

PARKING STUDY & SIGHT DISTANCE

January 2024

7301 Lundy's Lane
Proposed Residential Development
Niagara Falls, ON

Prepared for

RPD Studio

c/o - Mr. Raj Patel



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January 03, 2024

c/o Mr. Raj Patel, B.ARCH., MUD, OALA, Int'l Assoc. RAIC
Principal, RPD Studio
7895 Tranmere Dr, Suite 203
Mississauga ON L5S 1V9

Re: Proposed Mixed Use Development, 7301 Lundy's Lane, Niagara Falls, ON, Parking Study & Sight Distance Review

Dear Mr. Patel,

Trans-Plan is pleased to submit this Parking Justification Study and Sight Distance Review report for the proposed mixed-use development at 7301 Lundy's Lane in the City of Niagara Falls.

Our Parking Justification Study findings indicate that the proposed parking supply of 73 spaces is able to accommodate the parking demands of the site. The parking requirements were reviewed using the City of Niagara Falls Zoning By-law. Our study includes utilizing proxy parking surveys conducted at similar existing stacked townhome developments to obtain a peak parking demand rate to estimate parking demands of the subject site.

Our site distance review indicates that the available sight distance will allow vehicles to enter and exit safely when utilizing the site access onto Royal Manor Drive.

Sincerely,



Anil Seegobin, P.Eng.
Partner, Engineer

Trans-Plan Transportation Inc.
Transportation Consultants



Jeffrey Gorman
Traffic Assistant

Trans-Plan Transportation Inc.
Transportation Consultants

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Transmittal Letter

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1. INTRODUCTION

Trans-Plan has been retained by RPD Studio to complete a Parking Justification Study and Sight Distance Review in support of the proposed residential development located at 7301 Lundy's Lane in the City of Niagara Falls.

This report includes the following study components:

- A review of the study area context and the existing and proposed uses at the site
- A review of on-site parking requirements, as per the City of Niagara Falls Zoning By-laws, in comparison to the total proposed on-site parking supply
- Comparison of parking utilization surveys at a proxy sites with a similar site context as the subject site
- Comparison of the survey results to the proposed parking supply and parking recommendations with additional measures
- Providing parking recommendations for the proposed development, including confirmation that the existing / proposed on-site parking supply is sufficient to accommodate the development
- A review of the sight lines from the proposed accesses and internal roadways to confirm the adherence to TAC guidelines, based on the local roadway characteristics

2. SITE LOCATION AND CONTEXT

2.1 Site Location

The site, shown in Figure 1, is located in a predominately residential area on the west side of the city of Niagara Falls. The site is currently occupied by a Miniature Golf course that is no longer in operation that sits in between the Queen Elizabeth Parkway (QEW), Lundy's lane and Royal Manor Drive. On the other corners of where Lundy's Lane and the QEW intersect are a Niagara Falls inn, a Ramada Inn and the Canada One Outlet Mall. Surrounding this small commercial area are mostly single detached houses. Another important note is that while Lundy's lane and the QEW intersect here they do not interact. Lundy's Lane passes over the QEW on a bridge.

2.2 Proposed Development

The proposed site plan, by RPDS Integrated Design Firm, is provided in Figure 2. The proposal plans to construct five different stacked townhome buildings spaced throughout the site. Each building contains between twelve and 18 units with one of the buildings featuring commercial units on the ground floor instead of residential units. In total the site will provide 72 total units split as 68 residential units and 4 commercial units. The site will provide 73 total parking spaces for all uses.

2.3 Transit Connections

The site is served by Niagara Region Transit, which provides public transit across the city and region. The transit routes provided within the vicinity of the site connect riders to The Table Rock Centre in the east, the Canadian Drive Hub in the south and the Mt. Carmel Hub in the North.

Route 113, Montrose Road is a bus route operating mainly along Montrose Road connecting riders to the Canadian Drive Hub. The nearest bus stop is located at Montrose Road and Lundy's Lane (approximately 380m west of the site).

601 Red Line, Lundy's Lane is a bus route operating mainly along Lundy's Lane, connecting riders to the Table Rock Centre. The nearest bus stop is located at Lundy's Lane and Royal Manor Drive (approximately 70m east of the site).

