4	49	1	1	7	3	113
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	138	124	45	1	155	5	58	1	1	8	4	135
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	160			169			718	585	146	584	605	157
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	160			169			718	585	146	584	605	157
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 %	90			100			78	100	100	98	99	85
cM capacity (veh/h)	1402			1390			264	378	893	385	368	881
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	307	161	61	146								
Volume Left	138	1	58	8								
Volume Right	45	5	1	135								
cSH	1402	1390	270	795								
Volume to Capacity	0.10	0.00	0.23	0.18								
Queue Length 95th (m)	2.3	0.0	5.9	4.7								
Control Delay (s)	4.0	0.1	22.2	10.5								
Lane LOS	A	A	C	B								
Approach Delay (s)	4.0	0.1	22.2	10.5								
Approach LOS			C	B								
<b>Intersection Summary</b>												
Average Delay			6.1									
Intersection Capacity Utilization			40.8%		ICU Level of Service				A			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 3: Centre Street & Circle Drive

2026 Background Traffic  
FridayPrayerPeak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→	↘	↙	←	↘	↙
Volume (veh/h)	15	18	8	24	14	0
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	20	9	27	16	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	31	0	59	31	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	31	0	59	31	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	98	98	99	97	99	
cM capacity (veh/h)	847	1076	892	847	1604	
<b>Direction, Lane #</b>						
	EB 1	WB 1	NB 1			
Volume Total	37	36	16			
Volume Left	0	9	16			
Volume Right	20	0	0			
cSH	959	858	1604			
Volume to Capacity	0.04	0.04	0.01			
Queue Length 95th (m)	0.8	0.9	0.2			
Control Delay (s)	8.9	9.4	7.3			
Lane LOS	A	A	A			
Approach Delay (s)	8.9	9.4	7.3			
Approach LOS	A	A				
<b>Intersection Summary</b>						
Average Delay			8.8			
Intersection Capacity Utilization			18.3%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Centre Street & Circle Drive

















2026 Total Traffic  
FridayPrayerPeak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	15	63	8	24	48	0
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	70	9	27	53	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	107	0	185	107	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	107	0	185	107	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	98	93	99	96	97	
cM capacity (veh/h)	752	1076	689	752	1604	
<b>Direction, Lane #</b>						
	EB 1	WB 1	NB 1			
Volume Total	87	36	53			
Volume Left	0	9	53			
Volume Right	70	0	0			
cSH	994	735	1604			
Volume to Capacity	0.09	0.05	0.03			
Queue Length 95th (m)	2.0	1.1	0.7			
Control Delay (s)	9.0	10.1	7.3			
Lane LOS	A	B	A			
Approach Delay (s)	9.0	10.1	7.3			
Approach LOS	A	B				
<b>Intersection Summary</b>						
Average Delay			8.7			
Intersection Capacity Utilization			18.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
5: Centre Street & Site Access

2026 Total Traffic  
FridayPrayerPeak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	30	71	34	35	4	95	0	45	3	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	14	42	99	47	49	6	132	0	62	4	0	8
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	54			140			273	267	91	327	314	51
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	54			140			273	267	91	327	314	51
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 %	99			97			80	100	93	99	100	99
cM capacity (veh/h)	1532			1425			647	607	958	561	572	1008
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	154	101	194	12								
Volume Left	14	47	132	4								
Volume Right	99	6	62	8								
cSH	1532	1425	722	797								
Volume to Capacity	0.01	0.03	0.27	0.02								
Queue Length 95th (m)	0.2	0.7	7.6	0.3								
Control Delay (s)	0.7	3.7	11.8	9.6								
Lane LOS	A	A	B	A								
Approach Delay (s)	0.7	3.7	11.8	9.6								
Approach LOS			B	A								
<b>Intersection Summary</b>												
Average Delay			6.3									
Intersection Capacity Utilization			32.0%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 11: West Site Access & Carleton Drive

2026 Total Traffic  
 FridayPrayerPeak



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	41	10	0	31	11
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	49	12	0	37	13
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	99	12			12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	99	12			12	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	95			98	
cM capacity (veh/h)	872	1060			1588	

















Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	49	12	50
Volume Left	0	0	37
Volume Right	49	0	0
cSH	1060	1700	1588
Volume to Capacity	0.05	0.01	0.02
Queue Length 95th (m)	1.0	0.0	0.5
Control Delay (s)	8.6	0.0	5.4
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	5.4
Approach LOS	A		

Intersection Summary			
Average Delay		6.2	
Intersection Capacity Utilization		19.0%	ICU Level of Service A
Analysis Period (min)		15	