Table 1 – Transit Service Frequencies in the Study Area

Route	No.	Nearest Stop to Site	Approximate Service Times		Approximate Peak* Service Frequency (min)		
			Weekdays	Weekends	AM	PM	SAT
Montrose Road	113	Montrose Road & Lundy's Lane	06:00 - 19:00	-	30		-
Lundy's Lane	601	Lundy's Lane & Royal Manor Drive	06:00 - 24:00	6:45 – 24:00	30		30
OnDemand Transit St. Niagara Falls	-	Pickup/drop-off at address	06:00 – 23:45	Sat: 06:00 – 23:45 Sun: 09:00 – 20:00	Demand-responsive		

3. PARKING REQUIREMENTS

3.1 Zoning By-law Parking Requirements

The parking requirements of the proposed residential development use was reviewed based on the City of Niagara Falls Zoning By-law (See Appendix A for source information). The parking requirements and supply is shown in Table 2.

Table 2 – Parking Requirements, City of Niagara Falls Zoning By-law

Land Use	Site Stats	Minimum Parking Requirement		Parking Supply (spaces)	Deficiency (spaces)
		Rate	Required Spaces		
Apartment Building	68 Units	1.4 spaces per dwelling unit	95	68	27
Commercial Units	273.70 sq.m.	1 Space per 25 sq.m.	11	5	6
Total			106	73	33

Based on the City of Niagara Falls Zoning By-law, the parking requirement for the subject site is 106 spaces. The proposed parking supply is 73 spaces, which is deficient of the City's requirement by a minimal of 33 spaces. To better understand the existing parking demands of stacked townhome style properties, parking proxy surveys were conducted and discussed in the following section.

4. PROXY SITE PARKING SURVEYS

To estimate the parking activity of the site two similar sites were selected to provide example parking characteristics. The proxy site data collected reflects typical site operations of residential uses.

With these proxy sites we will be targeting the residential uses and not the commercial uses. With this approach we aim to reduce the required parking for only the residential units. The commercial units will be assigned 100% of the spaces required by the by-law. Therefore in this analysis we will assume of the 73 total spaces 11 are assigned to the commercial units and 62 are assigned to the residential units.

4.1 Proxy Site Details

The proxy sites selected are existing residential buildings with similar characteristics located at 6065 McLeod Road and 6591 Montrose Road both in the City of Niagara falls. Although the size of the proxy sites is a bit larger than subject site, the selected proxy sites are classified as stacked townhomes with similar transit frequencies and routes as the subject site. The site statistics of the subject site was compared with the proxy sites and summarized in Table 3.

Table 3 – Proxy Site Details, Site Statistics

Site	Parking Supply (Spaces)	No. of Units (Units)	Supply Ratio (Spaces/Unit)
Subject Site			
7301 Lundy's Lane	62	68	0.91
Proxy Sites			
6065 McLeod Road	69	54	1.28
6591 Montrose Road	33	26	1.27

4.2 Proxy Site Survey Methodology

The proxy parking surveys were conducted by Pyramid Traffic Inc. across four consecutive days in one week for each site. Details of the parking utilization surveys conducted are as follows:

- Conducted during the following days and times:
 - Thursday October 5th, 2023 from 6:00am and 24:00am;
 - Friday October 6th, 2023 from 6:00am and 24:00am;
 - Saturday October 7th, 2023 from 6:00am and 24:00am;
 - Sunday October 8th, 2023 from 6:00am and 24:00am;
- Surveys were conducted at 30-minute intervals, recording parking demand (number of spaces occupied) at the on-site parking lot.
- Recorded the number of vehicles parked at the lot, any illegal parking, and any spillover parking occurring off-site (on adjacent lots or streets) for the development.

4.3 Proxy Site Parking Demand Results

The survey results, showing the peak parking demand (maximum number of vehicles occupying the lot) are displayed in Table 4. The detailed survey results are shown in tabular form in Appendix B.

Table 4 – Proxy Site Parking Results

Site	Peak Parking Demand	Peak Demand Rate	Time Period
6065 McLeod Road	40	0.74	24:00pm Sunday
6591 Montrose Road	24	0.92	24:00pm Sunday
Average Rate		0.83	

4.4 Supplementary Proxy Spot Counts

Additional spot counts at each site were completed by Trans-Plan to provide additional support for the surveyed numbers. These surveys were conducted on Sunday November 12, 2023 and the results are displayed in Table 5

Table 5 – Spot Count Parking Results

Site	Peak Parking Demand	Peak Demand Rate	Time Period
6065 McLeod Road	21	0.39	24:00pm Sunday
6591 Montrose Road	21	0.81	24:00pm Sunday
Average Rate		0.60	

For the purposes of this analysis the numbers from section 4.3 and Table 4 will be used as they are the most conservative.

5. FUTURE PARKING DEMAND RESULTS

5.1 Estimated Future Parking Demands for the Subject Site

Proxy site parking survey data was utilized to estimate the parking activity of the site. The estimated future parking demand is summarized and shown below in Table 6.

Table 6 – Estimated Future Weekday Parking Demand, Subject Site

Site Stats	Estimated Parking Demands for Subject Site	
	Average Proxy Site Observed Rate	Parking Demand (Spaces)
68 Units	0.83 Spaces / Unit	57
By Law Requirement for commercial		11
Total Demand (residential + commercial)		68
Provided Parking Supply		73
On-site Parking Surplus / Available Parking (spaces)		+5

After review of the proxy parking data, we can conclude that this site will have a surplus of 5 parking spaces while providing ample supply for all on site uses.

6. PARKING REVIEW & PROPOSED ALLOCATION

After review of the proxy parking results, we can see that the residential townhome uses require 57 spaces to function well. Adding this to the by-law review we can see that the commercial uses will require 11 spaces for a total demand of 68 spaces for this site.

These numbers provide an analytical baseline for the site however we recommend that the parking be distributed in a more logical manner. From our experience allocating each stacked townhome unit with a single space and using the remaining 5 spaces to account for commercial visitors would distribute the parking in a more useable manner. The commercial uses on site are being targeted at local residents and allocating a single space to each dwelling would allow residents more flexibility when choosing modes of travel.

7. SIGHT DISTANCE REVIEW

A sight distance review was conducted for the vehicles exiting from the proposed accesses onto Royal Manor Drive. The review was based on the TAC 2017 standards. Royal Manor Drive has a speed limit of 40 km/h.

A departure triangle at the proposed accesses looking west and east based on TAC standards from the Geometric Design Guide for Canadian Roads, Section 9.9.2 was completed. The scenarios for the intersection sight distance (ISD) that were reviewed are Case B1- Left turns from minor road and Case B2- Right turns from the minor road. The following variables were used to complete the departure triangles:

- The sight line of a driver would be measured about 2.9m from the edge of the pavement at the proposed site accesses. Typically, this distance is set at 4.4m, however, in this case a fence surrounding the site prevented our surveyors from moving further into the site. We consider this as acceptable as typically a driver sits 2.4m away from the edge of the road when in their vehicle and it is typical for drivers to edge up to the road to maintain optimal sightlines before entering an intersection.
- The time gap of 7.5 seconds for Case B1 and 6.5 seconds for Case B2 and B3 was used to calculate the ISD, which is based on a passenger at the site.

- A design speed of 40 km/h was used to determine the ISD. The design speed was selected due to the nature of the local area being a neighborhood and the curvature of the roadway local to the site. It is more likely that drivers would travel at slower speeds due to these constraints.

A comparison of the required site distance to the available sight distance is summarized in Table 7 survey details and photos can be found in Appendix C.

Table 7 – Sight Distance Comparison

Location	Design Speed (km/h)	Criteria	Required Stopping Site Distance (m)	Available Sight Distance (m)	Requirement Met?
Looking Left					
Royal Manor Drive & Site Access	40	SSD	50	80	Y
		Right Turn SD	75	80	Y
Looking Right					
Royal Manor Drive & Site Access	40	SSD	50	95	Y
		Left Turn SD	85	95	Y

The sight distance for this access meets the minimum requirements set out in the TAC guidelines. This is considering the caveat that the sight distance had to be taken from 2.9m and the design speed of 40km/h was selected. As we previously stated we believe this is acceptable due to driver positioning and behaviour when entering intersections. During our site visit we did note that there is substantial curvature in Royal Manor Drive and there are elements of foliage that may obstruct clear sightlines. However, the access meets the stated requirements in the guidelines and so drivers should have ample sight distance to complete turning maneuvers.

We present additional sight distance tests in Appendix C for design speeds of 50km/h and 60km/h.

8. CONCLUSIONS

This Parking Justification Study and Sight Distance Review report for the proposed residential development located at 7301 Lundy's Lane in the City of Niagara Falls is summarized as follows:

Parking Justification Study

- The proposed development plans to provide 72 total units split between commercial and residential uses. 68 units will be residential, and 4 units will be commercial. These units will be in the form of 5 separate buildings on site in the stacked townhome style.
- The site will provide 73 parking spaces for the use of its residents and visitors. The City of Niagara Parking By-law requires that the site provide 106 total parking spaces. 95 for the residential uses and 11 for the commercial uses.
- Proxy parking counts indicate that an appropriate parking demand rate when considering local characteristics would be 0.83 spaces per unit for residential uses. Applying this to the subject site yields a requirement of 57 spaces for residential, 11 for commercial and 5 surplus spaces.

- We recommend that the parking be distributed as one space per residential unit plus 5 spaces for the commercial uses. From our experience this will maximize good operating conditions for the site.