# HCM Unsignalized Intersection Capacity Analysis

















## 8: Centre Street & Carleton Drive

2031 Background Traffic  
FridayPrayerPeak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	124	35	8	1	38	4	9	1	1	8	3	121
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	165	47	11	1	51	5	12	1	1	11	4	161
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	56			57			602	441	52	441	444	53
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	56			57			602	441	52	441	444	53
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 %	89			100			96	100	100	98	99	84
cM capacity (veh/h)	1530			1528			311	451	1007	477	449	1006
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	223	57	15	176								
Volume Left	165	1	12	11								
Volume Right	11	5	1	161								
cSH	1530	1528	342	918								
Volume to Capacity	0.11	0.00	0.04	0.19								
Queue Length 95th (m)	2.5	0.0	0.9	4.9								
Control Delay (s)	5.9	0.2	16.0	9.8								
Lane LOS	A	A	C	A								
Approach Delay (s)	5.9	0.2	16.0	9.8								
Approach LOS			C	A								
<b>Intersection Summary</b>												
Average Delay			7.0									
Intersection Capacity Utilization			30.4%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
8: Centre Street & Carleton Drive

2031 Total Traffic  
FridayPrayerPeak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	124	106	38	1	133	4	49	1	1	8	3	121
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	148	126	45	1	158	5	58	1	1	10	4	144
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	163			171			753	610	149	609	630	161
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	163			171			753	610	149	609	630	161
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 %	89			100			76	100	100	97	99	84
cM capacity (veh/h)	1397			1388			246	362	890	369	353	877
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	319	164	61	157								
Volume Left	148	1	58	10								
Volume Right	45	5	1	144								
cSH	1397	1388	251	785								
Volume to Capacity	0.11	0.00	0.24	0.20								
Queue Length 95th (m)	2.5	0.0	6.5	5.2								
Control Delay (s)	4.1	0.1	23.9	10.7								
Lane LOS	A	A	C	B								
Approach Delay (s)	4.1	0.1	23.9	10.7								
Approach LOS			C	B								
<b>Intersection Summary</b>												
Average Delay			6.4									
Intersection Capacity Utilization			46.8%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
3: Centre Street & Circle Drive

2031 Background Traffic  
FridayPrayerPeak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	16	20	9	26	15	0
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	21	27	12	35	20	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	40	0	77	40	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	40	0	77	40	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	97	98	99	96	99	
cM capacity (veh/h)	836	1076	857	836	1604	
<b>Direction, Lane #</b>						
	EB 1	WB 1	NB 1			
Volume Total	48	47	20			
Volume Left	0	12	20			
Volume Right	27	0	0			
cSH	954	841	1604			
Volume to Capacity	0.05	0.06	0.01			
Queue Length 95th (m)	1.1	1.2	0.3			
Control Delay (s)	9.0	9.5	7.3			
Lane LOS	A	A	A			
Approach Delay (s)	9.0	9.5	7.3			
Approach LOS	A	A				
<b>Intersection Summary</b>						
Average Delay			8.9			
Intersection Capacity Utilization			18.5%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 3: Centre Street & Circle Drive

2031 Total Traffic  
 FridayPrayerPeak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	16	65	9	26	49	0
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	72	10	29	54	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	109	0	190	109	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	109	0	190	109	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	98	93	99	96	97	
cM capacity (veh/h)	749	1076	681	749	1604	

















Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	90	39	54
Volume Left	0	10	54
Volume Right	72	0	0
cSH	991	731	1604
Volume to Capacity	0.09	0.05	0.03
Queue Length 95th (m)	2.1	1.2	0.7
Control Delay (s)	9.0	10.2	7.3
Lane LOS	A	B	A
Approach Delay (s)	9.0	10.2	7.3
Approach LOS	A	B	

Intersection Summary			
Average Delay		8.8	
Intersection Capacity Utilization	18.5%		ICU Level of Service A
Analysis Period (min)		15	

# HCM Unsignalized Intersection Capacity Analysis

## 5: Centre Street & Site Access

2031 Total Traffic  
FridayPrayerPeak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	33	71	34	37	4	95	0	45	3	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	15	46	99	47	51	6	132	0	62	4	0	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	57			144			284	277	95	337	324	54
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	57			144			284	277	95	337	324	54
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 %	99			97			79	100	93	99	100	99
cM capacity (veh/h)	1529			1420			634	599	953	552	564	1004
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	160	104	194	14								
Volume Left	15	47	132	4								
Volume Right	99	6	62	10								
cSH	1529	1420	711	807								
Volume to Capacity	0.01	0.03	0.27	0.02								
Queue Length 95th (m)	0.2	0.7	7.8	0.4								
Control Delay (s)	0.8	3.6	12.0	9.5								
Lane LOS	A	A	B	A								
Approach Delay (s)	0.8	3.6	12.0	9.5								
Approach LOS			B	A								
<b>Intersection Summary</b>												
Average Delay			6.3									
Intersection Capacity Utilization			32.1%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 11: West Site Access & Carleton Drive

2031 Total Traffic  
 FridayPrayerPeak



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	41	11	0	31	12
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	49	13	0	37	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	101	13			13	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	101	13			13	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	95			98	
cM capacity (veh/h)	869	1058			1586	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	49	13	51
Volume Left	0	0	37
Volume Right	49	0	0
cSH	1058	1700	1586
Volume to Capacity	0.05	0.01	0.02
Queue Length 95th (m)	1.0	0.0	0.5
Control Delay (s)	8.6	0.0	5.3
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	5.3
Approach LOS	A		

Intersection Summary			
Average Delay		6.1	
Intersection Capacity Utilization		19.0%	ICU Level of Service A
Analysis Period (min)		15	