Sight Distance Review

- A review of the sight distance available at the site access onto Royal Manor Drive indicates that the site will operate well despite local roadway characteristics.

In conclusion, based on our survey results, the parking supply of 73 spaces can accommodate the needs of the proposed mixed-use development.

Respectfully submitted,

Sincerely,



Anil Seegobin, P.Eng.
Partner, Engineer

Trans-Plan Transportation Inc.

Transportation Consultants

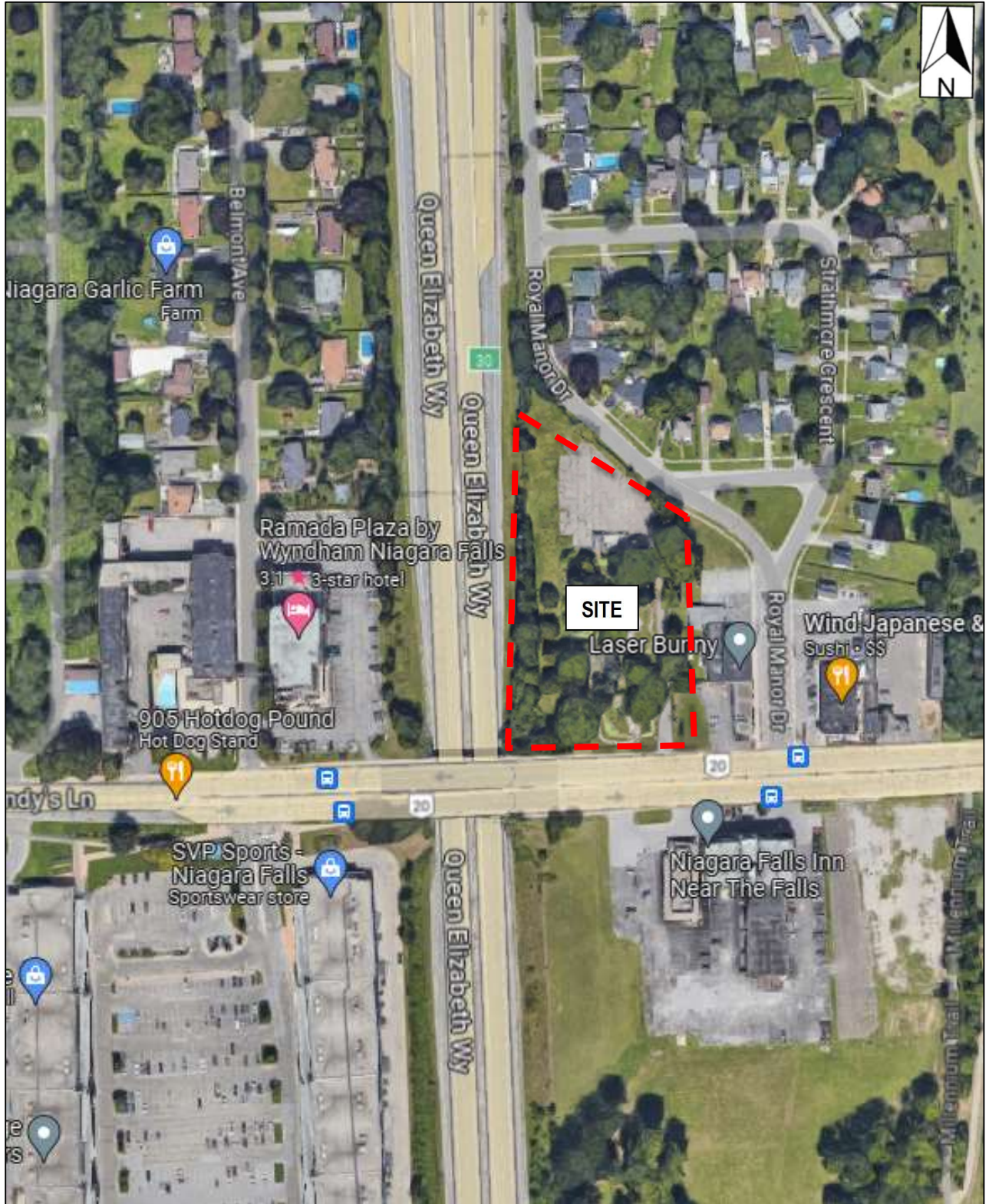


Jeffrey Gorman
Traffic Assistant

Trans-Plan Transportation Inc.

Transportation Consultants

Figure 1 – Site Location

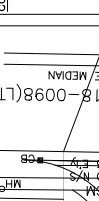


Source: Google Earth

PRIMARY CONSULTANT & PROJECT MANAGER

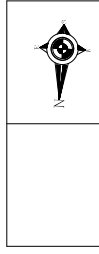


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1. 15/09/2023 ISSUED FOR ZONING BY LAW
No. Date Version Dwn.



PROJECT:	
STACKED TOWNHOMES DEVELOPMENT	
7301 LUNDY'S LANE NIAGARA FALLS, ON L2H 2W9 CANADA	
DRAWING TITLE: SITE PLAN	
DRAWN BY:	DATE:
CHECKED BY:	SCALE: 1:250
PROJECT NO.:	DRAWING NO.:
	A-2.0



"As per the e-mail confirmation dated 14 April 2023 from the MTO, the Ministry accepts the 4 m setback, being measured from the location instead of the outside limits of the MTO Land Owned (Brown)."

THE QUEEN ELIZABETH WAY
(DESIGNATED CONTROLLED ACCESS HIGHWAY BY DEPOSITED PLAN No. P-1915-9)

BUILDING	UNITS
A	12 (8 RESIDENTIAL + 4 RETAIL)
B	12
C	15
D	15
E	18
TOTAL UNITS	72
TOTAL RESIDENTIAL UNITS	68

PARKING BREAKDOWN	
1 RESIDENTIAL	64
2 ACCESSIBLE	4
3 COMMERCIAL	5
TOTAL PROPOSED PARKING	73

LOT AREA 69941.60 SQ.FT. (6497.79 SQ.MT.) 100%
LOT COVERAGE 19942.99 SQ.FT. (1852.76 SQ.MT.) 28.51%

LEGEND:

DOWNSPROUT	CONCRETE SIDEWALK
S.S.	PAINTED LINES
SNOW STORAGE	PROPERTY LINE
SOO	ACCESSIBLE PARKING SPACE
ACCESSIBLE SIDEWALK	CURB CUT
DEPRESSED SIDE WALK	NOISE BARRIER FENCE

APPENDICES

Appendix A – City of Niagara Falls By-law, Excerpts

Appendix B – Proxy Site Parking Utilization Survey Data

Appendix C – Sight Distance Survey Data



APPENDIX A

City of Niagara Falls By-law, Excerpts

be made a condition to the approval of plans and drawings in a site plan control area established under section 35a of The Planning Act. Where a building, structure or lot accommodates more than one use or purpose, the required parking spaces shall be the sum of the required parking spaces for each such use or purpose.

Table 1

CLASS OF USE, BUILDING OR STRUCTURE	MINIMUM PARKING SPACE REQUIREMENTS
Arena	1 parking space for each 5 seats
Bank, trust company, credit union, Currency exchange, sightseeing tourist information centre, timeshare sales office, office other than a dental or medical office or clinic medical office or clinic (2002-061)	1 parking space for each 25 square metres (269.1 sq. ft.) of gross leasable floor area
Barbershop or hairdressing establishment	3 parking spaces plus 1 additional parking space for each chair above 3
Bed and Breakfast	1 parking space for each guest room in addition to the parking space required for a detached dwelling or dwelling unit
Car Wash (81-62, #40)	4 parking spaces in line per bay
Dental or Medical Clinic or office	3 parking spaces for each practitioner
Drive-in-Restaurant	25 parking spaces plus 1 parking space for each 5 seats within the building or structure
Drive-through Facility accessory to a restaurant or retail store	12 parking spaces in a queuing lane measured from where products are dispensed, each with a minimum length of 6 metres (19.69 ft.) and a minimum width of 2.75 metres (9.02 ft.).
Drive-through Facility accessory to a financial institution	3 spaces in a queuing lane, measured from where products are dispensed, each with a minimum length of 6 metres (19.69 ft.) and a minimum width of 2.75 metres (9.02 ft.).
Detached dwelling, Duplex dwelling or Semi-detached dwelling and an on street townhouse dwelling	1 parking space for each dwelling unit
Dwelling containing 3 or more dwelling units save and except an on street townhouse dwelling	1.4 parking space for each dwelling unit
Funeral Home	15 parking spaces
Home for the Aged, Nursing Home	2 parking spaces for each 5 beds
Hospital	1 parking space for each 2 beds
Hotel	1 parking space for each two bedrooms. plus 1 parking space for each 5.5 square metres (59.2 sq. ft.) of floor area used as a place of assembly
Mobile Home Park	1.1 parking spaces for each mobile home
Motel	1 parking space for each 1.3 motel units

CLASS OF USE, BUILDING OR STRUCTURE	MINIMUM PARKING SPACE REQUIREMENTS
Museum, exhibition area	1 parking space for each 50 square metres (538.2 sq. ft.) of floor area
Place of worship	1 parking space for each 5 seats
Plant, factory, warehouse and transportation terminal (2011-136)	1 parking space for each 90 square metres of floor area
Premises licensed under The Liquor Licence Act if not part of a motel or hotel	1 parking space for each 5 seats
Premises licensed under The Liquor Licence Act if part of a motel or hotel	1 parking space for each 10 seats
Public Hall, Assembly Hall Place of Entertainment	1 parking space for each 5 persons that can be lawfully accommodated therein at any one time
Restaurant if not part of a motel or hotel, Adult Entertainment Parlour	1 parking space for each 5 seats
Restaurant if part of a motel or hotel	1 parking space for each 10 seats
Retail store, adult store, tattoo studio, dancing studio, laundromat and personal service shop up to and including a gross leasable floor area of 450 square metres (2011-136)	1 parking space for each 25 square meters of gross leasable floor area plus 1 parking space for each 90 square metres of floor area devoted to storage
Retail store, adult store, tattoo studio and dancing studio, exceeding a gross leasable floor area of 450 square metres (2011-136)	1 parking space for each 25 square metres of gross leasable floor area on the main sales floor plus 1 parking space for each 45 square metres of gross leasable floor area on every other floor and 1 parking space for each 90 square metres of floor area devoted to storage.
Retirement Home (2008-148)	0.6 parking space for each private living unit.
School	1 parking space for each teaching staff members plus one additional parking space for each 2 employees and in the case of secondary schools plus one further additional parking spaces for each 20 students.
Shopping Centres	1 parking space for each 18 square metres (193.75 sq. ft.) of gross leasable floor area on the main sales floor plus 1 parking space for each 45 square meters (484.38 sq. ft.) of gross leasable floor area on every other floor
Theatre	1 parking space for each 5 seats
Used Car Lot and New Car Agency	5 parking spaces for customers and staff
Uses, Buildings and structures permitted by this By-law other than those listed in this schedule	1 parking space for each 40 square metres (430.56 sq. ft.) of floor area
Vacation Rental Unit	2 parking spaces, which may be provided in tandem



APPENDIX B

Proxy Parking Survey Results

6065 McLeod

05-Oct-23

Total Parked in lot at 6:00am: 29

Total in Visitor: 7

	IN	OUT	Change	Total Utilization
6:30	2	3	-1	28
7:00	1	0	1	29
7:30	1	2	-1	28
8:00	0	1	-1	27
8:30	1	4	-3	24
9:00	2	5	-3	21
9:30	1	2	-1	20
10:00	3	5	-2	18
10:30	3	6	-3	15
11:00	4	2	2	17
11:30	2	4	-2	15
12:00	5	5	0	15
12:30	3	4	-1	14
13:00	3	0	3	17
13:30	1	4	-3	14
14:00	1	4	-3	11
14:30	3	2	1	12
15:00	5	5	0	12
15:30	4	3	1	13
16:00	0	0	0	13
16:30	6	3	3	16
17:00	6	3	3	19
17:30	6	7	-1	18
18:00	2	3	-1	17
18:30	1	3	-2	15
19:00	2	1	1	16
19:30	2	3	-1	15
20:00	1	5	-4	11
20:30	5	2	3	14
21:00	6	2	4	18
21:30	3	0	3	21
22:00	5	5	0	21
22:30	4	1	3	24
23:00	2	1	1	25
23:30	1	1	0	25
0:00	0	0	0	25

6065 McLeod

06-Oct-23

Total Parked in lot at 6:00am: 25

Total in Visitor: 3

	IN	OUT	Change	Total Utilization
6:30	1	2	-1	24
7:00	0	1	-1	23
7:30	1	1	0	23
8:00	1	2	-1	22
8:30	2	2	0	22
9:00	0	3	-3	19
9:30	0	2	-2	17
10:00	4	3	1	18
10:30	4	6	-2	16
11:00	1	1	0	16
11:30	3	7	-4	12
12:00	3	2	1	13
12:30	1	2	-1	12
13:00	3	3	0	12
13:30	3	3	0	12
14:00	1	3	-2	10
14:30	3	1	2	12
15:00	3	3	0	12
15:30	4	4	0	12
16:00	1	3	-2	10
16:30	6	3	3	13
17:00	3	5	-2	11
17:30	5	2	3	14
18:00	1	3	-2	12
18:30	5	3	2	14
19:00	6	6	0	14
19:30	4	2	2	16
20:00	5	2	3	19
20:30	4	3	1	20
21:00	4	3	1	21
21:30	3	4	-1	20
22:00	1	1	0	20
22:30	6	2	4	24
23:00	9	3	6	30
23:30	5	1	4	34
0:00	3	0	3	37

6065 McLeod

07-Oct-23

Total Parked in lot at 6:00am: 38

Total in Visitor: 5

	IN	OUT	Change	Total Utilization
6:30	0	1	-1	37
7:00	2	2	0	37
7:30	2	1	1	38
8:00	1	3	-2	36
8:30	2	2	0	36
9:00	2	6	-4	32
9:30	1	2	-1	31
10:00	0	4	-4	27
10:30	1	2	-1	26
11:00	2	2	0	26
11:30	4	7	-3	23
12:00	3	6	-3	20
12:30	4	4	0	20
13:00	1	5	-4	16
13:30	7	5	2	18
14:00	5	3	2	20
14:30	5	6	-1	19
15:00	3	6	-3	16
15:30	2	4	-2	14
16:00	3	0	3	17
16:30	4	1	3	20
17:00	5	8	-3	17
17:30	6	7	-1	16
18:00	5	6	-1	15
18:30	7	1	6	21
19:00	4	8	-4	17
19:30	4	2	2	19
20:00	3	3	0	19
20:30	3	1	2	21
21:00	8	6	2	23
21:30	7	4	3	26
22:00	4	1	3	29
22:30	2	0	2	31
23:00	6	1	5	36
23:30	1	1	0	36
0:00	1	1	0	36

6065 McLeod

08-Oct-23

Total Parked in lot at 6:00am: 39

Total in Visitor: 10

	IN	OUT	Change	Total Utilization
6:30	1	1	0	39
7:00	0	0	0	39
7:30	1	2	-1	38
8:00	1	2	-1	37
8:30	2	1	1	38
9:00	2	3	-1	37
9:30	1	5	-4	33
10:00	3	2	1	34
10:30	2	6	-4	30
11:00	1	5	-4	26
11:30	7	11	-4	22
12:00	4	7	-3	19
12:30	2	6	-4	15
13:00	7	5	2	17
13:30	4	6	-2	15
14:00	2	1	1	16
14:30	6	5	1	17
15:00	8	9	-1	16
15:30	8	4	4	20
16:00	7	7	0	20
16:30	4	1	3	23
17:00	4	4	0	23
17:30	2	2	0	23
18:00	4	3	1	24
18:30	3	4	-1	23
19:00	4	6	-2	21
19:30	5	4	1	22
20:00	5	4	1	23
20:30	6	3	3	26
21:00	8	5	3	29
21:30	3	3	0	29
22:00	11	6	5	34
22:30	5	1	4	38
23:00	3	2	1	39
23:30	1	0	1	40
0:00	3	3	0	40

6591 Montrose Rd

05-Oct-23

Total Parked in lot at 6:00am: 20

Total in Visitor: 1

	IN	OUT	Change	Total Utilization
6:30	1	2	-1	19
7:00	1	2	-1	18
7:30	1	3	-2	16
8:00	0	3	-3	13
8:30	3	2	1	14
9:00	0	5	-5	9
9:30	3	2	1	10
10:00	0	1	-1	9
10:30	0	2	-2	7
11:00	0	1	-1	6
11:30	2	1	1	7
12:00	2	2	0	7
12:30	2	1	1	8
13:00	1	2	-1	7
13:30	2	2	0	7
14:00	1	2	-1	6
14:30	4	2	2	8
15:00	0	2	-2	6
15:30	3	1	2	8
16:00	3	1	2	10
16:30	3	1	2	12
17:00	2	5	-3	9
17:30	2	2	0	9
18:00	6	5	1	10
18:30	3	3	0	10
19:00	3	3	0	10
19:30	8	5	3	13
20:00	5	4	1	14
20:30	6	6	0	14
21:00	4	3	1	15
21:30	1	1	0	15
22:00	2	1	1	16
22:30	1	0	1	17
23:00	0	0	0	17
23:30	0	1	-1	16
0:00	2	0	2	18

6591 Montrose Rd

06-Oct-23

Total Parked in lot at 6:00am: 19

Total in Visitor: 1

	IN	OUT	Change	Total Utilization
6:30	0	1	-1	18
7:00	0	0	0	18
7:30	0	2	-2	16
8:00	1	3	-2	14
8:30	2	4	-2	12
9:00	1	4	-3	9
9:30	1	2	-1	8
10:00	3	2	1	9
10:30	0	0	0	9
11:00	5	2	3	12
11:30	2	5	-3	9
12:00	2	3	-1	8
12:30	2	1	1	9
13:00	1	1	0	9
13:30	3	1	2	11
14:00	0	1	-1	10
14:30	2	2	0	10
15:00	4	6	-2	8
15:30	4	0	4	12
16:00	1	3	-2	10
16:30	3	2	1	11
17:00	3	4	-1	10
17:30	6	1	5	15
18:00	3	6	-3	12
18:30	5	4	1	13
19:00	5	6	-1	12
19:30	3	2	1	13
20:00	3	3	0	13
20:30	5	4	1	14
21:00	2	0	2	16
21:30	5	5	0	16
22:00	1	0	1	17
22:30	4	2	2	19
23:00	0	2	-2	17
23:30	2	0	2	19
0:00	3	1	2	21

6591 Montrose Rd

07-Oct-23

Total Parked in lot at 6:00am: 23

Total in Visitor: 1

	IN	OUT	Change	Total Utilization
6:30	0	0	0	23
7:00	0	1	-1	22
7:30	1	2	-1	21
8:00	1	0	1	22
8:30	2	3	-1	21
9:00	2	5	-3	18
9:30	1	1	0	18
10:00	2	3	-1	17
10:30	0	3	-3	14
11:00	2	3	-1	13
11:30	2	1	1	14
12:00	1	3	-2	12
12:30	4	3	1	13
13:00	2	3	-1	12
13:30	2	1	1	13
14:00	2	5	-3	10
14:30	4	2	2	12
15:00	1	2	-1	11
15:30	1	1	0	11
16:00	2	2	0	11
16:30	5	6	-1	10
17:00	1	2	-1	9
17:30	6	3	3	12
18:00	5	4	1	13
18:30	2	4	-2	11
19:00	6	6	0	11
19:30	2	4	-2	9
20:00	6	2	4	13
20:30	5	5	0	13
21:00	0	1	-1	12
21:30	1	1	0	12
22:00	4	2	2	14
22:30	4	2	2	16
23:00	1	2	-1	15
23:30	2	0	2	17
0:00	1	0	1	18

6591 Montrose Rd

08-Oct-23

Total Parked in lot at 6:00am: 22

Total in Visitor: 2

	IN	OUT	Change	Total Utilization
6:30	0	0	0	22
7:00	0	1	-1	21
7:30	1	0	1	22
8:00	0	0	0	22
8:30	1	1	0	22
9:00	0	1	-1	21
9:30	1	2	-1	20
10:00	3	2	1	21
10:30	0	2	-2	19
11:00	1	3	-2	17
11:30	6	7	-1	16
12:00	2	3	-1	15
12:30	2	3	-1	14
13:00	1	6	-5	9
13:30	2	1	1	10
14:00	2	1	1	11
14:30	5	3	2	13
15:00	4	3	1	14
15:30	4	3	1	15
16:00	2	0	2	17
16:30	1	1	0	17
17:00	6	5	1	18
17:30	2	2	0	18
18:00	2	1	1	19
18:30	2	4	-2	17
19:00	2	0	2	19
19:30	2	2	0	19
20:00	2	2	0	19
20:30	1	2	-1	18
21:00	3	1	2	20
21:30	2	2	0	20
22:00	5	4	1	21
22:30	3	1	2	23
23:00	1	1	0	23
23:30	1	0	1	24
0:00	0	0	0	24



APPENDIX C

Sight Distance Results

Access 1, T-access at Eastern side of property									
Looking Left (North West)					Looking Right (South East)				
Available Sight Distance	Reason	Criteria	Required Sight Distance (m)	Req. Met? (Y / N)	Available Sight Distance	Reason	Criteria	Required Sight Distance (m)	Req. Met? (Y / N)
80m	Tree	SSD (40km/h)	50	Y	95m	Horizontal Curve + Tree	SSD (40km/h)	50	Y
		ISD for R turn (40km/h)	75	Y			ISD for L turn (40km/h)	85	Y
		SSD (50km/h)	65	Y			SSD (50km/h)	65	Y
		ISD for R turn (50km/h)	95	N			ISD for L turn (50km/h)	105	N
		SSD (60km/h)	85	N			SSD (60km/h)	85	Y
		ISD for R turn (60km/h)	110	N			ISD for L turn (60km/h)	130	N

PHOTO TAKEN (TIME): 12:45 PM

PHOTO TAKEN (TIME): 12:55 PM



*The sight distance survey was conducted 2.9m from edge of pavement since it was not possible to be 4.4m from edge of pavement due to a fence being present at the site access. Regardless, the pictures taken also considered whether or not the surveyor was able to observe from 4.4m from edge of pavement.

Design Speed:	40	50	60	70	80	90	100
SSD:	50	65	85	105	130	160	185
ISD for L turn:	85	105	130	150	170	190	210
ISD for R turn:	75	95	110	130	145	165	185

Sight Distance Schematic Diagram:

