

60 Dean Avenue
City of Barrie

Traffic Impact Study for
Nestwise Inc.

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Executive Summary

This report summarizes the traffic impact study for the proposed residential development at 60 Dean Avenue, located on the east side of Dean Avenue, south of the existing Barrie Public Library - Painswick in the City of Barrie [City]. The report assesses the impact of traffic related to the development on the adjacent roadway and provides recommendations to accommodate this traffic in a safe and efficient manner.

The proposed development includes 122 residential apartment units.

The proposed development will share the existing full-movement driveway onto Dean Avenue for the Barrie Public Library - Painswick [Shared Site Access¹].

The scope of this analysis includes a review of the following intersections:

- Dean Avenue / Madelaine Drive;
- Dean Avenue / Raquel Street & Commercial Access; and
- Dean Avenue / Shared Site Access.

Conclusions

1. The proposed development is expected to generate a total of 46 AM and 48 PM peak hour trips.
2. Background traffic and pedestrian counts were completed at the Dean Avenue / Library Driveway intersection on Tuesday, January 14th, 2025. Background traffic and pedestrian counts were obtained from the City at the intersections of Commercial Access & Raquel Street / Dean Avenue and Madelaine Avenue / Dean Avenue, completed on Wednesday, April 3rd 2024 and Thursday, March 28th 2024, respectively.
3. An intersection operational analysis was completed at the study area intersections, using the existing (2025) and background (2028, 2033 and 2038) traffic volumes, without the proposed development traffic. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development. The following road rightsizing improvements are planned to be completed in 2025:
 - Madelaine Drive (between Yonge Street and Maplevue Drive East)
 - Lane removal in each direction from four-lanes to three-lanes with the addition of a two way left turn lane; and
 - Addition of painted on-street bicycle lanes.
4. No additional infrastructure improvements are recommended for the existing (2025) and background (2028, 2033 and 2038) scenarios.
5. An estimate of the amount of traffic that would be generated by the proposed development was prepared and assigned to the study area streets and intersection.
6. An intersection operation analysis was completed under total (2028, 2033 and 2038) traffic volumes with the proposed development operational at the study area intersections. No additional infrastructure improvements are recommended.

¹ The driveway for the Barrie Public Library – Painswick will be identified as ‘Library Driveway’ for the analysis scenarios without the proposed development (ex. existing and background scenarios).

7. The Shared Site Access will operate efficiently in the existing configuration with a full-movement access driveway, with one-way stop control for westbound movements. No lane improvements are recommended on Dean Avenue at the Shared Site Access as a result of the additional traffic generated by the proposed development. The existing configuration of the Shared Site Access, with a single eastbound and westbound lane, will provide the necessary capacity to service the proposed development.
8. The proposed parking supply for the subject site meets the parking requirements specified in the City's Zoning By-law Amendment 2024-051 for 48 Dean Avenue and accessibility parking requirements specified in the City's Zoning By-law 2009-141.
9. In summary the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

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1 Introduction

1.1 Background

Nestwise Inc. [the Developer] is proposing a residential development at 60 Dean Avenue, located on the east side of Dean Avenue, south of the existing Barrie Public Library - Painswick in the City of Barrie [City].

The proposed development includes 122 residential apartment units.

The proposed development will share the existing full-movement driveway onto Dean Avenue for the Barrie Public Library - Painswick [Shared Site Access²].

The Developer has retained **JD Engineering Inc.** [JD Engineering] to prepare this traffic impact study in support of the proposed development.

1.2 Study Area

Figure 1 illustrates the location of the subject site and study area intersections, in relation to the surrounding area. The Site Plan by Jones Consulting Group Ltd. is included in **Appendix A**.

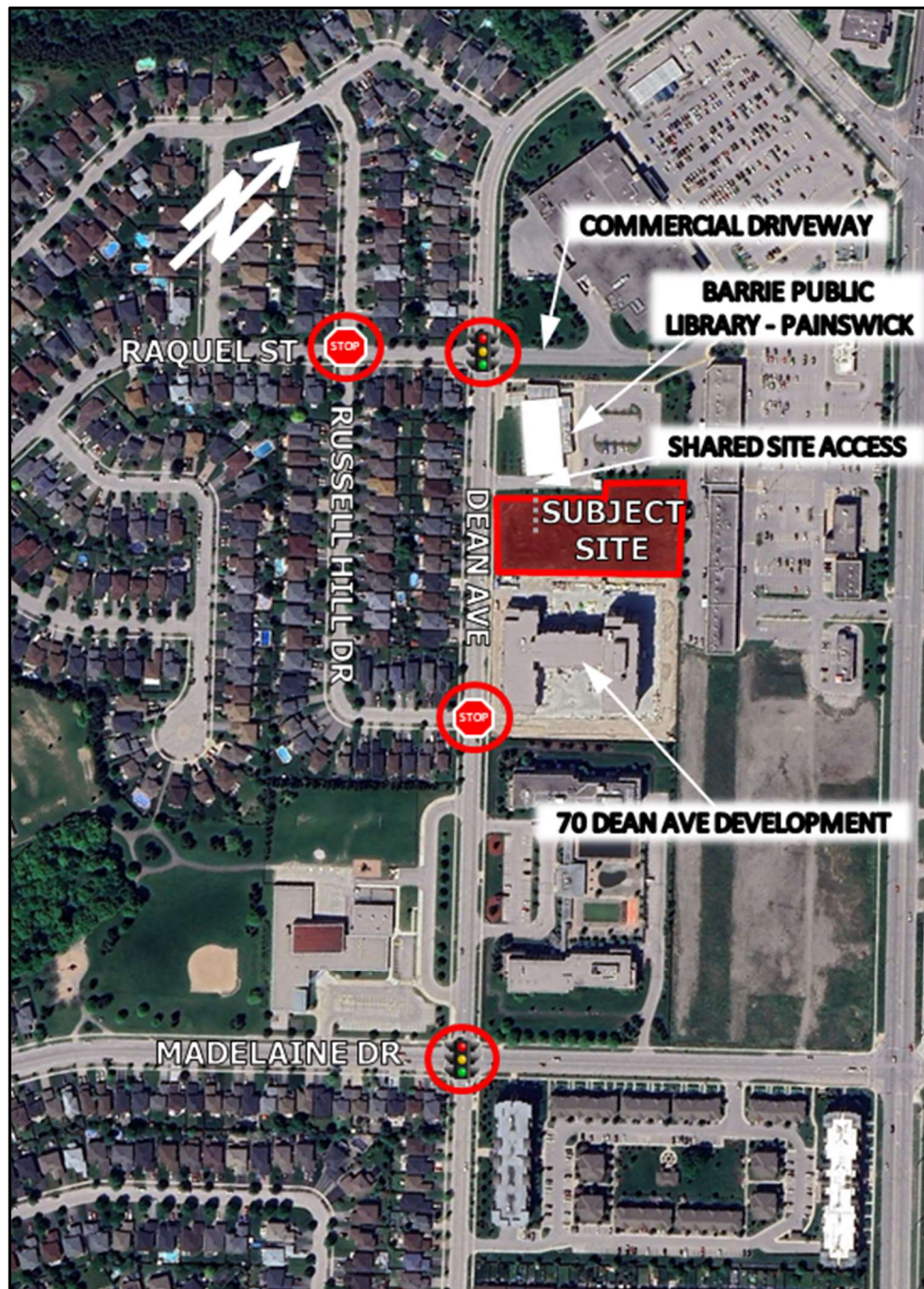
The subject site is bound by Dean Avenue to the west, the Barrie Public Library Painswick to the north, the existing 70 Dean Avenue development to the south and commercial lands to the east.

Through consultation with the City, the following intersections will be analysed as part of the study:

- Dean Avenue / Madelaine Drive;
- Dean Avenue / Raquel Street & Commercial Access; and
- Dean Avenue / Shared Site Access.

² The driveway for the Barrie Public Library – Painswick will be identified as ‘Library Driveway’ for the analysis scenarios without the proposed development (ex. existing and background scenarios).

Figure 1 – Proposed Site Location and Study Area



1.3 Study Scope and Objectives

The purpose of this study is to identify the potential impacts to traffic flow at the site access on the surrounding roadway network. The study analysis includes the following tasks:

- Consult with the City to address any traffic-related issues or concerns they have with the proposed development;
- Determine existing traffic volumes and circulation patterns;
- Estimate future traffic volumes if the proposed development was not constructed, including the impact of additional proposed developments in the area;
- Complete level-of-service [LOS] analysis of horizon year (without the proposed development) traffic conditions and identify operational deficiencies;
- Estimate the amount of traffic that would be generated by the proposed development and assign to the roadway network;
- Complete LOS analysis of horizon year (with the proposed development) traffic conditions and identify additional operational deficiencies;
- Identify improvement options to address operational deficiencies;
- Complete an active transportation review for the proposed development;
- Review the proposed parking supply and assess the suitability for the proposed development;
- Review and comment on the construction staging plan as it relates to parking of trades people, delivery of construction material, maintenance of adjacent property access, pedestrian movements, City infrastructure;
- Discuss the impact of the proposed development at the proposed Shared Site Access driveway; and
- Document findings and recommendations in a final report.

1.4 Horizon Year and Analysis Periods

It has been assumed that, should all approvals be granted, occupancy for the proposed development will be completely built-out and occupied by 2028. Traffic scenarios for the existing year (2025), buildout horizon year (2028), 5-year post-buildout horizon year (2033) and 10-year post-buildout horizon year (2038) were selected for analysis of traffic operations in the study area. The weekday morning [AM] and afternoon [PM] peak hour has selected as the analysis periods for this study.

2 Information Gathering

2.1 Street and Intersection Characteristics

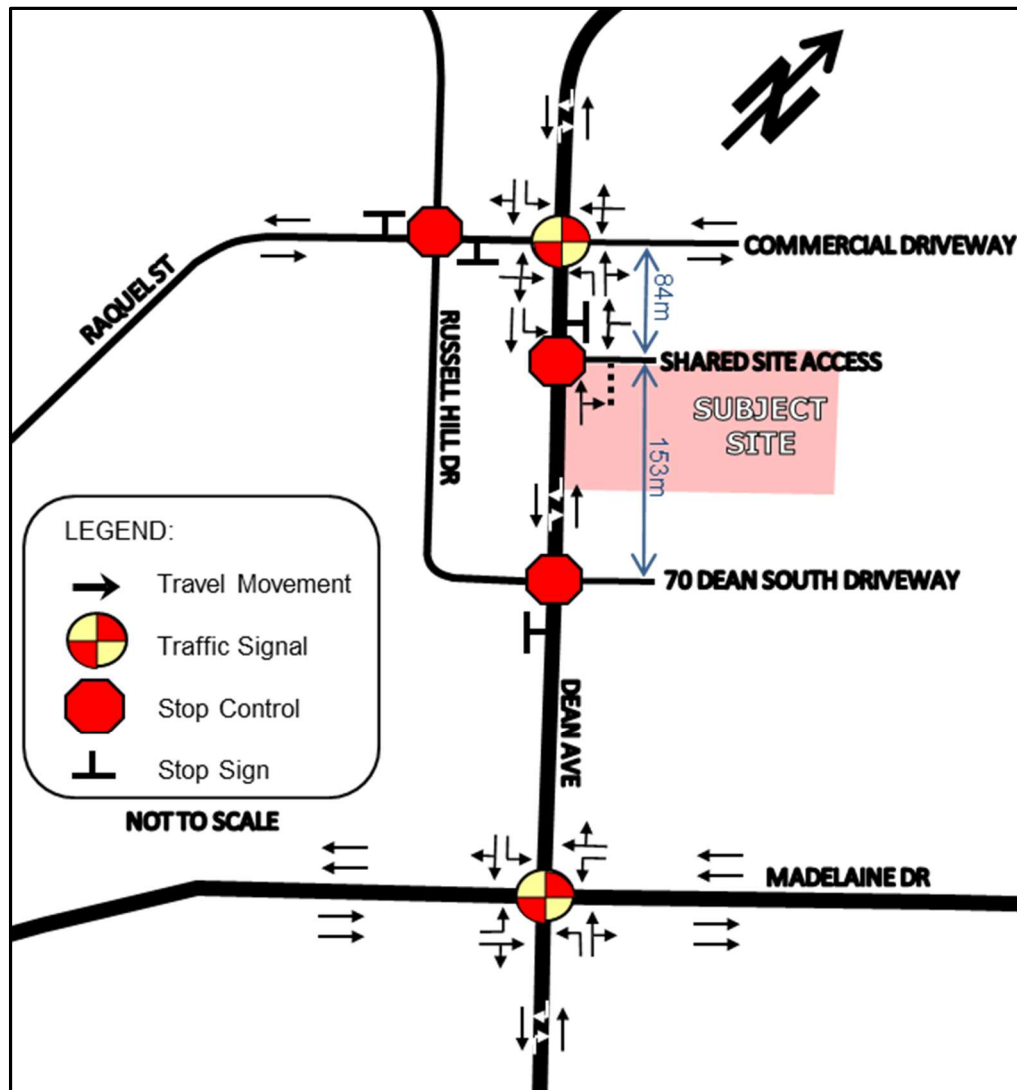
Dean Avenue is a three-lane minor collector road with an urban cross-section. Dean Avenue has bicycle lanes and sidewalks on both sides of the road in the study area. There is a community safety zone on Dean Avenue between Raquel Street and Madelaine Drive. The posted speed limit on Dean Avenue is 50km/h, north and south of the community safety zone, where the speed limit is reduced to 40km/h. Dean Avenue is under the jurisdiction of the City.

Madelaine Drive is a four-lane major collector road with an urban cross-section. There are sidewalks on both sides of Madelaine Drive. There is a community safety zone on Madelaine Drive between Yonge Street and Esther Drive. The posted speed limit on Dean Avenue is 50km/h, east and west of the community safety zone, where the speed limit is reduced to 40km/h when speed limit signage is flashing. Madelaine Drive is under the jurisdiction of the City.

Raquel Street is a two-lane local road with an urban cross-section. There is a sidewalk along the southeast side on Raquel Street. The unposted (assumed) speed limit on Raquel Street is 50 km/h. Raquel Street connects into a commercial shopping centre driveway, east of Dean Avenue. Raquel Street is under the jurisdiction of the City.

The existing intersection spacing and lane configuration within the study area is illustrated in **Figure 2**.

Figure 2 - Existing (2025) Intersection Spacing and Lane Configuration within Study Area



2.2 Local Transportation Infrastructure Improvements

Based on the City's Transportation Master Plan (2019) [TMP] and information available on the City's website, the following infrastructure improvements are proposed to be implemented in 2025:

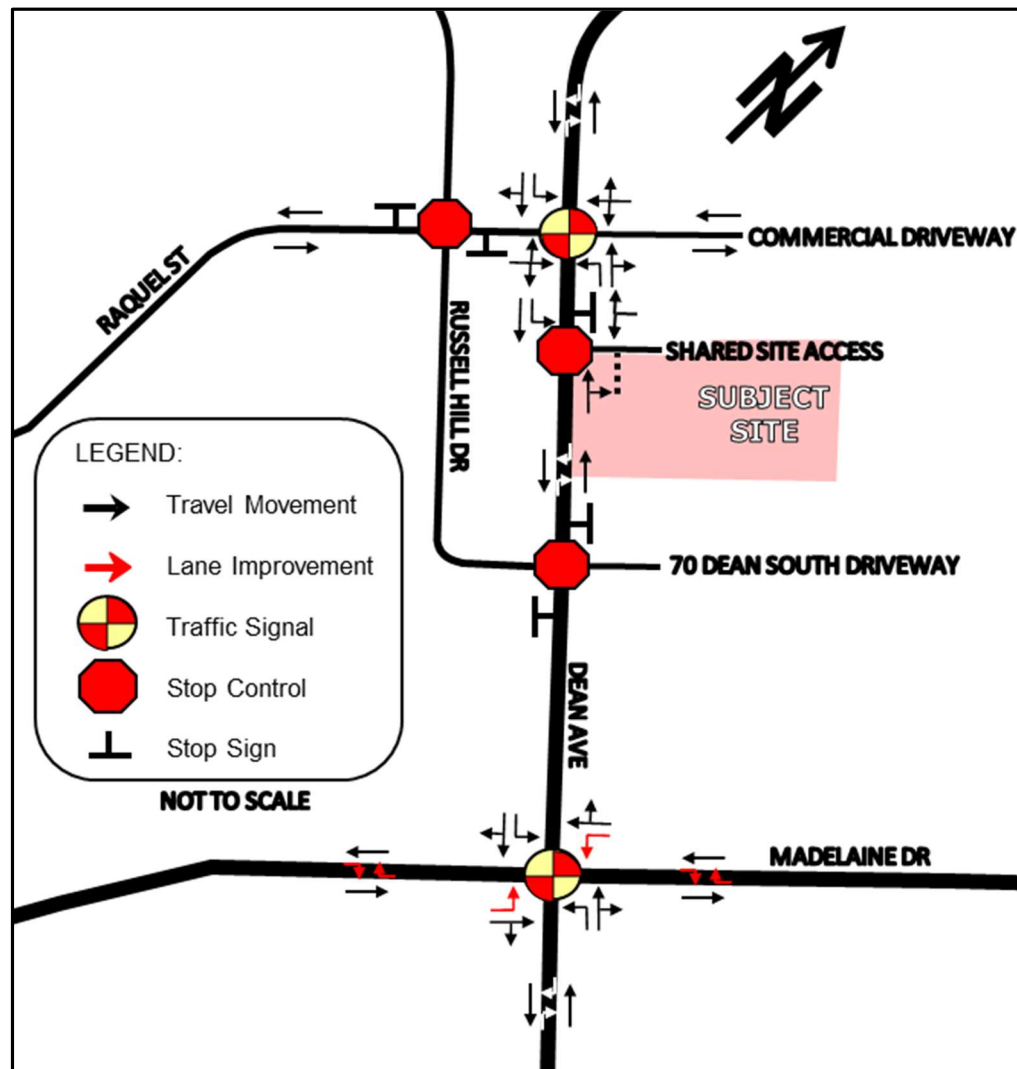
Road Rightsizing

- Madelaine Drive (between Yonge Street and Maplevue Drive East)
 - Lane removal in each direction from four-lanes to three-lanes with the addition of a two way left turn lane; and
 - Addition of painted on-street bicycle lanes.

The above-noted lane reduction has been applied to the existing (2025) traffic conditions. It is assumed that the intersection of Dean Avenue and Madelaine Drive will have an auxiliary left-turn storage lane and a shared through / right lane in each direction.

The assumed existing (2025) lane configuration within the study area can be seen in **Figure 3**.

Figure 3 - Assumed Existing (2025) Intersection Spacing and Lane Configuration within Study Area



2.3 Transit Access

The subject site is served by Barrie Transit. The No. 8A Southbound, No. 8B Northbound and No. 12 bus routes travel along Yonge Street and Big Bay Point Road, in the study area.

The No. 8A (RVH/Yonge) Southbound bus route operates from Monday to Friday between 04:51 – 00:14 with daytime service every half-hour, on Saturday between 06:51 – 00:14 with daytime service every half-hour and on Sundays and holidays between 08:51 – 21:16 with service every hour. The nearest bus stop is located for the No. 8A Southbound bus route is located on the west side of Yonge Street, 95 metres south of Big Bay Point Road (400 metres from the Subject Site).

The No. 8B (Crosstown/Essa) Northbound bus route operates from Monday to Friday between 05:34 – 00:05 with daytime service every half-hour, on Saturday between 07:36 – 00:03 with daytime service every half-hour and on Sundays and holidays between 10:06 – 22:06 with service every hour. The nearest bus stop is located for the No. 8B Northbound bus route is located on the east side of Yonge Street, 95 metres south of Big Bay Point Road (550 metres from the Subject Site).

The No. 12 (Georgian Mall/Barrie South GO) bus route operates from Monday to Friday between 05:09 – 23:40 with daytime service every 30 – 35 minutes, on Saturday between 06:16 – 23:32 with daytime service every 30 – 35 minutes and on Sundays and holidays between 08:03 – 21:36 with service every hour. The nearest eastbound and westbound stops for the No. 12 bus route is located at the southwest corner (500 metres from the Subject Site) and northwest corner (550 metres from the Subject Site) of the Yonge Street / Big Bay Point Road intersection, respectively.

2.4 Other Developments within Study Area

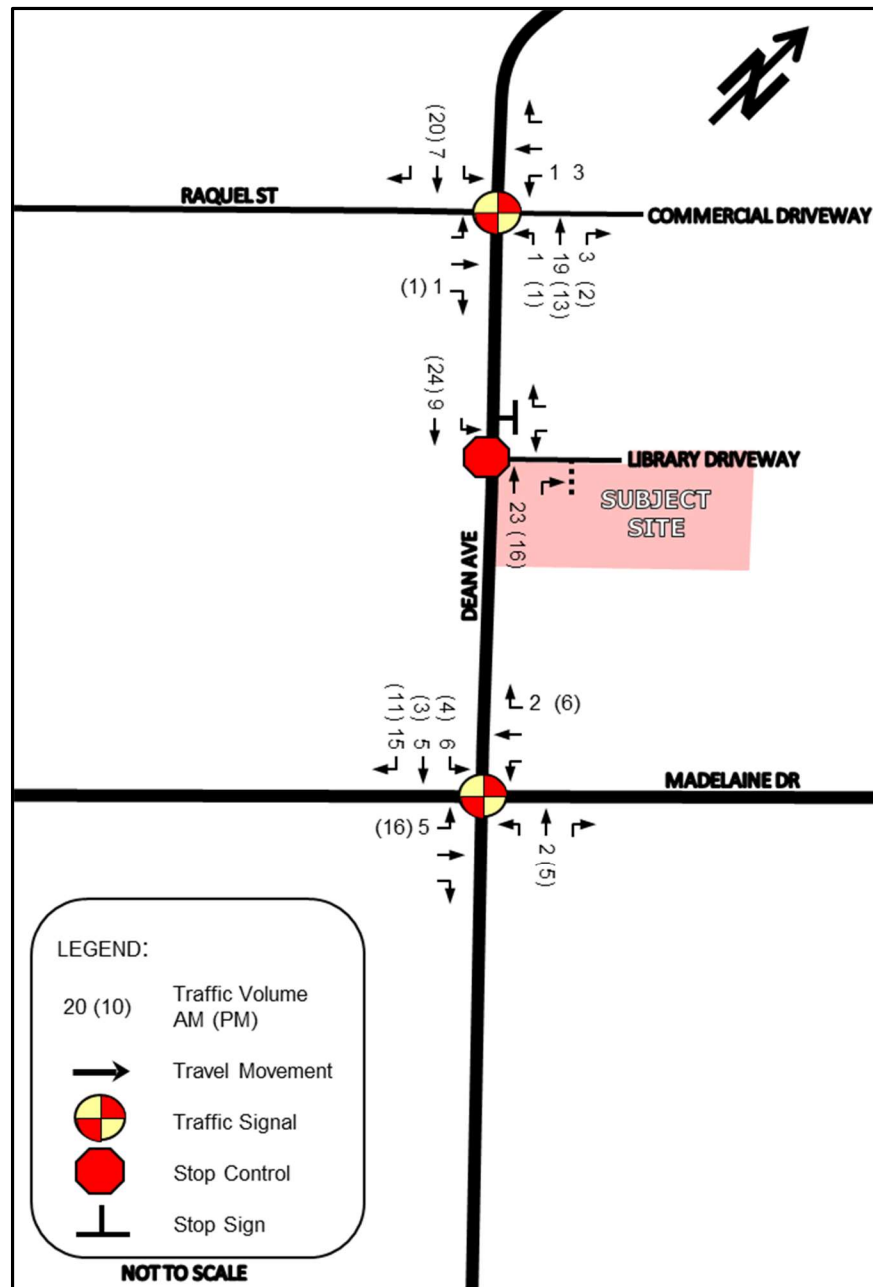
Based on our correspondence with the City, the 70 Dean Avenue development is the only other planned development that will have a potential impact on local traffic volumes in the study area.

Landmark Tower Ltd. is proposing a residential development for the property municipally known as 70 Dean Avenue [70 Dean Avenue development], located directly south of the proposed development. The 70 Dean Avenue development will consist of 199 apartment units. The 70 Dean Avenue development was under construction at the time the traffic counts for this study were completed. For the purposes of this study, the traffic generated by the 70 Dean Avenue development was added to the traffic counts, to estimate the existing (2025) traffic condition.

The traffic generation and assignment for the 70 Dean Avenue development have been determined based on the traffic study completed by JD Engineering for the 70 Dean Avenue development (dated November 2017) [70 Dean Avenue TIS] (excerpts provided in **Appendix B**).

Figure 4 illustrates the traffic assignment for the 70 Dean Avenue development in the AM and PM peak hour.

Figure 4 – 70 Dean Avenue Development Traffic Assignment (2025)



2.5 Background Traffic Growth

There is a significant amount of anticipated development planned within the annexed lands at the south end of the City, as well as intensification developments along the City's major corridors.

In order to be conservative, a background traffic growth rate of 2.0% per year has been selected for Dean Avenue, Madelaine Drive and Raquel Street, above and beyond the planned adjacent developments within the study area prior to 2031.

Beyond 2031, to analyse the traffic in the 2033 and 2038 horizon years we have applied a different background traffic growth rate illustrated in **Table 1**, estimated using the City's TMP Emme traffic projections for 2031 and 2041. The City's TMP Emme traffic projections did not include Raquel Street in the traffic model; for the purposes of this report, it is assumed the traffic growth on Raquel Street will be similar to Madelaine Drive.

Table 1 – Background Traffic Growth Rate in the Study Area (2031 - 2041)

Street	Background Traffic Growth Rate Calculated		Background Traffic Growth Rate Applied
	AM Peak Hour	PM Peak Hour	
Dean Avenue	5.5%	5.4%	5.5%
Madelaine Drive	1.5%	1.5%	1.5%
Raquel Street	-	-	1.5%

2.6 Traffic Counts

Detailed turning movements traffic and pedestrian counts were obtained from the City at the intersections of Dean Avenue / Raquel Avenue and Dean Avenue / Madelaine. Detailed turning movements traffic and pedestrian counts were also commissioned at the Dean Avenue / Library Driveway intersection by JD Engineering.

Table 2 summarizes the traffic count data collection information.

Table 2 - Traffic Count Data

Intersection (N-S Street / E-W Street)	Count Date	AM Peak Hour	PM Peak Hour	Source
Dean Avenue / Raquel Street & Commercial Driveway	Wednesday, April 3 rd , 2024	08:00 - 09:00	15:15 - 16:15	City
Dean Avenue / Madelaine Drive	Thursday, March 28 th , 2024	07:45 – 08:45	16:30 – 17:30	City
Dean Avenue / Library Driveway	Tuesday, January 14 th , 2025	08:00 – 09:00	16:15 – 17:15	JD Eng.*

*Traffic counts were completed by Accu Traffic Inc. on behalf of JD Engineering.

Detailed traffic count data can be found in **Appendix C**. The peak hours of traffic generation for the study area intersections generally aligned with the anticipated peak hour of traffic generation by the proposed development.

Heavy vehicle percentages and pedestrian crossings from the traffic count data have also been included in the Synchro analysis.

There is a minor variation in traffic on Dean Avenue between Raquel Avenue and the Library Driveway. This is common when traffic counts are completed on different dates. Since there are only three single detached driveways on Dean Avenue between Raquel Avenue and the Library Driveway, we would expect that there would be no variation in traffic volume between these intersections for the same analysis period. Consequently, the traffic volume at the intersections of Dean Avenue / Raquel Avenue and Dean Avenue / Library Driveway were manually adjusted to match each other on Dean Avenue.

Figure 5 illustrates the existing (2025) traffic volume, for the AM and PM peak hour within the study area.

2.7 Horizon Year Traffic Volumes

Future horizon year traffic volumes without the proposed development were estimated using the future development discussed in Section 2.4 and the background traffic growth discussed in Section 2.5. **Figure 6, 7 and 8** illustrate the background (2028, 2033 and 2038) traffic volumes respectively, for the AM and PM peak hour within the study area.

Figure 5 – Existing (2025) Traffic Volumes

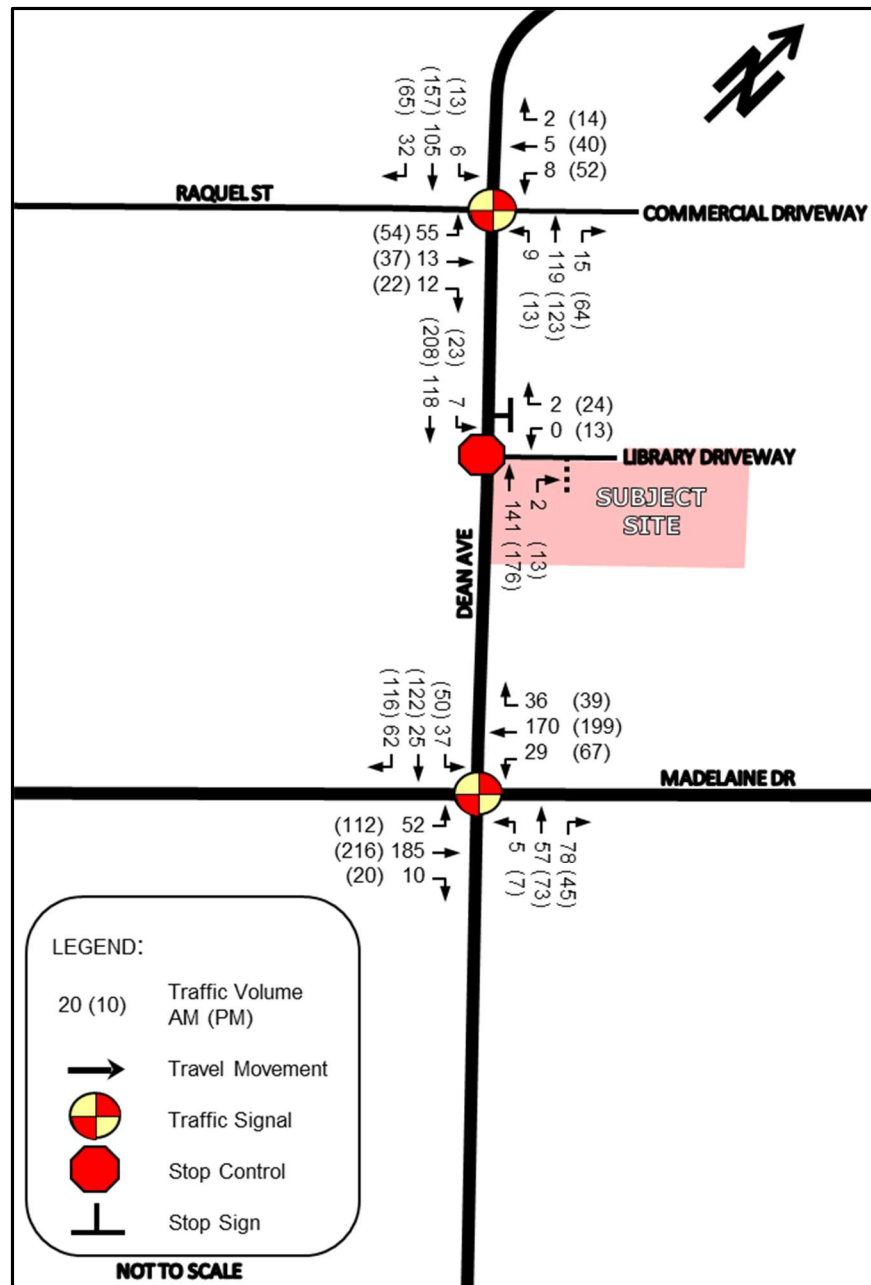


Figure 6 - Background (2028) Traffic Volumes

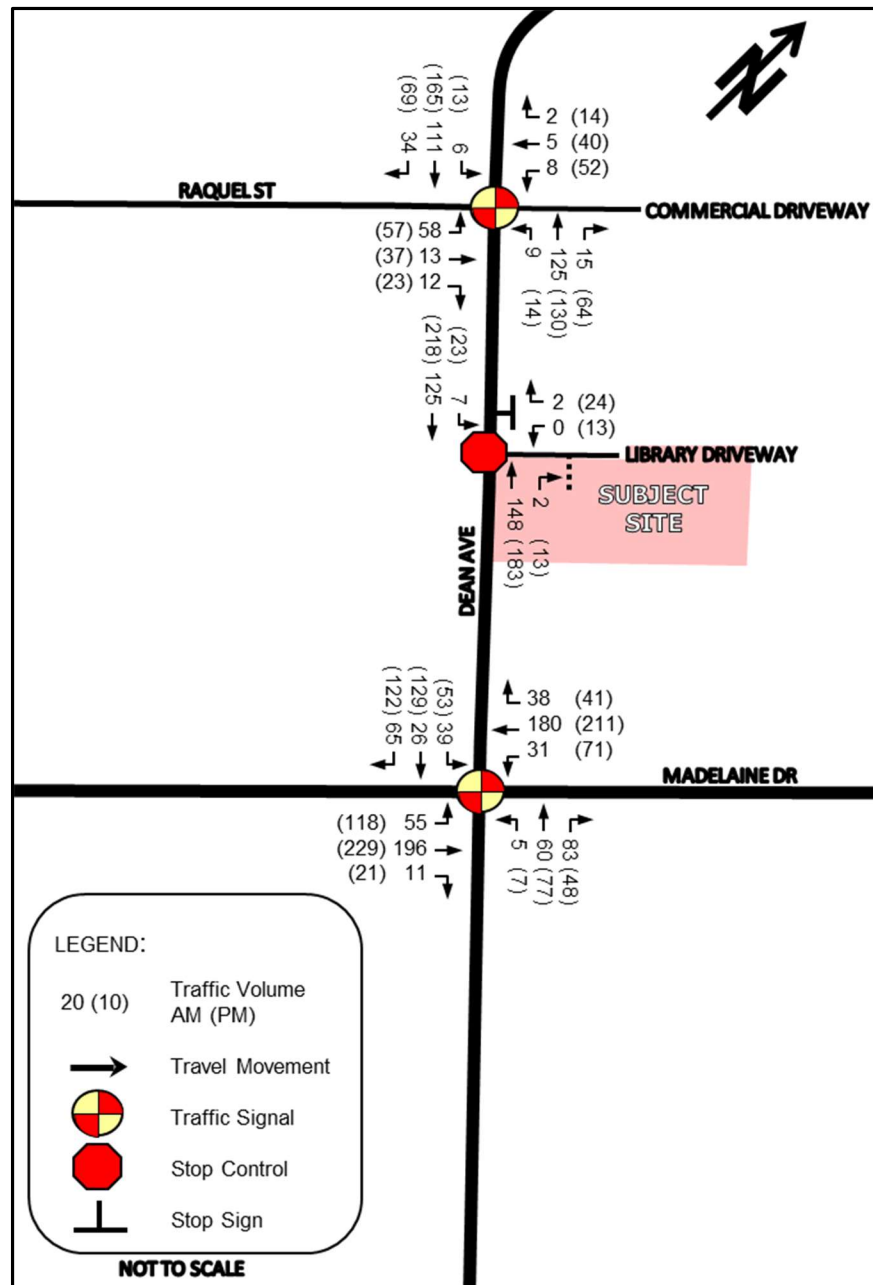


Figure 7 - Background (2033) traffic Volumes

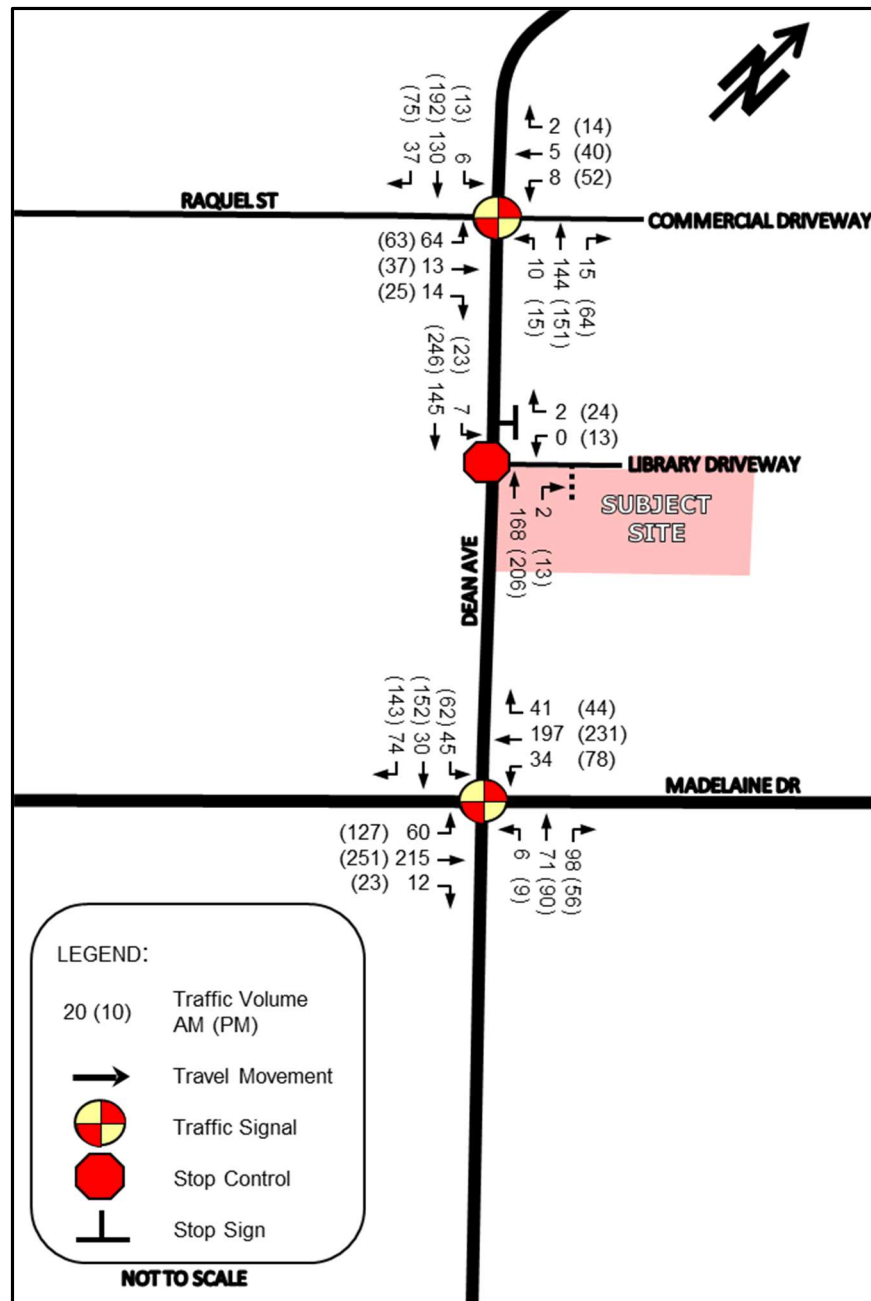
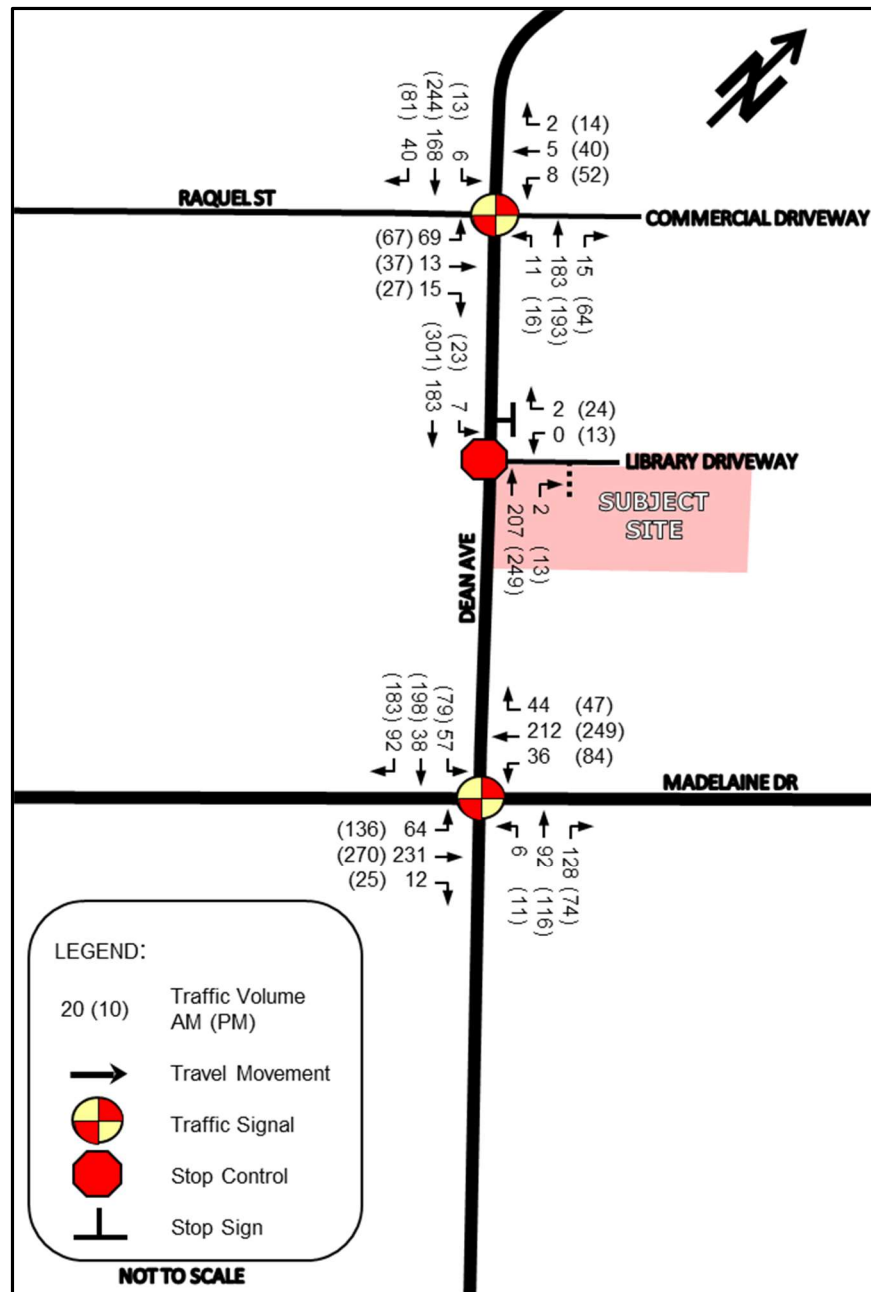


Figure 8 - Background (2038) traffic Volumes



3 Intersection Operation without Proposed Development

3.1 Intersection Capacity Analysis Criteria

Intersection performance was measured using the traffic analysis software, Synchro 9, a deterministic model that employs Highway Capacity Manual and Intersection Capacity Utilization methodologies for analysing intersection operations. These procedures are accepted by provincial and municipal agencies throughout North America.

Synchro 12 enables the study area to be graphically defined in terms of streets and intersections, along with their geometric and traffic control characteristics. The user is able to evaluate both signalized and unsignalized intersections in relation to each other, thus not only providing level of service for the individual intersections, but also enabling an assessment of the impact the various intersections in a network have on each other in terms of spacing, traffic congestion, delay, and queuing.

Individual turning movements with a volume-to-capacity [V/C] ratio of 0.85 or greater are considered to be critical movements and have been highlighted in the LOS tables.

The intersection operations were also evaluated in terms of the LOS. LOS is a common measure of the quality of performance at an intersection and is defined in terms of vehicular delay. This delay includes deceleration delay, queue move-up time, stopped delay, and acceleration delay. LOS is expressed on a scale of A through F, where LOS A represents very little delay (i.e. less than 10 seconds per vehicle) and LOS F represents very high delay (i.e. greater than 50 seconds per vehicle for a stop sign controlled intersection and greater than 80 seconds per vehicle for a signalized intersection).

The LOS criteria for signalized and stop sign controlled intersections are shown in **Table 3**. A description of traffic performance characteristics is included for each LOS.

Table 3 – Level of Service Criteria for Intersections

LOS	LOS Description	Control Delay (seconds per vehicle)	
		Signalized Intersections	Stop Controlled Intersections
A	Very low delay; most vehicles do not stop (Excellent)	less than 10.0	less than 10.0
B	Higher delay; more vehicles stop (Very Good)	between 10.0 and 20.0	between 10.0 and 15.0
C	Higher level of congestion; number of vehicles stopping is significant, although many still pass through intersection without stopping (Good)	between 20.0 and 35.0	between 15.0 and 25.0
D	Congestion becomes noticeable; vehicles must sometimes wait through more than one red light; many vehicles stop (Satisfactory)	between 35.0 and 55.0	between 25.0 and 35.0
E	Vehicles must often wait through more than one red light; considered by many agencies to be the limit of acceptable delay	between 55.0 and 80.0	between 35.0 and 50.0
F	This level is considered to be unacceptable to most drivers; occurs when arrival flow rates exceed the capacity of the intersection (Unacceptable)	greater than 80.0	greater than 50.0

3.2 Existing (2025) Intersection Operation

The results of the LOS analysis under existing (2025) traffic volumes during the AM and PM peak hours can be found below in **Table 4**. The lane improvements identified in Section 2.2 with existing traffic control has been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix D**.

Table 4 - Existing (2025) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Dean Avenue / Raquel Street & Commercial Access (signalized)	0.22	9.4	A	-	-	0.26	11.1	B	-	-
EB	0.49	25.4	C	17	-	0.48	24.0	C	23	-
WB	0.08	22.3	C	5	-	0.47	23.9	C	23	-
NBL	0.02	3.7	A	2	TWLTL	0.02	3.8	A	3	TWLTL
NBTR	0.16	4.3	A	13	-	0.18	4.6	A	16	-
SBL	0.01	3.6	A	2	TWLTL	0.02	3.8	A	3	TWLTL
SBTR	0.16	4.3	A	12	-	0.21	4.8	A	20	-
Dean Avenue / Madelaine Drive (signalized)	0.24	10.9	B	-	-	0.32	12.2	B	-	-
EBL	0.10	4.9	A	7	TWLTL	0.18	6.3	A	16	TWLTL
EBTR	0.21	5.4	A	18	-	0.23	6.4	A	27	-
WBL	0.05	4.6	A	4	TWLTL	0.11	5.7	A	10	TWLTL
WBTR	0.22	5.5	A	18	-	0.23	6.4	A	27	-
NBL	0.04	20.1	C	3	TWLTL	0.04	18.8	B	4	TWLTL
NBTR	0.31	21.6	C	18	-	0.25	20.0	B	20	-
SBL	0.22	21.2	C	11	TWLTL	0.20	19.8	B	14	TWLTL
SBTR	0.16	20.7	C	12	-	0.55	22.9	C	40	-
Dean Avenue / Library Driveway (unsignalized)	-	0.2	A	-	-	-	1.2	A	-	-
WB	0.00	9.2	A	1	-	0.05	9.9	A	2	-
SBL	0.01	7.6	A	1	TWLTL	0.02	7.7	A	1	TWLTL

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue length for the southbound through movement at the Dean Avenue / Madelaine Drive intersection is anticipated to extend beyond the existing bus loop driveway for the La Source Elementary School [School] during the PM peak hour; however, as the peak hour of traffic for the School will occur earlier than the PM peak hour and the queuing is anticipated to clear after each cycle. No improvements are recommended.

There are no other issues with the anticipated queue in the study area.

A review of the need for auxiliary right turn lanes at the Library Driveway was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, additional auxiliary right turn lanes are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the Dean Avenue / Library Driveway intersection (results are provided in **Appendix G**).

No further improvements are recommended within the study area.

3.3 Background (2028) Intersection Operation

The results of the LOS analysis under background (2028) traffic volumes during the AM and PM peak hours can be found below in **Table 5**. The lane improvements identified in Section 2.2 with existing

traffic control has been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 5 - Background (2028) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Dean Avenue / Raquel Street & Commercial Access (signalized)	0.23	9.5	A	-	-	0.28	11.1	B	-	-
EB	0.51	25.5	C	17	-	0.50	24.2	C	24	-
WB	0.08	22.0	C	5	-	0.47	23.9	C	23	-
NBL	0.02	3.7	A	2	TWLTL	0.02	3.9	A	3	TWLTL
NBTR	0.17	4.4	A	13	-	0.18	4.6	A	17	-
SBL	0.01	3.7	A	2	TWLTL	0.02	3.9	A	3	TWLTL
SBTR	0.17	4.4	A	13	-	0.23	4.9	A	22	-
Dean Avenue / Madelaine Drive (signalized)	0.26	10.9	B	-	-	0.34	12.5	B	-	-
EBL	0.10	5.0	A	7	TWLTL	0.20	6.5	A	17	TWLTL
EBTR	0.23	5.5	A	19	-	0.25	6.6	A	30	-
WBL	0.06	4.7	A	5	TWLTL	0.12	6.0	A	11	TWLTL
WBTR	0.24	5.6	A	20	-	0.25	6.6	A	29	-
NBL	0.04	19.7	B	3	TWLTL	0.04	18.7	B	4	TWLTL
NBTR	0.2	21.3	C	18	-	0.26	20.0	B	21	-
SBL	0.23	20.9	C	12	TWLTL	0.21	19.7	B	14	TWLTL
SBTR	0.16	20.4	C	12	-	0.58	23.3	C	42	-
Dean Avenue / Library Driveway (unsignalized)	-	0.2	A	-	-	-	1.1	A	-	-
WB	0.00	9.2	A	1	-	0.05	9.9	A	2	-
SBL	0.01	7.6	A	1	TWLTL	0.02	7.7	A	1	TWLTL

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue length for the southbound through movement at the Dean Avenue / Madelaine Drive intersection is anticipated to extend beyond the existing looping bus driveway for the School during the PM peak hour; however, as the peak hour of traffic for the School will occur earlier than the PM peak hour and the queuing is anticipated to clear after each cycle. No improvements are recommended.

There are no other issues with the anticipated queue in the study area.

A review of the need for auxiliary right turn lanes at the Library Driveway was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, additional auxiliary right turn lanes are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the Dean Avenue / Shared Site Access intersection (results are provided in **Appendix G**).

No further improvements are recommended within the study area.

3.4 Background (2033) Intersection Operation

The results of the LOS analysis under background (2033) traffic volumes during the AM and PM peak hours can be found below in **Table 6**. The lane improvements identified in Section 2.2 with existing traffic control has been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 6 - Background (2033) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Dean Avenue / Raquel Street & Commercial Access (signalized)	0.26	9.5	A	-	-	0.31	11.0	B	-	-
EB	0.54	26.0	C	19	-	0.52	24.7	C	26	-
WB	0.08	21.7	C	5	-	0.46	23.8	C	23	-
NBL	0.02	3.8	A	3	TWLTL	0.02	4.0	A	3	TWLTL
NBTR	0.19	4.7	A	16	-	0.21	4.9	A	21	-
SBL	0.01	3.8	A	2	TWLTL	0.02	3.9	A	3	TWLTL
SBTR	0.20	4.7	A	15	-	0.26	5.2	A	26	-
Dean Avenue / Madelaine Drive (signalized)	0.30	11.4	B	-	-	0.39	13.5	B	-	-
EBL	0.12	5.3	A	8	TWLTL	0.22	7.4	A	20	TWLTL
EBTR	0.25	6.0	A	23	-	0.28	7.5	A	36	-
WBL	0.06	5.0	A	5	TWLTL	0.14	6.7	A	13	TWLTL
WBTR	0.27	6.1	A	23	-	0.28	7.5	A	36	-
NBL	0.05	19.3	B	4	TWLTL	0.06	18.3	B	5	TWLTL
NBTR	0.41	21.5	C	22	-	0.30	19.7	B	25	-
SBL	0.26	20.7	C	13	TWLTL	0.23	19.4	B	16	TWLTL
SBTR	0.18	20.0	B	13	-	0.65	24.8	C	51	-
Dean Avenue / Library Driveway (unsignalized)	-	0.2	A	-	-	-	1.1	A	-	-
WB	0.00	9.3	A	1	-	0.05	10.1	B	2	-
SBL	0.01	7.6	A	1	TWLTL	0.02	7.8	A	1	TWLTL

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue length for the southbound through movement at the Dean Avenue / Madelaine Drive intersection is anticipated to extend beyond the existing looping bus driveway for the School during the PM peak hour; however, as the peak hour of traffic for the School will occur earlier than the PM peak hour and the queuing is anticipated to clear after each cycle. No improvements are recommended.

There are no other issues with the anticipated queue in the study area.

A review of the need for auxiliary right turn lanes at the Library Driveway was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, additional auxiliary right turn lanes are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the Dean Avenue / Shared Site Access intersection (results are provided in **Appendix G**).

No further improvements are recommended within the study area.

3.5 Background (2038) Intersection Operation

The results of the LOS analysis under background (2038) traffic volumes during the AM and PM peak hours can be found below in **Table 7**. The lane improvements identified in Section 2.2 with existing traffic control has been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 7 - Background (2038) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Dean Avenue / Raquel Street & Commercial Access (signalized)	0.31	9.3	A	-	-	0.37	10.7	B	-	-
EB	0.57	26.4	C	20	-	0.54	25.1	C	27	-
WB	0.08	21.4	C	5	-	0.46	23.7	C	23	-
NBL	0.02	3.9	A	3	TWLTL	0.03	4.1	A	4	TWLTL
NBTR	0.24	5.1	A	20	-	0.25	5.2	A	26	-
SBL	0.01	3.9	A	2	TWLTL	0.02	4.0	A	3	TWLTL
SBTR	0.25	5.1	A	20	-	0.32	5.7	A	34	-
Dean Avenue / Madelaine Drive (signalized)	0.36	12.8	B	-	-	0.46	15.9	B	-	-
EBL	0.13	6.0	A	10	TWLTL	0.26	9.5	A	27	TWLTL
EBTR	0.28	6.8	A	29	-	0.32	9.5	A	49	-
WBL	0.07	5.5	A	7	TWLTL	0.16	8.4	A	17	TWLTL
WBTR	0.29	6.9	A	29	-	0.32	9.5	A	48	-
NBL	0.05	18.9	B	4	TWLTL	0.08	17.5	B	5	TWLTL
NBTR	0.55	22.9	C	31	-	0.35	19.2	B	31	-
SBL	0.39	21.5	C	16	TWLTL	0.26	18.7	B	19	TWLTL
SBTR	0.21	19.7	B	14	-	0.74	27.4	C	69	-
Dean Avenue / Library Driveway (unsignalized)	-	0.2	A	-	-	-	0.9	A	-	-
WB	0.00	9.6	A	1	-	0.06	10.5	B	2	-
SBL	0.01	7.8	A	1	TWLTL	0.02	7.9	A	1	TWLTL

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue length for the southbound through movement at the Dean Avenue / Madelaine Drive intersection is anticipated to extend beyond the existing looping bus driveway for the School during the PM peak hour; however, as the peak hour of traffic for the School will occur earlier than the PM peak hour and the queuing is anticipated to clear after each cycle. No improvements are recommended.

The anticipated 95th percentile queue length for the southbound through movement at the Dean Avenue / Madelaine Drive intersection is anticipated to extend up to the south driveway for the IOOF Seniors Home on Dean Avenue; however, the queuing will only occur for a short period of time at the end of the cycle. This site includes a secondary driveway, so site access will be maintained at all times. Consequently, no improvements are recommended.

There are no other issues with the anticipated queue in the study area.

A review of the need for auxiliary right turn lanes at the Library Driveway was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, additional auxiliary right turn lanes are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the Dean Avenue / Shared Site Access intersection (results are provided in **Appendix G**).

No further improvements are recommended within the study area.

4 Proposed Development Traffic Generation and Assignment

4.1 Traffic Generation

The traffic generation for the subject site has been based on the Institute of Transportation Engineers [ITE] Trip Generation Manual (11th Edition) [ITE Trip Generation Manual]. The following ITE land uses have been applied to estimate the traffic from the proposed development:

- ITE land use #221 (Multifamily Housing (Mid-Rise)) – General Urban/Suburban

The estimated trip generation of the proposed development is illustrated below in **Table 8**. The AM and PM peak traffic generation for the proposed development is not expected to exactly align with the AM and PM peak hour in the traffic counts; consequently, we have applied the peak hour of adjacent street traffic values provided in the ITE Trip Generation Manual.

Table 8 – Estimated Traffic Generation of Proposed Development

Land Use	Size	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Multifamily Housing (Mid-Rise) ITE Land Use: 221	122 units	11	35	46	29	19	48

In order to be conservative, no transportation modal split reduction has been applied to the above-noted traffic generation calculation.

4.2 Traffic Assignment

For the purposes of this study, it has been assumed that all traffic generated by the proposed development will be new traffic and would not be in the study area if the development was not constructed.

The ITE data provides the anticipated percentage of new traffic entering and exiting during the peak hour. The distribution of traffic beyond the local area has been calculated based on the 2016 Transportation Tomorrow Survey [TTS] data for traffic zone 8529 retrieved using the TTS Internet Data Retrieval System [IDRS] (output attached in **Appendix H**). TTS data provides historical origin and destination trip data for specific areas within the County and the Greater Toronto and Hamilton Area [GTHA].

Traffic distribution for the trips generated by the proposed residential development during the AM and PM peak hour is expected to generally follow commuter travel patterns. Our analysis is based on egress traffic during the AM peak hour. Generally, the distribution of ingress traffic is expected to follow the

inverse of the egress traffic distribution. For each of the individual areas identified in the TTS data, we have selected the probable route of travel, assuming that people will select their route primarily based on travel time.

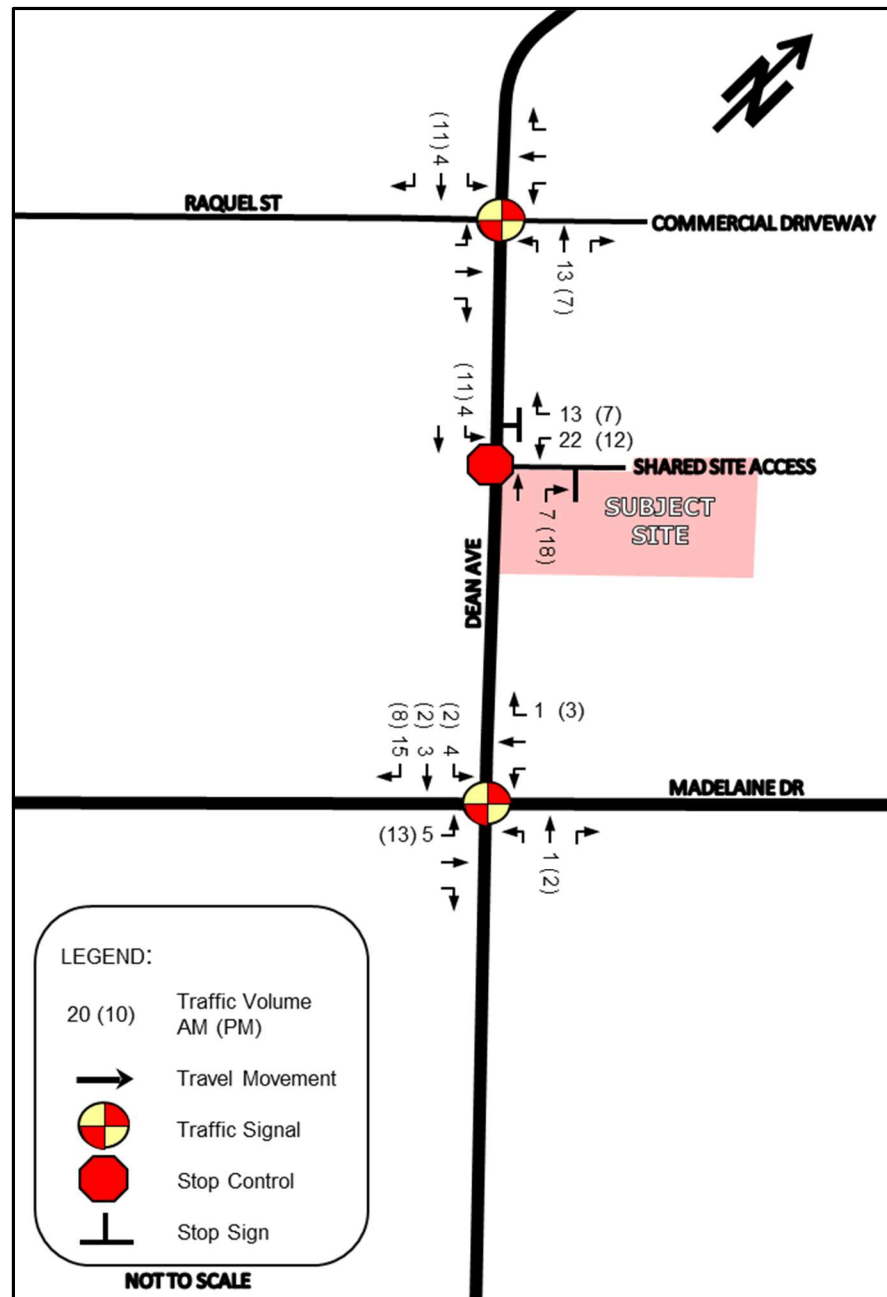
The estimated distribution of trips generated by the residential component of the development is illustrated in **Table 9**, which was calculated using the methodology outlined above.

Table 9 - Proposed Development Traffic Distribution

Travel Direction (to/from)	Percentage of Total Traffic Generation
North on Dean Avenue	36%
South on Dean Avenue	8%
West on Madelaine Drive	46%
East on Madelaine Drive	10%
Total	100%

Using the above-noted traffic distribution patterns, the proposed development traffic assignment is illustrated in **Figure 9** for the AM and PM peak hour.

Figure 9 – Proposed Development Traffic Assignment



4.3 Total Horizon Year Traffic Volumes with the Proposed Development

For the total (2028, 2033 and 2038) horizon year traffic volumes, the proposed development traffic was added to the background (2028, 2033 and 2038) traffic volumes. **Figures 10, 11 and 12** illustrate the total (2028, 2033 and 2038) traffic volumes respectively, for the AM and PM peak hour within the study area.

Figure 10 – Total (2028) Traffic Volumes

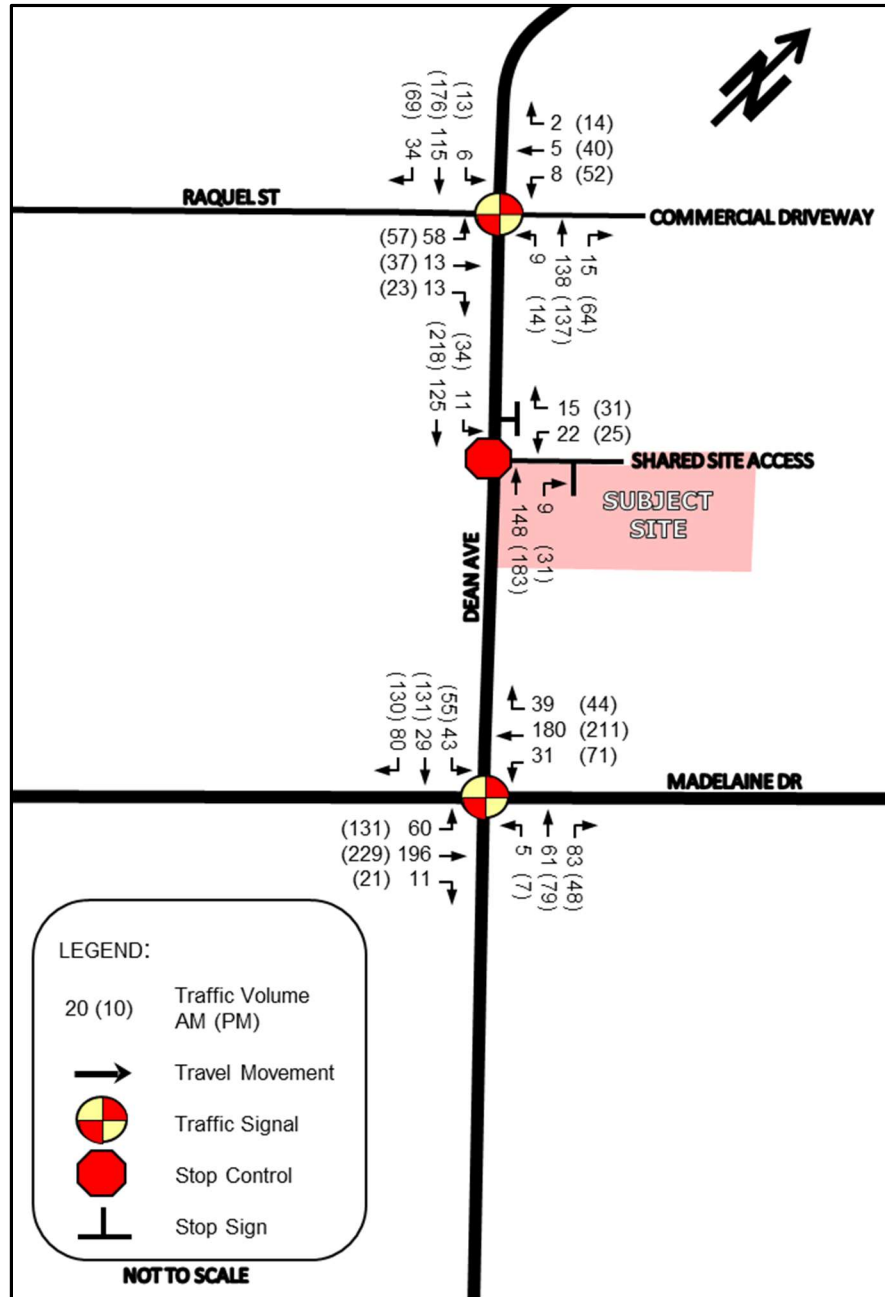


Figure 11 – Total (2033) Traffic Volumes

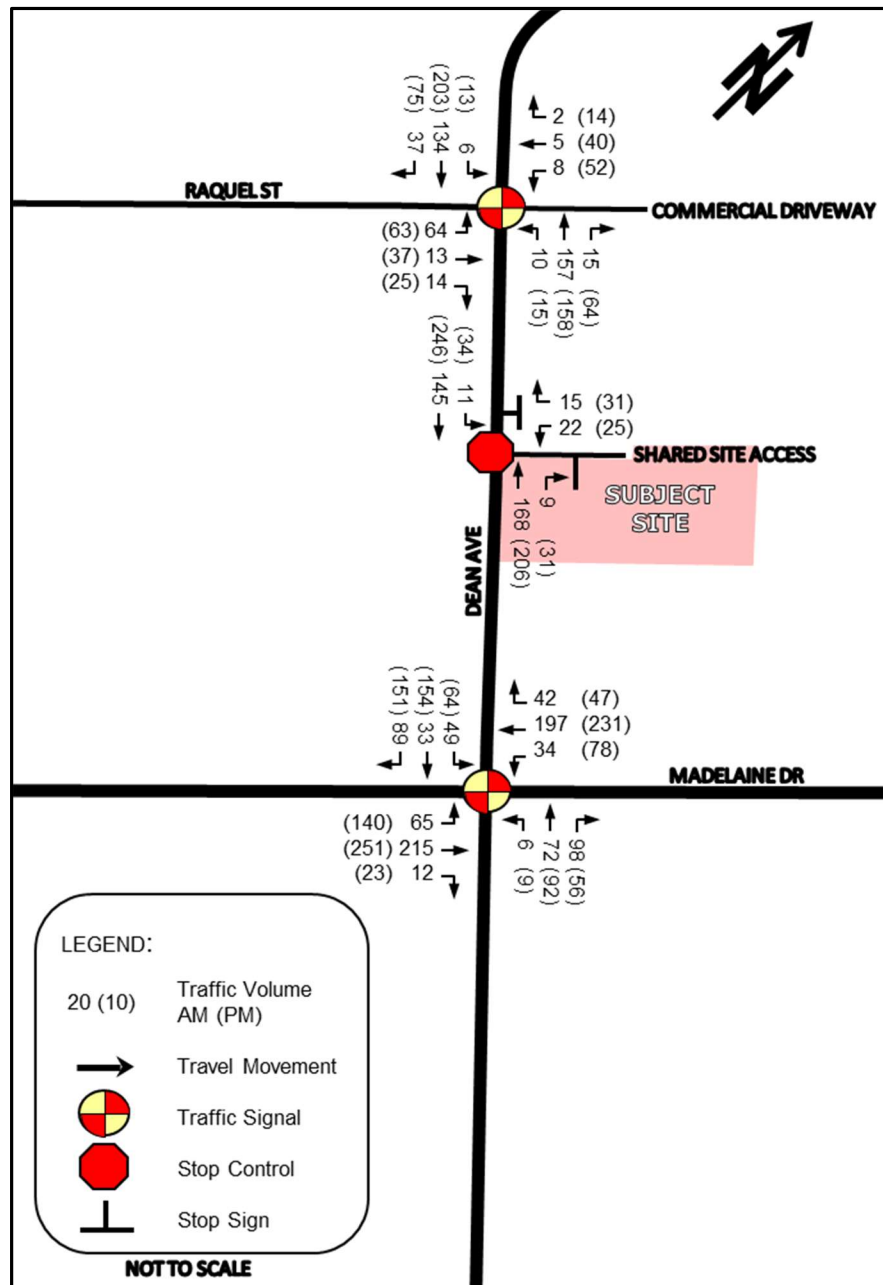
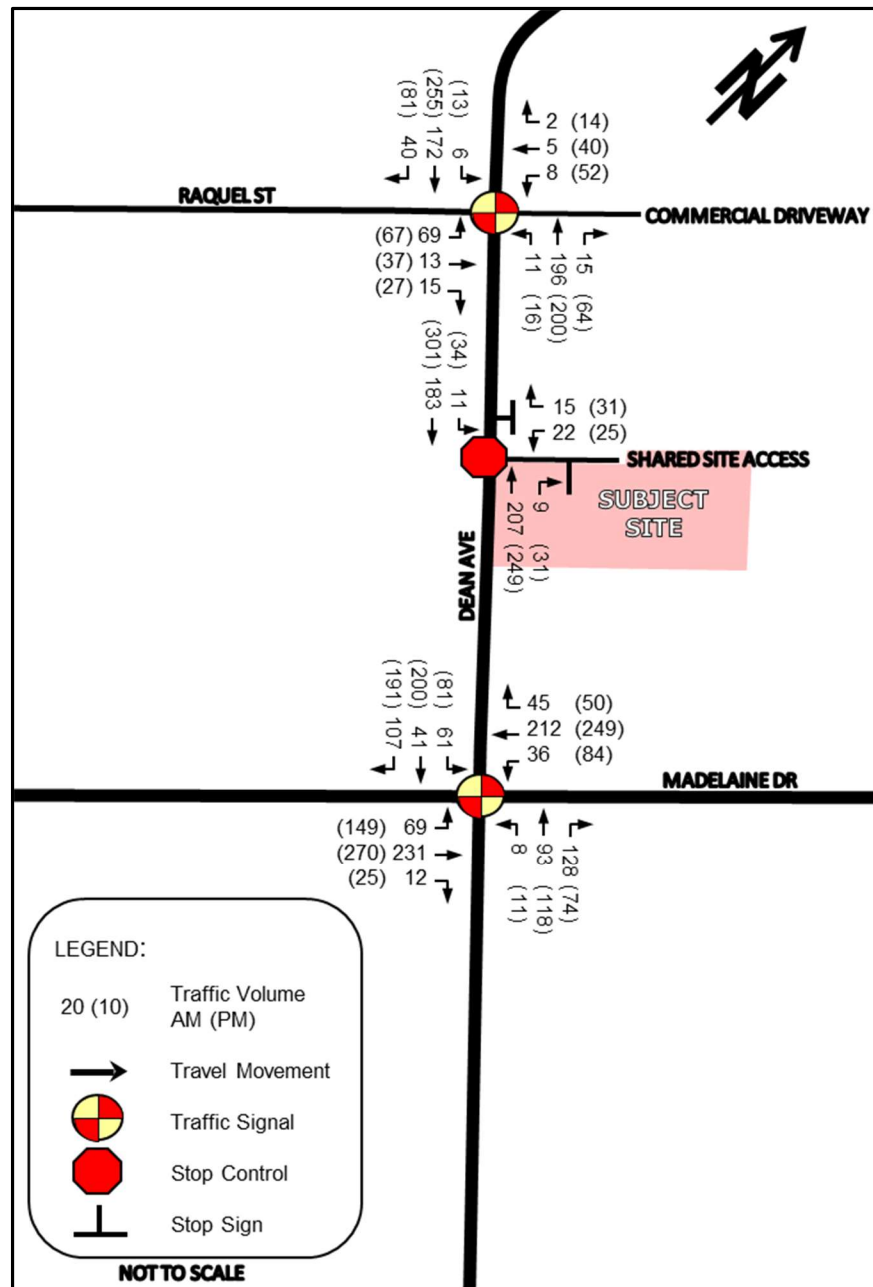


Figure 12 – Total (2038) Traffic Volumes



5 Intersection Operation with Proposed Development

5.1 Total (2028) Intersection Operation

The results of the LOS analysis under total (2028) traffic volumes during the AM and PM peak hours can be found below in **Table 10**. The lane improvements identified in Section 2.2 with existing traffic control has been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix F**.

Table 10 - Total (2028) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Dean Avenue / Raquel Street & Commercial Access (signalized)	0.24	9.3	A	-	-	0.29	10.9	B	-	-
EB	0.51	25.5	C	17	-	0.50	24.2	C	24	-
WB	0.08	22.0	C	5	-	0.47	23.9	C	23	-
NBL	0.02	3.7	A	2	TWLTL	0.02	3.9	A	3	TWLTL
NBTR	0.18	4.5	A	15	-	0.19	4.7	A	18	-
SBL	0.01	3.7	A	2	TWLTL	0.02	3.9	A	3	TWLTL
SBTR	0.17	4.4	A	13	-	0.24	4.9	A	23	-
Dean Avenue / Madelaine Drive (signalized)	0.26	11.1	B	-	-	0.34	12.6	B	-	-
EBL	0.11	5.1	A	8	TWLTL	0.22	6.8	A	19	TWLTL
EBTR	0.23	5.6	A	19	-	0.25	6.7	A	30	-
WBL	0.06	4.7	A	5	TWLTL	0.12	6.0	A	11	TWLTL
WBTR	0.24	5.7	A	20	-	0.25	6.7	A	30	-
NBL	0.04	19.4	B	3	TWLTL	0.04	18.7	B	4	TWLTL
NBTR	0.32	21.0	C	19	-	0.27	19.9	B	22	-
SBL	0.25	20.7	C	12	TWLTL	0.22	19.7	B	15	TWLTL
SBTR	0.19	20.2	C	13	-	0.59	23.6	C	43	-
Dean Avenue / Shared Site Access (unsignalized)	-	1.4	A	-	-	-	1.6	A	-	-
WB	0.06	9.8	A	2	-	0.08	10.3	B	3	-
SBL	0.01	7.6	A	1	TWLTL	0.03	7.8	A	1	TWLTL

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue length for the southbound through movement at the Dean Avenue / Madelaine Drive intersection is anticipated to extend beyond the existing looping bus driveway for the School during the PM peak hour; however, as the peak hour of traffic for the School will occur earlier than the PM peak hour and the queuing is anticipated to clear after each cycle. No improvements are recommended.

There are no other issues with the anticipated queue in the study area.

A review of the need for auxiliary right turn lanes at the Shared Site Access was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, additional auxiliary right turn lanes are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the Dean Avenue / Shared Site Access intersection (results are provided in **Appendix G**).

No further improvements are recommended within the study area.

5.2 Total (2033) Intersection Operation

The results of the LOS analysis under total (2033) traffic volumes during the AM and PM peak hours can be found below in **Table 11**. The lane improvements identified in Section 2.2 with existing traffic control has been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix F**.

Table 11 - Total (2033) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Dean Avenue / Raquel Street & Commercial Access (signalized)	0.27	9.4	A	-	-	0.32	10.9	B	-	-
EB	0.54	26.0	C	19	-	0.52	24.7	C	26	-
WB	0.08	21.7	C	5	-	0.46	23.7	C	23	-
NBL	0.02	3.8	A	3	TWLTL	0.02	4.0	A	3	TWLTL
NBTR	0.21	4.8	A	17	-	0.21	4.9	A	21	-
SBL	0.01	3.8	A	2	TWLTL	0.02	4.0	A	3	TWLTL
SBTR	0.20	4.7	A	16	-	0.27	5.3	A	28	-
Dean Avenue / Madelaine Drive (signalized)	0.30	11.6	B	-	-	0.39	13.8	B	-	-
EBL	0.13	5.4	A	9	TWLTL	0.25	7.7	A	23	TWLTL
EBTR	0.25	6.0	A	23	-	0.28	7.6	A	37	-
WBL	0.06	5.0	A	6	TWLTL	0.14	6.8	A	13	TWLTL
WBTR	0.27	6.1	A	24	-	0.28	7.6	A	37	-
NBL	0.05	19.3	B	4	TWLTL	0.06	18.3	B	5	TWLTL
NBTR	0.41	21.5	C	23	-	0.30	19.7	B	25	-
SBL	0.29	20.9	C	14	TWLTL	0.24	19.4	B	16	TWLTL
SBTR	0.20	20.1	C	14	-	0.66	25.3	C	52	-
Dean Avenue / Shared Site Access (unsignalized)	-	1.2	A	-	-	-	1.5	A	-	-
WB	0.06	10.0	A	2	-	0.09	10.5	B	3	-
SBL	0.01	7.7	A	1	TWLTL	0.03	7.8	A	1	TWLTL

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue length for the southbound through movement at the Dean Avenue / Madelaine Drive intersection is anticipated to extend beyond the existing looping bus driveway for the School during the PM peak hour; however, as the peak hour of traffic for the School will occur earlier than the PM peak hour and the queuing is anticipated to clear after each cycle. No improvements are recommended.

There are no other issues with the anticipated queue in the study area.

A review of the need for auxiliary right turn lanes at the Shared Site Access was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, additional auxiliary right turn lanes are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the Dean Avenue / Shared Site Access intersection (results are provided in **Appendix G**).

No further improvements are recommended within the study area.

5.3 Total (2038) Intersection Operation

The results of the LOS analysis under total (2038) traffic volumes during the AM and PM peak hours can be found below in **Table 12**. The lane improvements identified in Section 2.2 with existing traffic control has been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix F**.

Table 12 - Total (2038) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Dean Avenue / Raquel Street & Commercial Access (signalized)	0.32	9.3	A	-	-	0.38	10.7	B	-	-
EB	0.57	26.3	C	20	-	0.54	25.1	C	27	-
WB	0.08	21.4	C	5	-	0.46	23.7	C	23	-
NBL	0.02	3.9	A	3	TWLT	0.03	4.1	A	4	TWLT
NBTR	0.26	5.2	A	21	-	0.26	5.2	A	27	-
SBL	0.01	3.9	A	2	TWLT	0.02	4.0	A	3	TWLT
SBTR	0.25	5.1	A	20	-	0.33	58	A	36	-
Dean Avenue / Madelaine Drive (signalized)	0.36	13.0	B	-	-	0.47	16.1	B	-	-
EBL	0.14	6.0	A	11	TWLT	0.29	10.0	B	30	TWLT
EBTR	0.28	6.8	A	29	-	0.32	9.7	A	50	-
WBL	0.07	5.5	A	7	TWLT	0.16	8.6	A	18	TWLT
WBTR	0.29	6.9	A	30	-	0.32	9.7	A	49	-
NBL	0.05	18.9	B	4	TWLT	0.08	17.4	B	5	TWLT
NBTR	0.56	23.0	C	32	-	0.35	19.1	B	32	-
SBL	0.42	21.9	C	16	TWLT	0.26	18.6	B	19	TWLT
SBTR	0.23	19.9	B	15	-	0.75	27.6	C	71	-
Dean Avenue / Shared Site Access (unsignalized)	-	1.1	A	-	-	-	1.3	A	-	-
WB	0.06	10.3	B	2	-	0.09	10.9	B	3	-
SBL	0.01	7.8	A	1	TWLT	0.03	8.0	A	1	TWLT

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue length for the southbound through movement at the Dean Avenue / Madelaine Drive intersection is anticipated to extend beyond the existing looping bus driveway for the School during the PM peak hour; however, as the peak hour of traffic for the School will occur earlier than the PM peak hour and the queuing is anticipated to clear after each cycle. No improvements are recommended.

The anticipated 95th percentile queue length for the southbound through movement at the Dean Avenue / Madelaine Drive intersection is anticipated to extend up to the south driveway for the IOOF Seniors Home on Dean Avenue; however, the queuing will only occur for a short period of time at the end of the cycle. This site includes a secondary driveway, so site access will be maintained at all times. Consequently, no improvements are recommended.

There are no other issues with the anticipated queue in the study area.

A review of the need for auxiliary right turn lanes at the Shared Site Access was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, additional auxiliary right turn lanes are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the Dean Avenue / Shared Site Access intersection (results are provided in **Appendix G**).

No further improvements are recommended within the study area.

5.4 Site Access

The Shared Site Access will operate efficiently in the existing configuration as a full-movement access driveway, with one-way stop control for westbound movements. No lane improvements are recommended on Dean Avenue at the Shared Site Access as a result of the additional traffic generated by the proposed development. The existing configuration of the Shared Site Access, with a single eastbound and westbound lane, will provide the necessary capacity to service the proposed development.

5.5 Active Transportation Review

Dean Avenue currently has painted bicycle lanes in the study area. As noted in Section 2.2, the planned rightsizing on Madelaine Drive includes painted bicycle lanes. The bicycle lane network will connect to the planned major active transportation pathway on Big Bay Point Road and Yonge Street. It is recommended that the City continue to prioritize active transportation along these corridors, in order to provide the necessary transportation network capacity to accommodate the anticipated future transportation demands in the study area.

The proposed development will include the construction of an internal sidewalk network which will connect into the existing sidewalk network on the adjacent streets and provide pedestrian access throughout the City. The proposed development includes a pedestrian connection to the existing sidewalk within the Library property, which connects to the commercial plaza at the northeast corner of the property.

5.6 Swept Path Analysis

A swept path analysis has been provided in **Appendix I** to illustrate that the following vehicles can access the site as intended:

- Passenger Vehicle;
- Compact Vehicle;
- City of Barrie Recycling Truck
- City of Barrie Automated Sideload Waste Vehicle

5.7 Parking Review

The proposed parking supply for the subject site meets the parking requirements specified in the City's Zoning By-law Amendment 2024-051 for the subject site (48 Dean Avenue - amendment passed as of May 2024) [ZBL Amendment 2024-051]. The accessible parking supply meets the parking requirement specified in the City's Zoning By-law 2009-141 [City ZBL]. The proposed parking breakdown is provided in **Table 13**.

Table 13 - Zoning By-law Parking Requirements

Category	Zoning By-Law Section	Parking Standard	Size	Parking	
				Required	Provided
Residential Parking	ZBL Amendment 2024-051	0.8 spaces per dwelling unit	122 units	98 Spaces	125 Spaces
Accessible Parking	City ZBL (Sec. 4.6.4)	3% of required parking	-	3 Spaces	4 Spaces

5.8 Construction Parking

Based on our correspondence with the design team for this project, the Developer is committed to the following arrangement for construction parking:

The parking of construction vehicles and vehicles owned by staff and subcontractors employed by the Developer will be formally directed (in writing where possible) to avoid parking on municipal streets surrounding the subject site and avoid parking within private parking lots surrounding the subject site, without consent from the owner of the parking lots.

Parking of trades vehicles within a designated area at the Library Parking Lot can be coordinated with the library staff, for weekdays when the parking supply is significantly greater than the parking demand. Parking in this area would only occur with approval from the library staff.

Similarly, trades vehicle parking within a designated area at the adjacent commercial plaza can be coordinated with the property manager during weekday periods, when the existing parking supply is significantly greater than the parking demand. Parking in this area would only occur with approval from the property manager for the commercial plaza.

6 Summary

Nestwise Inc. retained **JD Engineering** to prepare this traffic impact study in support of the proposed residential development of 60 Dean Avenue, in the City of Barrie. The proposed Site Plan is included in **Appendix A**. This chapter summarizes the conclusions and recommendations from the study.

The proposed development includes 122 residential apartment units.

1. The proposed development is expected to generate a total of 46 AM and 48 PM peak hour trips.
2. Background traffic and pedestrian counts was completed at the Dean Avenue / Library Driveway intersection on Tuesday, January 14th, 2025. Background traffic and pedestrian counts were obtained from the City at the intersections of Commercial Access & Raquel Street / Dean Avenue and Madeline Avenue / Dean Avenue, completed on Wednesday, April 3rd 2024 and Thursday, March 28th 2024 respectively.

3. An intersection operational analysis was completed at the study area intersections, using the existing (2025) and background (2028, 2033 and 2038) traffic volumes, without the proposed development traffic. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development. The following road rightsizing improvements are planned to be completed in 2025:
 - Madelaine Drive (between Yonge Street and Mapleview Drive East)
 - Lane removal in each direction from four-lanes to three-lanes with the addition of a two way left turn lane; and
 - Addition of painted on-street bicycle lanes.
4. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area streets and intersection.
5. An intersection operation analysis was completed under total (2028, 2033 and 2038) traffic volumes with the proposed development operational at the study area intersections. No additional infrastructure improvements are recommended.
6. The Shared Site Access will operate efficiently in the existing configuration with a full-movement access driveway, with one-way stop control for westbound movements. No lane improvements are recommended on Dean Avenue at the Shared Site Access as a result of the additional traffic generated by the proposed development. The existing configuration of the Shared Site Access, with a single eastbound and westbound lane, will provide the necessary capacity to service the proposed development.
7. The proposed parking supply for the subject site meets the parking requirements specified in the City's Zoning By-law Amendment 2024-051 for 48 Dean Avenue and accessibility parking requirements specified in the City's Zoning By-law 2009-141.
8. In summary the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

Appendix A – Conceptual Site Plan

The diagram shows a cross-section of a building's roof assembly. From top to bottom, the layers are:

- TOP OF ROOF PARAPET**
- TOP OF TOP PLATE**
- 6TH I/F SLAB**: Thickness 215 mm.
- 5TH I/F SLAB**: Thickness 215 mm.
- 4TH I/F SLAB**: Thickness 215 mm.
- 3RD I/F SLAB**: Thickness 215 mm.
- 2ND I/F SLAB**: Thickness 215 mm.
- U/P FINISH SLAB**

Below the slabs, there is a horizontal section labeled **DEAN AVENUE**. A vertical line indicates the **CENTRELINE OF DEAN**. Dimensions shown include:

- A horizontal distance of **19.70 MET** from the centerline to the left edge of the slab.
- A horizontal distance of **18.70 MET** from the centerline to the right edge of the slab.
- A vertical height of **21.5** from the top of the top plate to the top of the 6th floor slab.
- A vertical height of **21.5** from the top of the 6th floor slab to the top of the 5th floor slab.
- A vertical height of **21.5** from the top of the 5th floor slab to the top of the 4th floor slab.
- A vertical height of **21.5** from the top of the 4th floor slab to the top of the 3rd floor slab.
- A vertical height of **21.5** from the top of the 3rd floor slab to the top of the 2nd floor slab.
- A vertical height of **21.5** from the top of the 2nd floor slab to the top of the U/P finish slab.

48 DEAN AVENUE
CITY OF BARRIE



Zone Provision for Residential (Apartment) Zone (Bill No. 051)
(RA2-1)(SP-658)(H-164)

6 Storey Apartment Building – 122 units
1616 m² – footprint
9696 m² – GFA

	REQUIRED	PROVIDED
Lot Area	1300 m ²	6670 m ²
Lot Frontage (min.)	30.0 m	49.0 m
Front Yard (min.)	9.0 m	10.0 m
Interior Side Yard (min.)	3.0 m	5.0 m
Rear Yard	3.0 m	28.2 m
Lot Coverage (max.)	57% / 3602 m ²	24% / 1616 m ²
Gross Floor Area (min.)	209% / 13940 m ²	150% / 9696 m ² *
Height (max.)	36.0 m	21.8 m
Parking Coverage (max.)	35% / 2335 m ²	34% / 2295 m ²
Landscape Buffer	3.0 m	1.27 m *
Landscape Open Space	35% / 2335 m ²	36% / 2432 m ²
Angular Plane	45 degree	Please refer to inset #

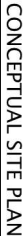
98 spaces
(0.98/unit)

125 spaces
(1.02/unit)

- Typical Street Level Spaces - 67
- Barrier Free Spaces - 4
- Underground Typical Spaces - 54
- Total - 125 Spaces

Notes

- * This symbol indicates a variance is required



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CONSULTING GROUP LTD.

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Appendix B – 70 Dean Avenue TIS Excerpts



70 Dean Avenue

City of Barrie

Traffic Impact Study for Lotco Limited

Type of Document:
Final Report

Project Number:
JDE – 17104

Date Submitted:
November 30th, 2017



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Table 5 - Background (2026) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour			Weekday PM Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Commercial Access & Raquel Street / Dean Avenue (signalized)	0.26	10.2	B	0.27	10.7	B
EBL	0.00	3.8	A	0.04	3.9	A
EBTR	0.19	4.7	A	0.22	4.8	A
WBL	0.01	3.9	A	0.02	3.8	A
WBTR	0.18	4.3	A	0.22	4.8	A
NB	0.54	22.6	C	0.46	23.9	C
SB	0.13	21.1	C	0.48	24.1	C
Madelaine Drive / Dean Avenue (signalized)	0.33	13.4	B	0.30	12.6	B
EBL	0.35	21.6	C	0.18	20.4	C
EBTR	0.26	20.5	C	0.50	22.6	C
WBL	0.08	19.4	B	0.07	19.7	B
WBTR	0.56	23.7	C	0.45	22.1	C
NBL	0.09	5.7	A	0.15	5.7	A
NBTR	0.20	6.2	A	0.17	5.6	A
SBL	0.08	5.6	A	0.12	5.5	A
SBTR	0.24	6.5	A	0.23	6.0	A

The results of the LOS analysis indicate that all intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue length for the eastbound through movement at the Madelaine Drive / Dean Avenue intersection is anticipated to block the Elementary School driveway during the PM peak hour; however, as the peak hour of traffic for the Elementary School is anticipated to be earlier than the PM peak hour, no improvements are recommended.

No improvements are recommended within the study area.

4 Proposed Development Traffic Generation and Assignment

4.1 Traffic Generation

The traffic generation for the subject site has been based on the ITE *Trip Generation* data. The following ITE land uses have been applied to estimate the traffic from the proposed development:

- ITE land use #222 (Multifamily Housing (Mid-Rise))
 - o General Urban/Suburban

The estimated trip generation of the proposed development is illustrated below in **Table 6**. The AM and PM peak traffic generation for the proposed development is not expected to exactly align with the AM and PM peak hour in the traffic counts; consequently, we have applied the peak hour of adjacent street traffic values provided in the ITE Trip Generation Manual.

Table 6 – Estimated Traffic Generation of Proposed Development

Land Use	Size	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Multifamily Housing (Mid-Rise) ITE Land Use: 221	199 units	18	50	68	52	34	86

In order to be conservative, no transportation modal split reduction has been applied to the above-noted traffic generation calculation.

4.2 Traffic Assignment

For the purposes of this study, it has been assumed that all traffic generated by the proposed development will be new traffic and would not be in the study area if the development was not constructed.

The ITE data provides the anticipated percentage of new traffic entering and exiting during the peak hour. The distribution of traffic beyond the local area has been calculated based on the 2011 Transportation Tomorrow Survey [TTS] data for traffic zone 8529 retrieved using the TTS Internet Data Retrieval System [IDRS] (output attached in **Appendix F**). TTS data provides historical origin and destination trip data for specific areas within the County and the Greater Toronto and Hamilton Area [GTHA].

Traffic distribution for the trips generated by the proposed residential development during the AM and PM peak hour is expected to generally follow commuter travel patterns. Our analysis is based on egress traffic during the AM peak hour. Generally, the distribution of ingress traffic is expected to follow the inverse of the egress traffic distribution. For each of the individual areas identified in the TTS data, we have selected the probable route of travel, assuming that people will select their route primarily based on travel time.

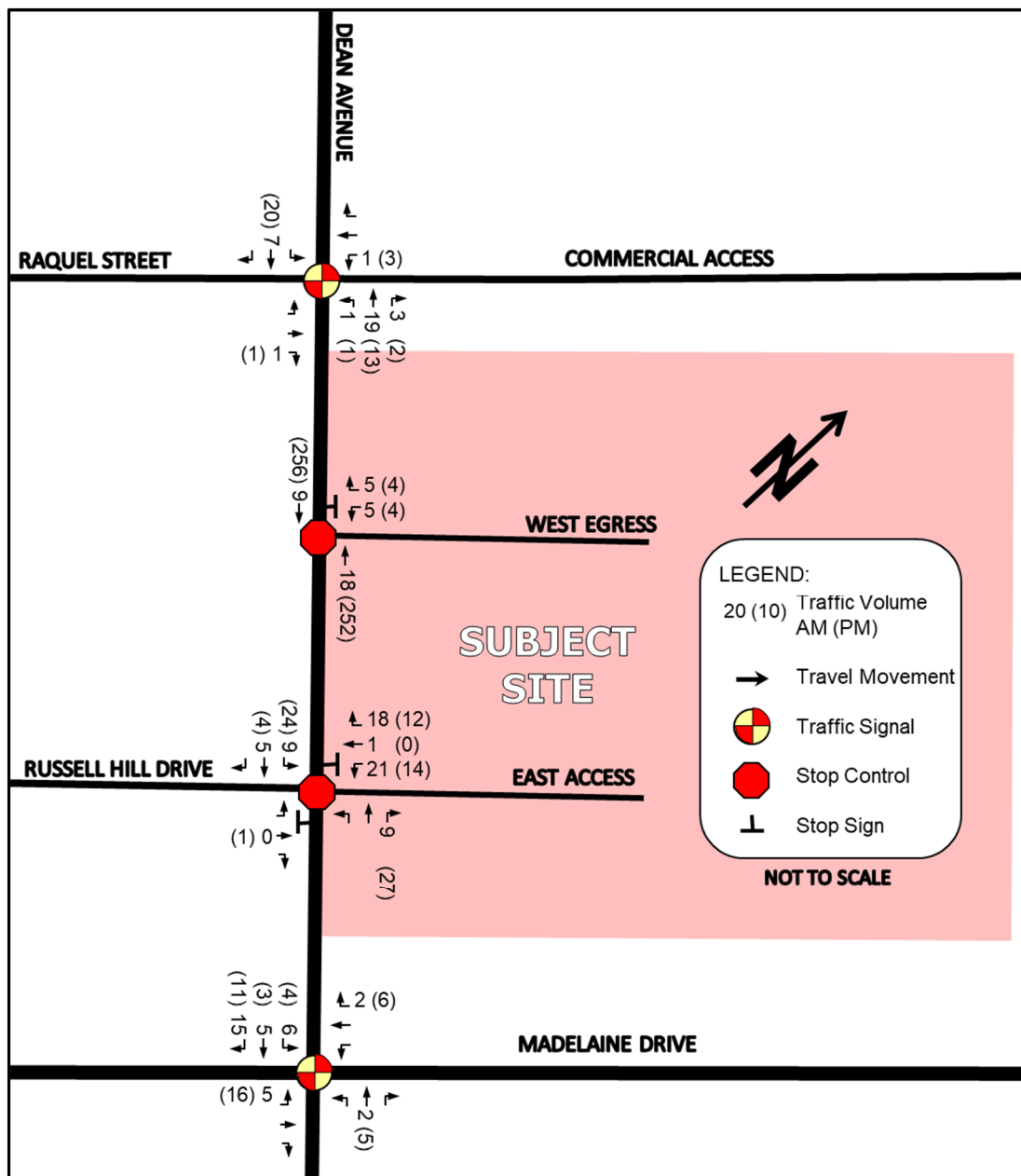
The estimated distribution of trips generated by the residential component of the development is illustrated in **Table 7**, which was calculated using the methodology outlined above.

Table 7 - Proposed Development Traffic Distribution

Travel Direction (to/from)	Percentage of Total Traffic Generation
East on Dean Avenue	10%
West on Dean Avenue	39%
North on Madelaine Drive	12%
South on Madelaine Drive	31%
North on Commercial Access	5%
South on Raquel Street	2%
South on Russell Hill Drive	1%
Total	100%

Using the above-noted traffic distribution patterns, the proposed development traffic assignment for the build-out (2021) and 5-year post build-out (2026) scenarios in the AM and PM peak hour is illustrated in **Figure 7**.

Figure 7 – Site Traffic Assignment



4.3 Total Horizon Year Traffic Volumes with the Proposed Development

For the total (2021 and 2026) horizon year traffic volumes, the proposed development traffic was added to the background (2021 and 2026) traffic volumes, respectively. The resulting total (2021 and 2026) horizon year traffic volumes for the AM and PM peak hour are illustrated in **Figure 8** and **9**.

Appendix C – Traffic Count Data

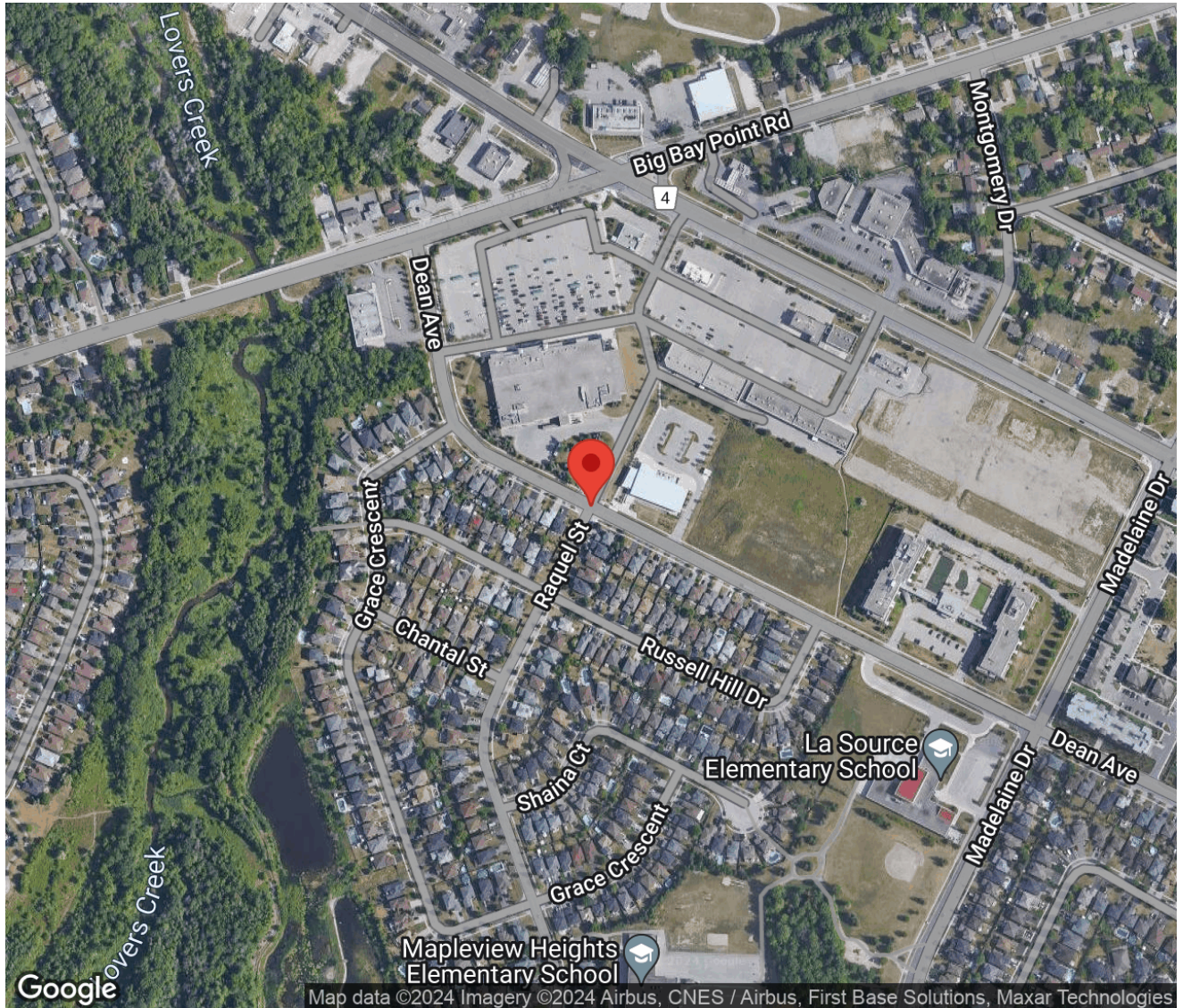
Project #24-035 - City of Barrie

Intersection Count Report

Intersection: Dean Ave & Raquel St
Municipality: Barrie
Count Date: Wednesday, Apr 03, 2024
Site Code: 2403500073
Count Categories: Cars, Trucks, Bicycles, Pedestrians
Count Period: 07:00-09:00, 11:00-14:00, 15:00-18:00
Weather: Clear
Comments:

Traffic Count Map

Intersection:	Dean Ave & Raquel St
Site Code:	2403500073
Municipality:	Barrie
Count Date:	Apr 03, 2024



Traffic Count Summary

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

Dean Ave - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	1	59	14	0	74	0	5	80	9	0	94	2	168
08:00 - 09:00	6	96	31	0	133	3	8	98	12	0	118	4	251
BREAK													
11:00 - 12:00	11	75	20	0	106	0	1	61	39	0	101	0	207
12:00 - 13:00	12	77	28	0	117	0	2	69	34	0	105	0	222
13:00 - 14:00	9	85	33	0	127	0	6	77	38	0	121	15	248
BREAK													
15:00 - 16:00	10	132	62	0	204	0	12	110	61	0	183	6	387
16:00 - 17:00	16	137	63	0	216	0	12	115	56	0	183	4	399
17:00 - 18:00	15	108	68	0	191	1	13	83	50	0	146	8	337
GRAND TOTAL	80	769	319	0	1168	4	59	693	299	0	1051	39	2219

Traffic Count Summary

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

Commerical Entrance - Traffic Summary

East Approach Totals							West Approach Totals						
Hour	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	4	1	2	0	7	1	39	8	14	0	61	1	68
08:00 - 09:00	7	5	2	0	14	2	54	13	11	0	78	3	92
BREAK													
11:00 - 12:00	22	17	16	0	55	0	21	17	4	0	42	0	97
12:00 - 13:00	30	15	12	0	57	0	16	16	7	0	39	2	96
13:00 - 14:00	28	26	14	0	68	0	17	19	4	0	40	1	108
BREAK													
15:00 - 16:00	43	36	11	0	90	1	45	34	19	0	98	13	188
16:00 - 17:00	35	34	17	0	86	0	44	24	10	0	78	0	164
17:00 - 18:00	47	19	21	0	87	2	25	29	6	0	60	0	147
GRAND TOTAL	216	153	95	0	464	6	261	160	75	0	496	20	960

Traffic Count Data

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

North Approach - Dean Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
07:00	0	8	3	0	11	0	0	0	0	0	0	0	0	0	0	0
07:15	0	8	1	0	9	0	3	0	0	3	0	0	0	0	0	0
07:30	0	15	4	0	19	0	0	0	0	0	0	0	0	0	0	0
07:45	1	24	6	0	31	0	1	0	0	1	0	0	0	0	0	0
08:00	0	18	7	0	25	0	1	0	0	1	0	0	0	0	0	1
08:15	0	10	8	0	18	0	0	0	0	0	0	0	0	0	0	0
08:30	4	23	7	0	34	0	1	1	0	2	0	0	0	0	0	1
08:45	2	42	8	0	52	0	1	0	0	1	0	0	0	0	0	1
SUBTOTAL	7	148	44	0	199	0	7	1	0	8	0	0	0	0	0	3

Traffic Count Data

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

North Approach - Dean Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	4	19	7	0	30	0	1	1	0	2	0	0	0	0	0	0
11:15	3	15	4	0	22	0	1	0	0	1	0	0	0	0	0	0
11:30	0	19	5	0	24	0	2	1	0	3	0	0	0	0	0	0
11:45	4	18	2	0	24	0	0	0	0	0	0	0	0	0	0	0
12:00	4	15	6	0	25	0	1	0	0	1	0	0	0	0	0	0
12:15	2	26	8	0	36	0	0	0	0	0	0	0	0	0	0	0
12:30	3	14	9	0	26	0	0	0	0	0	0	0	0	0	0	0
12:45	3	20	5	0	28	0	1	0	0	1	0	0	0	0	0	0
13:00	1	24	11	0	36	0	0	0	0	0	0	0	0	0	0	0
13:15	2	19	7	0	28	0	1	0	0	1	0	0	0	0	0	0
13:30	3	20	5	0	28	0	1	0	0	1	0	0	0	0	0	0
13:45	3	20	10	0	33	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	32	229	79	0	340	0	8	2	0	10	0	0	0	0	0	0

Traffic Count Data

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

North Approach - Dean Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	0	33	11	0	44	1	3	1	0	5	0	0	0	0	0	0
15:15	5	29	15	0	49	0	3	0	0	3	0	0	0	0	0	0
15:30	0	20	20	0	40	0	2	0	0	2	0	0	0	0	0	0
15:45	4	41	14	0	59	0	1	1	0	2	0	0	0	0	0	0
16:00	4	34	14	0	52	0	1	0	0	1	0	0	0	0	0	0
16:15	4	30	13	0	47	0	1	0	0	1	0	0	0	0	0	0
16:30	5	33	17	0	55	0	0	0	0	0	0	0	0	0	0	0
16:45	3	37	19	0	59	0	1	0	0	1	0	0	0	0	0	0
17:00	6	30	18	0	54	1	0	0	0	1	0	0	0	0	0	1
17:15	5	37	18	0	60	0	0	0	0	0	0	0	0	0	0	0
17:30	2	13	17	0	32	0	1	0	0	1	0	0	0	0	0	0
17:45	1	26	15	0	42	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	39	363	191	0	593	2	14	2	0	18	0	0	0	0	0	1
GRAND TOTAL	78	740	314	0	1132	2	29	5	0	36	0	0	0	0	0	4

Traffic Count Data

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

South Approach - Dean Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
07:00	0	12	1	0	13	1	1	0	0	2	0	0	0	0	0	1
07:15	1	18	2	0	21	0	1	0	0	1	0	0	0	0	0	0
07:30	1	22	3	0	26	0	2	0	0	2	0	0	0	0	0	0
07:45	2	23	3	0	28	0	1	0	0	1	0	0	0	0	0	1
08:00	4	21	2	0	27	0	1	0	0	1	0	0	0	0	0	0
08:15	1	14	1	0	16	0	3	0	0	3	0	1	0	0	1	2
08:30	0	31	1	0	32	0	1	0	0	1	0	0	0	0	0	1
08:45	3	25	8	0	36	0	1	0	0	1	0	0	0	0	0	1
SUBTOTAL	12	166	21	0	199	1	11	0	0	12	0	1	0	0	1	6

Traffic Count Data

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

South Approach - Dean Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	0	19	11	0	30	0	0	0	0	0	0	0	0	0	0	0
11:15	0	8	8	0	16	0	1	1	0	2	0	0	0	0	0	0
11:30	0	20	8	0	28	0	0	0	0	0	0	0	0	0	0	0
11:45	1	12	11	0	24	0	1	0	0	1	0	0	0	0	0	0
12:00	1	17	12	0	30	0	0	0	0	0	0	0	0	0	0	0
12:15	0	8	7	0	15	0	1	0	0	1	0	0	0	0	0	0
12:30	0	18	10	0	28	0	1	0	0	1	0	0	0	0	0	0
12:45	1	24	5	0	30	0	0	0	0	0	0	0	0	0	0	0
13:00	0	21	7	0	28	0	1	0	0	1	0	0	0	0	0	0
13:15	1	20	12	0	33	0	0	0	0	0	0	0	0	0	0	7
13:30	2	15	8	0	25	0	2	0	0	2	0	0	0	0	0	7
13:45	3	18	11	0	32	0	0	0	0	0	0	0	0	0	0	1
SUBTOTAL	9	200	110	0	319	0	7	1	0	8	0	0	0	0	0	15

Traffic Count Data

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

South Approach - Dean Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	5	30	12	0	47	0	0	1	0	1	0	0	0	0	0	0
15:15	2	27	13	0	42	0	1	0	0	1	0	0	0	0	0	1
15:30	3	24	13	0	40	0	0	0	0	0	0	0	0	0	0	2
15:45	2	25	22	0	49	0	3	0	0	3	0	0	0	0	0	3
16:00	5	27	13	0	45	0	1	0	0	1	0	0	0	0	0	3
16:15	2	24	9	0	35	0	0	0	0	0	0	0	0	0	0	1
16:30	2	32	20	0	54	0	1	0	0	1	0	0	0	0	0	0
16:45	3	29	14	0	46	0	1	0	0	1	0	0	0	0	0	0
17:00	4	24	12	0	40	0	1	0	0	1	0	0	0	0	0	1
17:15	3	14	14	0	31	0	0	0	0	0	0	0	0	0	0	6
17:30	4	28	11	0	43	0	0	0	0	0	0	0	0	0	0	1
17:45	2	15	13	0	30	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	37	299	166	0	502	0	9	1	0	10	0	0	0	0	0	18
GRAND TOTAL	58	665	297	0	1020	1	27	2	0	30	0	1	0	0	1	39

Traffic Count Data

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

East Approach - Commerical Entrance

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
07:30	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	1
07:45	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0
08:00	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
08:15	2	3	0	0	5	0	0	0	0	0	0	0	0	0	0	0
08:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
08:45	2	2	2	0	6	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	11	6	2	0	19	0	0	2	0	2	0	0	0	0	0	3

Traffic Count Data

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

East Approach - Commerical Entrance

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	5	6	5	0	16	0	0	0	0	0	0	0	0	0	0	0
11:15	5	5	5	0	15	0	0	0	0	0	0	0	0	0	0	0
11:30	5	2	3	0	10	0	0	0	0	0	0	0	0	0	0	0
11:45	7	4	3	0	14	0	0	0	0	0	0	0	0	0	0	0
12:00	11	5	3	0	19	0	0	0	0	0	0	0	0	0	0	0
12:15	5	2	3	0	10	0	0	0	0	0	0	0	0	0	0	0
12:30	8	5	3	0	16	0	0	0	0	0	0	0	0	0	0	0
12:45	6	3	3	0	12	0	0	0	0	0	0	0	0	0	0	0
13:00	5	2	5	0	12	0	0	0	0	0	0	0	0	0	0	0
13:15	5	4	0	0	9	0	0	0	0	0	0	0	0	0	0	0
13:30	12	10	2	0	24	0	0	0	0	0	0	0	0	0	0	0
13:45	6	10	6	0	22	0	0	1	0	1	0	0	0	0	0	0
SUBTOTAL	80	58	41	0	179	0	0	1	0	1	0	0	0	0	0	0

Traffic Count Data

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

East Approach - Commerical Entrance

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	6	6	3	0	15	0	0	0	0	0	0	0	0	0	0	0
15:15	10	7	2	0	19	0	0	0	0	0	0	0	0	0	0	1
15:30	14	11	5	0	30	0	0	0	0	0	0	0	0	0	0	0
15:45	12	12	1	0	25	1	0	0	0	1	0	0	0	0	0	0
16:00	10	9	6	0	25	0	0	0	0	0	0	0	0	0	0	0
16:15	9	9	4	0	22	0	0	1	0	1	0	0	0	0	0	0
16:30	10	10	4	0	24	1	1	0	0	2	0	0	0	0	0	0
16:45	5	5	2	0	12	0	0	0	0	0	0	0	0	0	0	0
17:00	8	3	4	0	15	0	0	0	0	0	0	0	0	0	0	1
17:15	14	4	7	0	25	1	0	1	0	2	0	0	0	0	0	0
17:30	16	10	5	0	31	0	0	0	0	0	0	0	0	0	0	0
17:45	8	2	4	0	14	0	0	0	0	0	0	0	0	0	0	1
SUBTOTAL	122	88	47	0	257	3	1	2	0	6	0	0	0	0	0	3
GRAND TOTAL	213	152	90	0	455	3	1	5	0	9	0	0	0	0	0	6

Traffic Count Data

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

West Approach - Raquel St

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	6	4	4	0	14	0	0	0	0	0	0	0	0	0	0	0
07:15	4	2	2	0	8	1	0	0	0	1	0	0	0	0	0	1
07:30	14	0	2	0	16	1	0	0	0	1	0	0	0	0	0	0
07:45	13	2	6	0	21	0	0	0	0	0	0	0	0	0	0	0
08:00	15	4	3	0	22	0	0	0	0	0	0	0	0	0	0	1
08:15	12	3	0	0	15	1	0	0	0	1	0	0	0	0	0	0
08:30	10	2	2	0	14	1	0	0	0	1	0	0	0	0	0	0
08:45	15	4	6	0	25	0	0	0	0	0	0	0	0	0	0	2
SUBTOTAL	89	21	25	0	135	4	0	0	0	4	0	0	0	0	0	4

Traffic Count Data

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

West Approach - Raquel St

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	6	4	0	0	10	0	0	0	0	0	0	0	0	0	0	0
11:15	5	2	2	0	9	0	0	0	0	0	0	0	0	0	0	0
11:30	2	6	1	0	9	1	0	0	0	1	0	0	0	0	0	0
11:45	7	5	1	0	13	0	0	0	0	0	0	0	0	0	0	0
12:00	5	4	0	0	9	0	0	0	0	0	0	0	0	0	0	1
12:15	3	4	3	0	10	0	0	0	0	0	0	0	0	0	0	0
12:30	3	2	2	0	7	0	0	0	0	0	0	0	0	0	0	0
12:45	5	5	2	0	12	0	1	0	0	1	0	0	0	0	0	1
13:00	7	3	0	0	10	0	0	0	0	0	0	0	0	0	0	0
13:15	2	9	1	0	12	0	0	0	0	0	0	0	0	0	0	0
13:30	4	4	2	0	10	0	0	0	0	0	0	0	0	0	0	0
13:45	4	3	1	0	8	0	0	0	0	0	0	0	0	0	0	1
SUBTOTAL	53	51	15	0	119	1	1	0	0	2	0	0	0	0	0	3

Traffic Count Data

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Municipality: Barrie
Count Date: Apr 03, 2024

West Approach - Raquel St

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	8	4	2	0	14	0	0	0	0	0	0	0	0	0	0	4
15:15	10	7	2	0	19	0	0	0	0	0	0	0	0	0	0	1
15:30	11	11	12	0	34	0	0	0	0	0	0	0	0	0	0	4
15:45	16	12	3	0	31	0	0	0	0	0	0	0	0	0	0	4
16:00	16	6	3	0	25	0	0	0	0	0	0	0	0	0	0	0
16:15	8	3	2	0	13	1	0	0	0	1	0	0	0	0	0	0
16:30	8	5	4	0	17	0	0	0	0	0	0	0	0	0	0	0
16:45	11	10	1	0	22	0	0	0	0	0	0	0	0	0	0	0
17:00	6	12	1	0	19	0	0	0	0	0	0	0	0	0	0	0
17:15	3	3	1	0	7	0	0	0	0	0	0	0	0	0	0	0
17:30	8	6	0	0	14	0	0	0	0	0	0	0	0	0	0	0
17:45	8	8	4	0	20	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	113	87	35	0	235	1	0	0	0	1	0	0	0	0	0	13
GRAND TOTAL	255	159	75	0	489	6	1	0	0	7	0	0	0	0	0	20

Peak Hour Diagram

Specified Period

From: 07:00:00

To: 09:00:00

One Hour Peak

From: 08:00:00

To: 09:00:00

Intersection: Dean Ave & Raquel St

Site Code: 2403500073

Count Date: Apr 03, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Dean Ave runs N/S

North Approach

	Out	In	Total
	129	145	274
	4	8	12
	0	1	1
Totals	133	154	287

Dean Ave

	0	0	0	0
	1	3	0	0
	30	93	6	0
Totals	31	96	6	0






East Approach

	Out	In	Total
	14	31	45
	0	0	0
	0	0	0
Totals	14	31	45

Raquel St

				Totals
	0	0	0	0
	0	2	52	54
	0	0	13	13
	0	0	11	11

Peds: 3



Peds: 2

Commercial Entrance

Totals			
	0	0	0
	2	2	0
	5	5	0
	7	7	0

Peds: 4

West Approach

	Out	In	Total
	76	43	119
	2	1	3
	0	0	0
Totals	78	44	122

				
Totals	8	98	12	0
	8	91	12	0
	0	6	0	0
	0	1	0	0

Dean Ave

South Approach

	Out	In	Total
	111	111	222
	6	3	9
	1	0	1
Totals	118	114	232

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Count Date: Apr 03, 2024
Period: 07:00 - 09:00

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

Start Time	North Approach Dean Ave						South Approach Dean Ave						East Approach Commerical Entrance						West Approach Raquel St						Total Vehicl es
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
08:00	0	19	7	0	1	26	4	22	2	0	0	28	2	0	0	0	2	2	15	4	3	0	1	22	78
08:15	0	10	8	0	0	18	1	18	1	0	2	20	2	3	0	0	0	5	13	3	0	0	0	16	59
08:30	4	24	8	0	1	36	0	32	1	0	1	33	1	0	0	0	0	1	11	2	2	0	0	15	85
08:45	2	43	8	0	1	53	3	26	8	0	1	37	2	2	2	0	0	6	15	4	6	0	2	25	121
Grand Total	6	96	31	0	3	133	8	98	12	0	4	118	7	5	2	0	2	14	54	13	11	0	3	78	343
Approach %	4.5	72.2	23.3	0	-	-	6.8	83.1	10.2	0	-	-	50	35.7	14.3	0	-	-	69.2	16.7	14.1	0	-	-	-
Totals %	1.7	28	9	0	-	38.8	2.3	28.6	3.5	0	-	34.4	2	1.5	0.6	0	-	4.1	15.7	3.8	3.2	0	-	22.7	-
PHF	0.38	0.56	0.97	0	-	0.63	0.5	0.77	0.38	0	-	0.8	0.88	0.42	0.25	0	-	0.58	0.9	0.81	0.46	0	-	0.78	0.71
Cars	6	93	30	0	-	129	8	91	12	0	-	111	7	5	2	0	-	14	52	13	11	0	-	76	330
% Cars	100	96.9	96.8	0	-	97	100	92.9	100	0	-	94.1	100	100	100	0	-	100	96.3	100	100	0	-	97.4	96.2
Trucks	0	3	1	0	-	4	0	6	0	0	-	6	0	0	0	0	-	0	2	0	0	0	-	2	12
% Trucks	0	3.1	3.2	0	-	3	0	6.1	0	0	-	5.1	0	0	0	0	-	0	3.7	0	0	0	-	2.6	3.5
Bicycles	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles	0	0	0	0	-	0	0	1	0	0	-	0.8	0	0	0	0	-	0	0	0	0	0	-	0	0.3
Peds	-	-	-	-	3	-	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	3	-	12
% Peds	-	-	-	-	25	-	-	-	-	-	33.3	-	-	-	-	-	16.7	-	-	-	-	-	25	-	-

Peak Hour Diagram

Specified Period

From: 11:00:00
To: 14:00:00

One Hour Peak

From: 13:00:00
To: 14:00:00

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Count Date: Apr 03, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Dean Ave runs N/S

North Approach

	Out	In	Total
	125	104	229
	2	4	6
	0	0	0
Totals	127	108	235

Dean Ave

	0	0	0	0
	0	2	0	0
	33	83	9	0
Totals	33	85	9	0






East Approach

	Out	In	Total
	67	66	133
	1	0	1
	0	0	0
Totals	68	66	134

Raquel St

				Totals
	0	0	0	0
	0	0	17	17
	0	0	19	19
	0	0	4	4

Peds: 0



Peds: 15

Commercial Entrance

Totals			
0	0	0	0
14	13	1	0
26	26	0	0
28	28	0	0

West Approach

	Out	In	Total
	40	65	105
	0	0	0
	0	0	0
Totals	40	65	105

Totals				
6	77	38	0	
	6	74	38	0
	0	3	0	0
	0	0	0	0

Dean Ave

South Approach

	Out	In	Total
	118	115	233
	3	2	5
	0	0	0
Totals	121	117	238

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Count Date: Apr 03, 2024
Period: 11:00 - 14:00

Peak Hour Data (13:00 - 14:00)

Start Time	North Approach Dean Ave						South Approach Dean Ave						East Approach Commerical Entrance						West Approach Raquel St						Total Vehicl es
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
13:00	1	24	11	0	0	36	0	22	7	0	0	29	5	2	5	0	0	12	7	3	0	0	0	10	87
13:15	2	20	7	0	0	29	1	20	12	0	7	33	5	4	0	0	0	9	2	9	1	0	0	12	83
13:30	3	21	5	0	0	29	2	17	8	0	7	27	12	10	2	0	0	24	4	4	2	0	0	10	90
13:45	3	20	10	0	0	33	3	18	11	0	1	32	6	10	7	0	0	23	4	3	1	0	1	8	96
Grand Total	9	85	33	0	0	127	6	77	38	0	15	121	28	26	14	0	0	68	17	19	4	0	1	40	356
Approach %	7.1	66.9	26	0	-	-	5	63.6	31.4	0	-	-	41.2	38.2	20.6	0	-	-	42.5	47.5	10	0	-	-	-
Totals %	2.5	23.9	9.3	0	-	35.7	1.7	21.6	10.7	0	-	34	7.9	7.3	3.9	0	-	19.1	4.8	5.3	1.1	0	-	11.2	-
PHF	0.75	0.89	0.75	0	-	0.88	0.5	0.88	0.79	0	-	0.92	0.58	0.65	0.5	0	-	0.71	0.61	0.53	0.5	0	-	0.83	0.93
Cars	9	83	33	0	-	125	6	74	38	0	-	118	28	26	13	0	-	67	17	19	4	0	-	40	350
% Cars	100	97.6	100	0	-	98.4	100	96.1	100	0	-	97.5	100	100	92.9	0	-	98.5	100	100	100	0	-	100	98.3
Trucks	0	2	0	0	-	2	0	3	0	0	-	3	0	0	1	0	-	1	0	0	0	0	-	0	6
% Trucks	0	2.4	0	0	-	1.6	0	3.9	0	0	-	2.5	0	0	7.1	0	-	1.5	0	0	0	0	-	0	1.7
Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Peds	-	-	-	-	0	-	-	-	-	-	15	-	-	-	-	-	0	-	-	-	-	-	1	-	16
% Peds	-	-	-	-	0	-	-	-	-	-	93.8	-	-	-	-	-	0	-	-	-	-	-	6.3	-	-

Peak Hour Diagram

Specified Period

From: 15:00:00
To: 18:00:00

One Hour Peak

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

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Count Date: Apr 03, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Dean Ave runs N/S

North Approach

	Out	In	Total
	200	170	370
	8	5	13
	0	0	0
Totals	208	175	383

Dean Ave

	0	0	0	0
	1	7	0	0
	63	124	13	0
Totals	64	131	13	0






East Approach

	Out	In	Total
	99	110	209
	1	0	1
	0	0	0
Totals	100	110	210

Raquel St

				Totals
	0	0	0	0
	0	0	53	53
	0	0	36	36
	0	0	20	20

Peds: 0



Peds: 9

Peds: 1

Commercial Entrance

Totals			
0	0	0	0
14	14	0	0
39	39	0	0
47	46	1	0

Peds: 9

West Approach

	Out	In	Total
	109	114	223
	0	1	1
	0	0	0
Totals	109	115	224

Totals				
	12	103	61	0
	0	5	0	0
	0	0	0	0

Dean Ave

South Approach

	Out	In	Total
	176	190	366
	5	8	13
	0	0	0
Totals	181	198	379

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Dean Ave & Raquel St
Site Code: 2403500073
Count Date: Apr 03, 2024
Period: 15:00 - 18:00

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

Start Time	North Approach Dean Ave						South Approach Dean Ave						East Approach Commerical Entrance						West Approach Raquel St						Total Vehicl es
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
15:15	5	32	15	0	0	52	2	28	13	0	1	43	10	7	2	0	1	19	10	7	2	0	1	19	133
15:30	0	22	20	0	0	42	3	24	13	0	2	40	14	11	5	0	0	30	11	11	12	0	4	34	146
15:45	4	42	15	0	0	61	2	28	22	0	3	52	13	12	1	0	0	26	16	12	3	0	4	31	170
16:00	4	35	14	0	0	53	5	28	13	0	3	46	10	9	6	0	0	25	16	6	3	0	0	25	149
Grand Total	13	131	64	0	0	208	12	108	61	0	9	181	47	39	14	0	1	100	53	36	20	0	9	109	598
Approach %	6.3	63	30.8	0	-	-	6.6	59.7	33.7	0	-	-	47	39	14	0	-	-	48.6	33	18.3	0	-	-	-
Totals %	2.2	21.9	10.7	0	-	34.8	2	18.1	10.2	0	-	30.3	7.9	6.5	2.3	0	-	16.7	8.9	6	3.3	0	-	18.2	-
PHF	0.65	0.78	0.8	0	-	0.85	0.6	0.96	0.69	0	-	0.87	0.84	0.81	0.58	0	-	0.83	0.83	0.75	0.42	0	-	0.8	0.88
Cars	13	124	63	0	-	200	12	103	61	0	-	176	46	39	14	0	-	99	53	36	20	0	-	109	584
% Cars	100	94.7	98.4	0	-	96.2	100	95.4	100	0	-	97.2	97.9	100	100	0	-	99	100	100	100	0	-	100	97.7
Trucks	0	7	1	0	-	8	0	5	0	0	-	5	1	0	0	0	-	1	0	0	0	0	-	0	14
% Trucks	0	5.3	1.6	0	-	3.8	0	4.6	0	0	-	2.8	2.1	0	0	0	-	1	0	0	0	0	-	0	2.3
Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Peds	-	-	-	-	0	-	-	-	-	-	9	-	-	-	-	-	1	-	-	-	-	-	9	-	19
% Peds	-	-	-	-	0	-	-	-	-	-	47.4	-	-	-	-	-	5.3	-	-	-	-	-	47.4	-	-

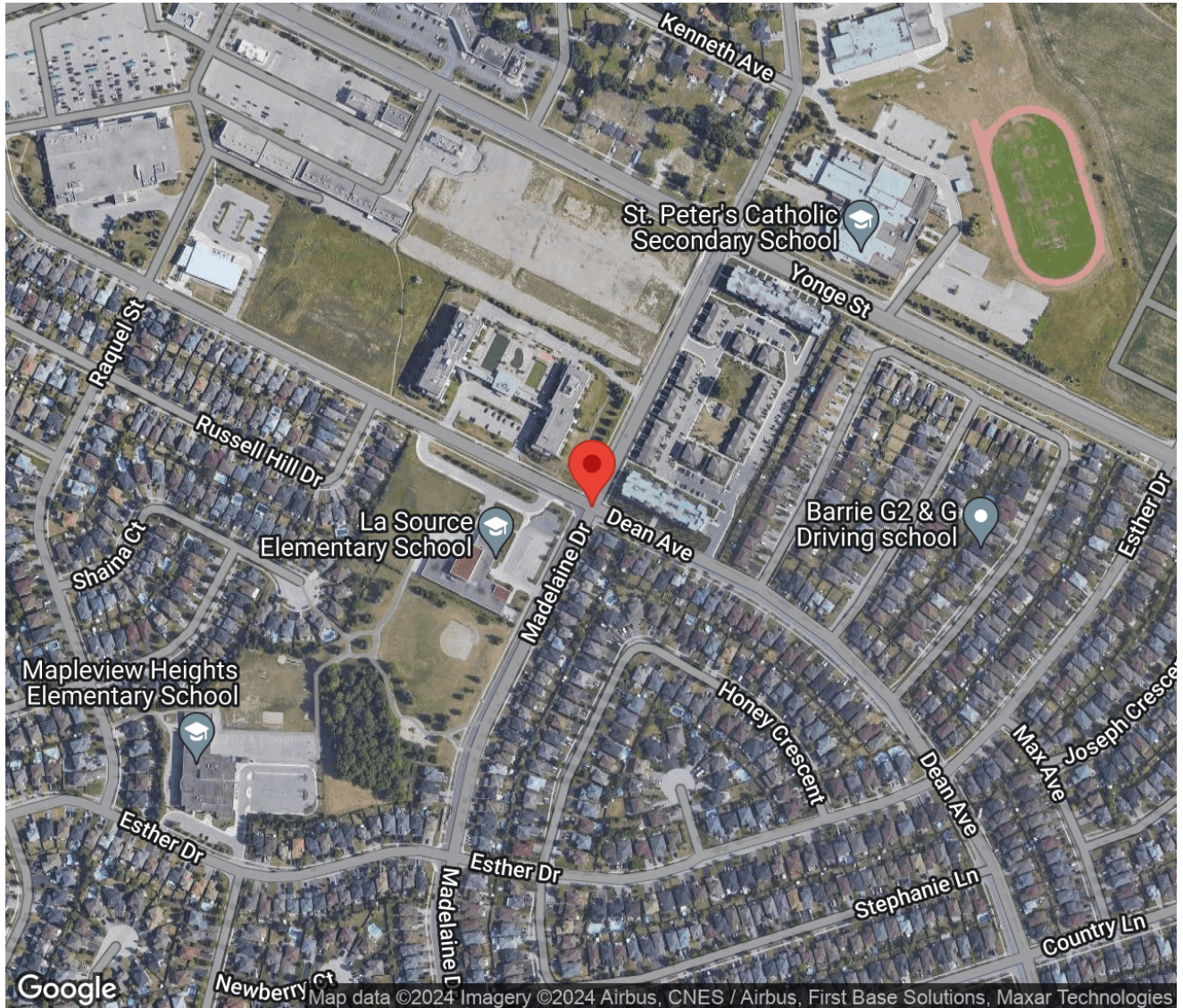
Project #24-035 - City of Barrie

Intersection Count Report

Intersection: Madelaine Dr & Dean Ave
Municipality: Barrie
Count Date: Thursday, Mar 28, 2024
Site Code: 2403500151
Count Categories: Cars, Trucks, Bicycles, Pedestrians
Count Period: 07:00-09:00, 11:00-14:00, 15:00-18:00
Weather: Clear
Comments:

Traffic Count Map

Intersection:	Madeline Dr & Dean Ave
Site Code:	2403500151
Municipality:	Barrie
Count Date:	Mar 28, 2024



Traffic Count Summary

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

Madelaine Dr - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	16	159	24	0	199	14	38	149	9	0	196	1	395
08:00 - 09:00	31	173	28	0	232	4	53	165	8	0	226	8	458
BREAK													
11:00 - 12:00	20	137	37	0	194	11	61	142	15	0	218	3	412
12:00 - 13:00	25	159	28	0	212	14	73	163	10	0	246	8	458
13:00 - 14:00	28	134	23	0	185	7	61	167	13	0	241	9	426
BREAK													
15:00 - 16:00	44	219	26	0	289	19	105	251	27	0	383	25	672
16:00 - 17:00	53	205	29	0	287	12	96	212	27	0	335	7	622
17:00 - 18:00	54	147	34	0	235	7	110	231	22	0	363	13	598
GRAND TOTAL	271	1333	229	0	1833	88	597	1480	131	0	2208	74	4041

Traffic Count Summary

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

Dean Ave - Traffic Summary

East Approach Totals							West Approach Totals						
Hour	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	6	47	41	0	94	14	26	15	27	0	68	6	162
08:00 - 09:00	4	51	75	0	130	13	22	23	54	0	99	9	229
BREAK													
11:00 - 12:00	4	35	30	0	69	5	24	46	44	0	114	4	183
12:00 - 13:00	3	41	29	0	73	14	36	54	46	0	136	8	209
13:00 - 14:00	3	41	34	0	78	6	20	54	56	0	130	4	208
BREAK													
15:00 - 16:00	7	47	49	0	103	27	39	73	76	0	188	15	291
16:00 - 17:00	5	57	42	0	104	7	36	107	92	0	235	3	339
17:00 - 18:00	7	71	31	0	109	5	42	106	89	0	237	12	346
GRAND TOTAL	39	390	331	0	760	91	245	478	484	0	1207	61	1967

Traffic Count Data

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

North Approach - Madelaine Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
07:00	1	25	2	0	28	0	0	0	0	0	0	0	0	0	0	0
07:15	4	39	5	0	48	1	0	0	0	1	0	0	0	0	0	2
07:30	5	37	5	0	47	0	2	0	0	2	0	0	0	0	0	5
07:45	5	55	12	0	72	0	1	0	0	1	0	0	0	0	0	7
08:00	6	36	7	0	49	0	0	1	0	1	0	0	0	0	0	0
08:15	5	25	2	0	32	0	0	0	0	0	0	0	0	0	0	1
08:30	12	50	11	0	73	0	0	0	0	0	0	0	0	0	0	2
08:45	8	62	5	0	75	0	0	2	0	2	0	0	0	0	0	1
SUBTOTAL	46	329	49	0	424	1	3	3	0	7	0	0	0	0	0	18

Traffic Count Data

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

North Approach - Madelaine Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	2	30	6	0	38	1	1	0	0	2	0	0	0	0	0	5
11:15	5	36	9	0	50	0	1	0	0	1	0	0	0	0	0	0
11:30	3	32	16	0	51	0	1	0	0	1	0	0	0	0	0	3
11:45	9	36	6	0	51	0	0	0	0	0	0	0	0	0	0	3
12:00	3	42	12	0	57	0	0	0	0	0	0	0	0	0	0	1
12:15	8	37	7	0	52	0	0	0	0	0	0	0	0	0	0	3
12:30	8	36	4	0	48	0	0	0	0	0	0	0	0	0	0	6
12:45	6	44	5	0	55	0	0	0	0	0	0	0	0	0	0	4
13:00	8	33	5	0	46	0	0	0	0	0	0	0	0	0	0	3
13:15	8	33	7	0	48	0	2	0	0	2	0	0	0	0	0	2
13:30	4	34	4	0	42	0	0	0	0	0	0	0	0	0	0	1
13:45	8	31	6	0	45	0	1	0	0	1	0	0	1	0	1	1
SUBTOTAL	72	424	87	0	583	1	6	0	0	7	0	0	1	0	1	32

Traffic Count Data

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

North Approach - Madelaine Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	12	46	3	0	61	0	0	0	0	0	0	0	1	0	1	2
15:15	14	61	8	0	83	0	0	1	0	1	0	0	0	0	0	6
15:30	9	53	5	0	67	1	2	1	0	4	0	0	0	0	0	7
15:45	8	57	7	0	72	0	0	0	0	0	0	0	0	0	0	4
16:00	11	47	9	0	67	1	0	0	0	1	0	0	0	0	0	2
16:15	6	40	3	0	49	0	0	0	0	0	0	0	0	0	0	2
16:30	15	59	10	0	84	0	0	0	0	0	0	0	0	0	0	1
16:45	20	59	7	0	86	0	0	0	0	0	0	0	0	0	0	7
17:00	19	38	6	0	63	0	0	0	0	0	0	0	0	0	0	2
17:15	12	39	9	0	60	0	0	0	0	0	0	0	0	0	0	1
17:30	14	37	11	0	62	0	1	1	0	2	0	0	0	0	0	1
17:45	9	32	7	0	48	0	0	0	0	0	0	0	0	0	0	3
SUBTOTAL	149	568	85	0	802	2	3	3	0	8	0	0	1	0	1	38
GRAND TOTAL	267	1321	221	0	1809	4	12	6	0	22	0	0	2	0	2	88

Traffic Count Data

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

South Approach - Madelaine Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
07:00	8	14	3	0	25	2	3	0	0	5	0	0	0	0	0	0
07:15	5	26	2	0	33	0	1	0	0	1	0	0	0	0	0	1
07:30	12	37	1	0	50	1	0	0	0	1	0	0	0	0	0	0
07:45	10	67	3	0	80	0	1	0	0	1	0	0	0	0	0	0
08:00	8	41	2	0	51	0	2	0	0	2	0	0	0	0	0	0
08:15	13	29	2	0	44	0	0	1	0	1	0	0	0	0	0	1
08:30	14	40	2	0	56	1	1	0	0	2	0	0	0	0	0	1
08:45	16	51	1	0	68	1	1	0	0	2	0	0	0	0	0	6
SUBTOTAL	86	305	16	0	407	5	9	1	0	15	0	0	0	0	0	9

Traffic Count Data

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

South Approach - Madelaine Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	10	26	4	0	40	0	0	0	0	0	0	0	0	0	0	1
11:15	22	39	3	0	64	0	0	1	0	1	0	0	0	0	0	0
11:30	7	39	4	0	50	0	0	0	0	0	0	0	0	0	0	0
11:45	21	38	3	0	62	1	0	0	0	1	0	0	0	0	0	2
12:00	21	44	3	0	68	0	0	0	0	0	0	0	0	0	0	1
12:15	23	40	2	0	65	0	0	0	0	0	0	0	0	0	0	1
12:30	18	45	5	0	68	0	0	0	0	0	0	0	0	0	0	3
12:45	11	34	0	0	45	0	0	0	0	0	0	0	0	0	0	3
13:00	22	35	5	0	62	0	0	1	0	1	0	0	0	0	0	0
13:15	10	43	4	0	57	0	2	0	0	2	0	0	0	0	0	3
13:30	14	37	1	0	52	0	2	0	0	2	0	0	0	0	0	6
13:45	15	46	2	0	63	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	194	466	36	0	696	1	6	2	0	9	0	0	0	0	0	20

Traffic Count Data

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

South Approach - Madelaine Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	18	65	6	0	89	0	0	0	0	0	0	1	0	0	1	3
15:15	26	46	5	0	77	1	2	0	0	3	0	0	0	0	0	14
15:30	29	53	5	0	87	1	1	0	0	2	0	0	0	0	0	5
15:45	30	82	11	0	123	0	1	0	0	1	0	0	0	0	0	3
16:00	24	64	7	0	95	0	2	0	0	2	0	0	0	0	0	2
16:15	33	54	9	0	96	0	1	0	0	1	0	0	0	0	0	2
16:30	22	59	7	0	88	0	0	0	0	0	0	0	0	0	0	1
16:45	17	32	4	0	53	0	0	0	0	0	0	0	0	0	0	2
17:00	34	65	5	0	104	0	1	0	0	1	0	0	0	0	0	5
17:15	21	54	4	0	79	0	1	0	0	1	0	0	0	0	0	0
17:30	32	57	6	0	95	0	0	0	0	0	0	0	0	0	0	2
17:45	23	52	7	0	82	0	1	0	0	1	0	0	0	0	0	6
SUBTOTAL	309	683	76	0	1068	2	10	0	0	12	0	1	0	0	1	45
GRAND TOTAL	589	1454	128	0	2171	8	25	3	0	36	0	1	0	0	1	74

Traffic Count Data

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

East Approach - Dean Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	2	3	3	0	8	0	1	0	0	1	0	0	0	0	0	0
07:15	1	17	6	0	24	0	1	0	0	1	0	0	0	0	0	1
07:30	0	12	13	0	25	1	1	0	0	2	0	0	0	0	0	7
07:45	1	11	18	0	30	1	1	1	0	3	0	0	0	0	0	6
08:00	2	14	19	0	35	0	0	0	0	0	0	0	0	0	0	3
08:15	0	10	14	0	24	0	3	1	0	4	0	0	0	0	0	1
08:30	0	15	23	0	38	1	0	0	0	1	0	0	0	0	0	5
08:45	1	8	18	0	27	0	1	0	0	1	0	0	0	0	0	4
SUBTOTAL	7	90	114	0	211	3	8	2	0	13	0	0	0	0	0	27

Traffic Count Data

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

East Approach - Dean Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
11:00	3	10	4	0	17	0	0	0	0	0	0	0	0	0	0	0
11:15	1	8	7	0	16	0	1	0	0	1	0	0	0	0	0	0
11:30	0	11	11	0	22	0	0	0	0	0	0	0	0	0	0	0
11:45	0	4	8	0	12	0	1	0	0	1	0	0	0	0	0	5
12:00	0	8	9	0	17	0	0	0	0	0	0	0	0	0	0	3
12:15	2	13	7	0	22	0	1	0	0	1	0	0	0	0	0	3
12:30	1	12	3	0	16	0	1	0	0	1	0	0	0	0	0	2
12:45	0	6	10	0	16	0	0	0	0	0	0	0	0	0	0	6
13:00	0	11	8	0	19	0	1	0	0	1	0	0	0	0	0	0
13:15	0	9	6	0	15	0	1	0	0	1	0	0	0	0	0	1
13:30	1	11	8	0	20	0	1	0	0	1	0	0	0	0	0	4
13:45	2	7	11	0	20	0	0	1	0	1	0	0	0	0	0	1
SUBTOTAL	10	110	92	0	212	0	7	1	0	8	0	0	0	0	0	25

Traffic Count Data

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

East Approach - Dean Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	3	9	18	0	30	0	0	0	0	0	0	0	0	0	0	2
15:15	1	9	13	0	23	0	1	2	0	3	0	0	0	0	0	16
15:30	1	8	8	0	17	0	2	0	0	2	0	0	0	0	0	8
15:45	2	18	8	0	28	0	0	0	0	0	0	0	0	0	0	1
16:00	0	16	6	0	22	1	1	0	0	2	0	0	0	0	0	0
16:15	0	11	10	0	21	0	0	0	0	0	0	0	0	0	0	4
16:30	3	14	13	0	30	0	1	0	0	1	0	0	0	0	0	0
16:45	1	14	13	0	28	0	0	0	0	0	0	0	0	0	0	3
17:00	2	17	9	0	28	0	1	0	0	1	0	0	0	0	0	1
17:15	1	20	9	0	30	0	0	0	0	0	0	0	0	0	0	1
17:30	2	16	7	0	25	0	0	0	0	0	0	0	0	0	0	3
17:45	2	16	6	0	24	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	18	168	120	0	306	1	7	2	0	10	0	0	0	0	0	39
GRAND TOTAL	35	368	326	0	729	4	22	5	0	31	0	0	0	0	0	91

Traffic Count Data

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

West Approach - Dean Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	2	5	6	0	13	0	0	0	0	0	0	0	0	0	0	0
07:15	4	4	3	0	11	0	0	1	0	1	0	0	0	0	0	1
07:30	6	1	5	0	12	0	0	1	0	1	0	0	0	0	0	0
07:45	13	5	10	0	28	1	0	1	0	2	0	0	0	0	0	5
08:00	6	5	15	0	26	0	1	0	0	1	0	0	0	0	0	0
08:15	4	1	8	0	13	0	0	0	0	0	0	0	0	0	0	2
08:30	6	7	12	0	25	0	1	0	0	1	0	0	0	0	0	5
08:45	6	8	19	0	33	0	0	0	0	0	0	0	0	0	0	2
SUBTOTAL	47	36	78	0	161	1	2	3	0	6	0	0	0	0	0	15

Traffic Count Data

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

West Approach - Dean Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	6	18	8	0	32	0	1	0	0	1	0	0	0	0	0	2
11:15	5	6	6	0	17	0	0	0	0	0	0	0	0	0	0	0
11:30	5	9	9	0	23	0	1	0	0	1	0	0	0	0	0	0
11:45	8	11	21	0	40	0	0	0	0	0	0	0	0	0	0	2
12:00	9	17	13	0	39	0	0	0	0	0	0	0	0	0	0	2
12:15	3	8	10	0	21	0	1	0	0	1	0	0	0	0	0	1
12:30	15	13	9	0	37	0	1	0	0	1	0	0	0	0	0	2
12:45	9	13	14	0	36	0	1	0	0	1	0	0	0	0	0	3
13:00	3	9	18	0	30	1	0	0	0	1	0	0	0	0	0	1
13:15	4	19	14	0	37	0	2	0	0	2	0	0	0	0	0	1
13:30	6	11	14	0	31	0	0	0	0	0	0	0	0	0	0	1
13:45	6	13	9	0	28	0	0	1	0	1	0	0	0	0	0	1
SUBTOTAL	79	147	145	0	371	1	7	1	0	9	0	0	0	0	0	16

Traffic Count Data

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Municipality: Barrie
Count Date: Mar 28, 2024

West Approach - Dean Ave

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	10	15	8	0	33	0	0	0	0	0	0	0	0	0	0	1
15:15	14	18	16	0	48	0	3	1	0	4	0	0	0	0	0	3
15:30	6	21	22	0	49	1	0	1	0	2	0	0	0	0	0	8
15:45	5	14	26	0	45	3	2	2	0	7	0	0	0	0	0	3
16:00	8	19	23	0	50	1	0	0	0	1	0	0	0	0	0	0
16:15	9	29	18	0	56	0	1	0	0	1	0	0	0	0	0	0
16:30	8	21	26	0	55	0	0	0	0	0	0	0	0	0	0	0
16:45	10	37	25	0	72	0	0	0	0	0	0	0	0	0	0	3
17:00	18	31	24	0	73	0	1	0	0	1	0	0	0	0	0	3
17:15	9	27	28	0	64	0	0	0	0	0	0	0	0	0	0	2
17:30	8	27	22	0	57	0	1	0	0	1	0	0	0	0	0	2
17:45	7	19	15	0	41	0	0	0	0	0	0	0	0	0	0	5
SUBTOTAL	112	278	253	0	643	5	8	4	0	17	0	0	0	0	0	30
GRAND TOTAL	238	461	476	0	1175	7	17	8	0	32	0	0	0	0	0	61

Peak Hour Diagram

Specified Period

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

One Hour Peak

From: 07:45:00
To: 08:45:00

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Count Date: Mar 28, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Madelaine Dr runs N/S

North Approach

	Out	In	Total
	226	280	506
	2	7	9
	0	0	0
Totals	228	287	515

Madelaine Dr

	0	0	0	0
	1	1	0	0
	32	166	28	0
Totals	33	167	28	0






East Approach

	Out	In	Total
	127	55	182
	8	3	11
	0	0	0
Totals	135	58	193

Dean Ave

				Totals
0	0	0	0	0
0	1	29	30	30
0	2	18	20	20
0	1	45	46	46






Peds: 10

Peds: 12



Peds: 15

Peds: 2

Dean Ave

Totals			
0	0	0	0
76	74	2	0
54	50	4	0
5	3	2	0






West Approach

	Out	In	Total
	92	127	219
	4	6	10
	0	0	0
Totals	96	133	229

				
Totals	46	181	10	0
	45	177	9	0
	1	4	1	0
	0	0	0	0

Madelaine Dr

South Approach

	Out	In	Total
	231	214	445
	6	4	10
	0	0	0
Totals	237	218	455

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Count Date: Mar 28, 2024
Period: 07:00 - 09:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Madelaine Dr						South Approach Madelaine Dr						East Approach Dean Ave						West Approach Dean Ave						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
07:45	5	56	12	0	7	73	10	68	3	0	0	81	2	12	19	0	6	33	14	5	11	0	5	30	217
08:00	6	36	8	0	0	50	8	43	2	0	0	53	2	14	19	0	3	35	6	6	15	0	0	27	165
08:15	5	25	2	0	1	32	13	29	3	0	1	45	0	13	15	0	1	28	4	1	8	0	2	13	118
08:30	12	50	11	0	2	73	15	41	2	0	1	58	1	15	23	0	5	39	6	8	12	0	5	26	196
Grand Total	28	167	33	0	10	228	46	181	10	0	2	237	5	54	76	0	15	135	30	20	46	0	12	96	696
Approach %	12.3	73.2	14.5	0	-	-	19.4	76.4	4.2	0	-	-	3.7	40	56.3	0	-	-	31.3	20.8	47.9	0	-	-	-
Totals %	4	24	4.7	0	-	32.8	6.6	26	1.4	0	-	34.1	0.7	7.8	10.9	0	-	19.4	4.3	2.9	6.6	0	-	13.8	-
PHF	0.58	0.75	0.69	0	-	0.78	0.77	0.67	0.83	0	-	0.73	0.63	0.9	0.83	0	-	0.87	0.54	0.63	0.77	0	-	0.8	0.8
Cars	28	166	32	0	-	226	45	177	9	0	-	231	3	50	74	0	-	127	29	18	45	0	-	92	676
% Cars	100	99.4	97	0	-	99.1	97.8	97.8	90	0	-	97.5	60	92.6	97.4	0	-	94.1	96.7	90	97.8	0	-	95.8	97.1
Trucks	0	1	1	0	-	2	1	4	1	0	-	6	2	4	2	0	-	8	1	2	1	0	-	4	20
% Trucks	0	0.6	3	0	-	0.9	2.2	2.2	10	0	-	2.5	40	7.4	2.6	0	-	5.9	3.3	10	2.2	0	-	4.2	2.9
Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Peds	-	-	-	-	10	-	-	-	-	-	2	-	-	-	-	-	15	-	-	-	-	-	12	-	39
% Peds	-	-	-	-	25.6	-	-	-	-	-	5.1	-	-	-	-	-	38.5	-	-	-	-	-	30.8	-	-

Peak Hour Diagram

Specified Period

From: 11:00:00
To: 14:00:00

One Hour Peak

From: 11:45:00
To: 12:45:00

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Count Date: Mar 28, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Madelaine Dr runs N/S

North Approach

	Out	In	Total
	208	229	437
	0	0	0
	0	0	0
Totals	208	229	437

Madelaine Dr

	0	0	0	0
	0	0	0	0
	29	151	28	0
Totals	29	151	28	0






East Approach

	Out	In	Total
	67	90	157
	3	2	5
	0	0	0
Totals	70	92	162

Dean Ave

				Totals
	0	0	0	0
	0	0	35	35
	0	2	49	51
	0	0	53	53

Peds: 13

Peds: 7



Peds: 13

Peds: 7

Dean Ave

Totals			
	0	0	0
	27	27	0
	40	37	3
	3	3	0

West Approach

	Out	In	Total
	137	149	286
	2	4	6
	0	0	0
Totals	139	153	292

				
Totals	84	167	13	0
	83	167	13	0
	1	0	0	0
	0	0	0	0

Madelaine Dr

South Approach

	Out	In	Total
	263	207	470
	1	0	1
	0	0	0
Totals	264	207	471

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Count Date: Mar 28, 2024
Period: 11:00 - 14:00

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

Start Time	North Approach Madelaine Dr						South Approach Madelaine Dr						East Approach Dean Ave						West Approach Dean Ave						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
11:45	9	36	6	0	3	51	22	38	3	0	2	63	0	5	8	0	5	13	8	11	21	0	2	40	167
12:00	3	42	12	0	1	57	21	44	3	0	1	68	0	8	9	0	3	17	9	17	13	0	2	39	181
12:15	8	37	7	0	3	52	23	40	2	0	1	65	2	14	7	0	3	23	3	9	10	0	1	22	162
12:30	8	36	4	0	6	48	18	45	5	0	3	68	1	13	3	0	2	17	15	14	9	0	2	38	171
Grand Total	28	151	29	0	13	208	84	167	13	0	7	264	3	40	27	0	13	70	35	51	53	0	7	139	681
Approach %	13.5	72.6	13.9	0	-	-	31.8	63.3	4.9	0	-	-	4.3	57.1	38.6	0	-	-	25.2	36.7	38.1	0	-	-	-
Totals %	4.1	22.2	4.3	0	30.5	12.3	24.5	1.9	0	38.8	0.4	5.9	4	0	10.3	5.1	7.5	7.8	0	20.4					
PHF	0.78	0.9	0.6	0	0.91	0.91	0.93	0.65	0	0.97	0.38	0.71	0.75	0	0.76	0.58	0.75	0.63	0	0.87	0.94				
Cars	28	151	29	0	208	83	167	13	0	263	3	37	27	0	67	35	49	53	0	137	675				
% Cars	100	100	100	0	100	98.8	100	100	0	99.6	100	92.5	100	0	95.7	100	96.1	100	0	98.6	99.1				
Trucks	0	0	0	0	0	1	0	0	0	1	0	3	0	0	3	0	2	0	0	2	6				
% Trucks	0	0	0	0	0	1.2	0	0	0	0.4	0	7.5	0	0	4.3	0	3.9	0	0	1.4	0.9				
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Peds					13	-				7	-				13	-				7	-				40
% Peds					32.5	-				17.5	-				32.5	-				17.5	-				

Peak Hour Diagram

Specified Period

From: 15:00:00
To: 18:00:00

One Hour Peak

From: 16:30:00
To: 17:30:00

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Count Date: Mar 28, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Madelaine Dr runs N/S

North Approach

	Out	In	Total
	293	299	592
	0	2	2
	0	0	0
Totals	293	301	594

Madelaine Dr

	0	0	0	0
	0	0	0	0
	32	195	66	0
Totals	32	195	66	0






East Approach

	Out	In	Total
	116	202	318
	2	1	3
	0	0	0
Totals	118	203	321

Dean Ave

				Totals
	0	0	0	0
	0	0	45	45
	0	1	116	117
	0	0	103	103

Peds: 11

Peds: 8



Peds: 5

Peds: 8

Dean Ave

Totals			
	0	0	0
	44	44	0
	67	65	2
	7	7	0

West Approach

	Out	In	Total
	264	191	455
	1	2	3
	0	0	0
Totals	265	193	458

Totals				
	94	210	20	0
	0	2	0	0
	0	0	0	0

Madelaine Dr

South Approach

	Out	In	Total
	324	305	629
	2	0	2
	0	0	0
Totals	326	305	631

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Madelaine Dr & Dean Ave
Site Code: 2403500151
Count Date: Mar 28, 2024
Period: 15:00 - 18:00

Peak Hour Data (16:30 - 17:30)

Start Time	North Approach Madelaine Dr						South Approach Madelaine Dr						East Approach Dean Ave						West Approach Dean Ave						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
16:30	15	59	10	0	1	84	22	59	7	0	1	88	3	15	13	0	0	31	8	21	26	0	0	55	258
16:45	20	59	7	0	7	86	17	32	4	0	2	53	1	14	13	0	3	28	10	37	25	0	3	72	239
17:00	19	38	6	0	2	63	34	66	5	0	5	105	2	18	9	0	1	29	18	32	24	0	3	74	271
17:15	12	39	9	0	1	60	21	55	4	0	0	80	1	20	9	0	1	30	9	27	28	0	2	64	234
Grand Total	66	195	32	0	11	293	94	212	20	0	8	326	7	67	44	0	5	118	45	117	103	0	8	265	1002
Approach %	22.5	66.6	10.9	0	-	-	28.8	65	6.1	0	-	-	5.9	56.8	37.3	0	-	-	17	44.2	38.9	0	-	-	-
Totals %	6.6	19.5	3.2	0	-	29.2	9.4	21.2	2	0	-	32.5	0.7	6.7	4.4	0	-	11.8	4.5	11.7	10.3	0	-	26.4	-
PHF	0.83	0.83	0.8	0	-	0.85	0.69	0.8	0.71	0	-	0.78	0.58	0.84	0.85	0	-	0.95	0.63	0.79	0.92	0	-	0.9	0.92
Cars	66	195	32	0	-	293	94	210	20	0	-	324	7	65	44	0	-	116	45	116	103	0	-	264	997
% Cars	100	100	100	0	-	100	100	99.1	100	0	-	99.4	100	97	100	0	-	98.3	100	99.1	100	0	-	99.6	99.5
Trucks	0	0	0	0	-	0	0	2	0	0	-	2	0	2	0	0	-	2	0	1	0	0	-	1	5
% Trucks	0	0	0	0	-	0	0	0.9	0	0	-	0.6	0	3	0	0	-	1.7	0	0.9	0	0	-	0.4	0.5
Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Peds	-	-	-	-	11	-	-	-	-	-	8	-	-	-	-	-	5	-	-	-	-	-	8	-	32
% Peds	-	-	-	-	34.4	-	-	-	-	-	25	-	-	-	-	-	15.6	-	-	-	-	-	25	-	-

Accu-Traffic Inc.

Morning Peak Diagram		Specified Period From: 7:00:00 To: 9:00:00	One Hour Peak From: 8:00:00 To: 9:00:00
Municipality: Barrie Site #: 2501000001 Intersection: Dean Ave & Barrie Public Library- TFR File #: 1 Count date: 14-Jan-25		Weather conditions: Person counted: Person prepared: Person checked:	
** Non-Signalized Intersection **		Major Road: Dean Ave runs N/S	

North Leg Total: 198 North Entering: 85 North Peds: 0 Peds Cross: ☒	<table style="margin: 0 auto;"> <tr> <td style="text-align: right;">Heavys</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td rowspan="5" style="font-size: 2em; vertical-align: middle;">↑</td> <td style="text-align: left;">Heavys</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: right;">Trucks</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: left;">Trucks</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: right;">Cars</td> <td style="text-align: center;">77</td> <td style="text-align: center;">7</td> <td style="text-align: center;">84</td> <td style="text-align: left;">Cars</td> <td style="text-align: center;">108</td> </tr> <tr> <td style="text-align: right;">Totals</td> <td style="text-align: center;">78</td> <td style="text-align: center;">7</td> <td></td> <td style="text-align: left;">Totals</td> <td style="text-align: center;">113</td> </tr> <tr> <td colspan="3"></td> <td colspan="3"></td> </tr> </table> Dean Ave Dean Ave <table style="margin: 0 auto; margin-top: 10px;"> <tr> <td style="text-align: right;">Cars</td> <td style="text-align: center;">77</td> <td style="text-align: center;">1</td> <td style="text-align: center;">108</td> </tr> <tr> <td style="text-align: right;">Trucks</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: right;">Heavys</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: right;">Totals</td> <td style="text-align: center;">78</td> <td style="text-align: center;">1</td> <td style="text-align: center;">111</td> </tr> </table>	Heavys	1	0	1	↑	Heavys	5	Trucks	0	0	0	Trucks	0	Cars	77	7	84	Cars	108	Totals	78	7		Totals	113							Cars	77	1	108	Trucks	0	0	0	Heavys	1	0	5	Totals	78	1	111	East Leg Total: 11 East Entering: 2 East Peds: 5 Peds Cross: ☒
Heavys	1	0	1	↑	Heavys		5																																										
Trucks	0	0	0		Trucks		0																																										
Cars	77	7	84		Cars		108																																										
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Heavys	0	0	0	0																	
Totals	2	0	0	2																	

Barrie Public Library- Painswick driveway

	<table style="margin: 0 auto;"> <tr> <td style="text-align: right;">Cars</td> <td style="text-align: center;">9</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">9</td> </tr> <tr> <td style="text-align: right;">Trucks</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: right;">Heavys</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: right;">Totals</td> <td style="text-align: center;">9</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">9</td> </tr> </table>	Cars	9	0	0	9	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	9	0	0	9
Cars	9	0	0	9																	
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Heavys	0	0	0	0																	
Totals	9	0	0	9																	

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Cars	77	1	108														
Trucks	0	0	0														
Heavys	1	0	5														
Totals	78	1	111														

Comments

Accu-Traffic Inc.

Afternoon Peak Diagram		Specified Period From: 16:00:00 To: 19:00:00	One Hour Peak From: 16:15:00 To: 17:15:00																																																																																																				
Municipality: Barrie Site #: 2501000001 Intersection: Dean Ave & Barrie Public Library- TFR File #: 1 Count date: 14-Jan-25		Weather conditions: Person counted: Person prepared: Person checked:																																																																																																					
** Non-Signalized Intersection **		Major Road: Dean Ave runs N/S																																																																																																					
North Leg Total: 383 North Entering: 207 North Peds: 0 Peds Cross:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; vertical-align: top;"> <table style="width: 100%; border-collapse: collapse;"> <tr><td>Heavys</td><td style="text-align: right;">0</td><td style="text-align: right;">0</td><td style="text-align: right;">0</td></tr> <tr><td>Trucks</td><td style="text-align: right;">2</td><td style="text-align: right;">0</td><td style="text-align: right;">2</td></tr> <tr><td>Cars</td><td style="text-align: right; border-bottom: 1px solid black;">182</td><td style="text-align: right; border-bottom: 1px solid black;">23</td><td style="text-align: right; border-bottom: 1px solid black;">205</td></tr> <tr><td>Totals</td><td style="text-align: right;">184</td><td style="text-align: right;">23</td><td></td></tr> </table> </td> <td style="width: 10%; text-align: center; vertical-align: middle;"> </td> <td style="width: 30%; vertical-align: top;"> <table style="width: 100%; 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Accu-Traffic Inc.

Total Count Diagram

Municipality: Barrie
Site #: 2501000001
Intersection: Dean Ave & Barrie Public Library-
TFR File #: 1
Count date: 14-Jan-25

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

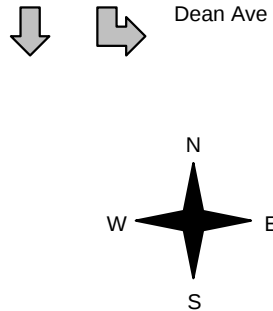
Major Road: Dean Ave runs N/S

North Leg Total: 1318
 North Entering: 678
 North Peds: 0
 Peds Cross: 

Heavys	8	0	8
Trucks	2	0	2
Cars	597	71	668
Totals	607	71	

Heavys	9
Trucks	2
Cars	629
Totals	640

East Leg Total: 228
 East Entering: 116
 East Peds: 18
 Peds Cross: 



Cars	Trucks	Heavys	Totals
75	1	0	76
40	0	0	40
115	1	0	

Barrie Public Library- Painswick driveway

Cars	Trucks	Heavys	Totals
112	0	0	112

Cars	637
Trucks	2
Heavys	8
Totals	647

Cars	554	41	595
Trucks	1	0	1
Heavys	9	0	9
Totals	564	41	

Peds Cross: 
 South Peds: 0
 South Entering: 605
 South Leg Total: 1252

Comments

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Dean Ave & Barrie Public Library-

Count Date: 14-Jan-25

Municipality: Barrie

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	4	63	0	67	0	153	8:00:00	0	86	0	86	0
9:00:00	7	78	0	85	0	198	9:00:00	0	111	2	113	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	22	175	0	197	0	361	17:00:00	0	152	12	164	0
18:00:00	24	182	0	206	0	336	18:00:00	0	117	13	130	0
19:00:00	14	109	0	123	0	235	19:00:00	0	98	14	112	0

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Appendix D – Synchro Analysis Output – Existing Traffic Volumes

1: Dean Ave & Raquel St/Commercial Driveway

Existing 2025 AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	55	13	8	5	9	119	6	105
Future Volume (vph)	55	13	8	5	9	119	6	105
Lane Group Flow (vph)	0	112	0	21	13	189	8	193
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.41		0.08	0.02	0.15	0.01	0.16
Control Delay (s/veh)		23.6		17.7	5.1	5.1	5.2	4.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		23.6		17.7	5.1	5.1	5.2	4.7
Queue Length 50th (m)		9.4		1.6	0.5	7.0	0.3	6.4
Queue Length 95th (m)		16.3		5.0	1.9	12.3	1.4	11.4
Internal Link Dist (m)		153.8		232.5		57.1		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		587		623	830	1223	835	1230
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.19		0.03	0.02	0.15	0.01	0.16

Intersection Summary

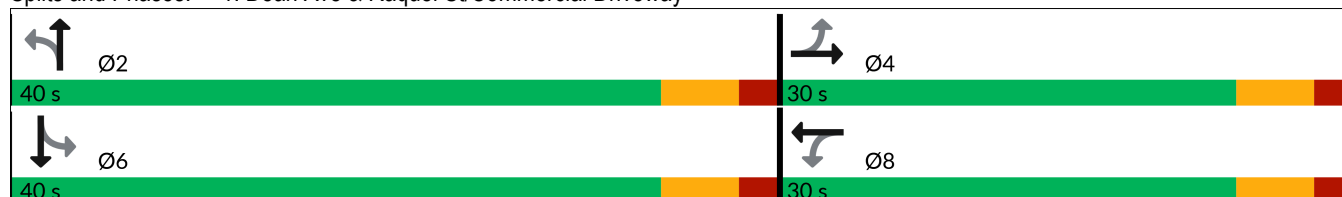
Cycle Length: 70

Actuated Cycle Length: 58.5

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	13	12	8	5	2	9	119	15	6	105	32
Future Volume (vph)	55	13	12	8	5	2	9	119	15	6	105	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.98		1.00	0.97	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1740			1805		1800	1769		1801	1770	
Flt Permitted		0.78			0.82		0.64	1.00		0.64	1.00	
Satd. Flow (perm)		1406			1510		1205	1769		1211	1770	
Peak-hour factor, PHF	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Adj. Flow (vph)	77	18	17	11	7	3	13	168	21	8	148	45
RTOR Reduction (vph)	0	12	0	0	3	0	0	4	0	0	10	0
Lane Group Flow (vph)	0	100	0	0	18	0	13	185	0	8	183	0
Confl. Peds. (#/hr)	3		4	4		3	3		2	2		3
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	6%	0%	0%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.7			8.7		39.1	39.1		39.1	39.1	
Effective Green, g (s)		8.7			8.7		39.1	39.1		39.1	39.1	
Actuated g/C Ratio		0.15			0.15		0.65	0.65		0.65	0.65	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		204			219		787	1156		791	1157	
v/s Ratio Prot							c0.10				0.10	
v/s Ratio Perm		c0.07			0.01		0.01			0.01		
v/c Ratio		0.49			0.08		0.02	0.16		0.01	0.16	
Uniform Delay, d1		23.5			22.1		3.6	4.0		3.6	4.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.9			0.2		0.0	0.3		0.0	0.3	
Delay (s)		25.4			22.3		3.7	4.3		3.6	4.3	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		25.4			22.3			4.3			4.3	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		9.4			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.22										
Actuated Cycle Length (s)		59.8			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		47.9%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

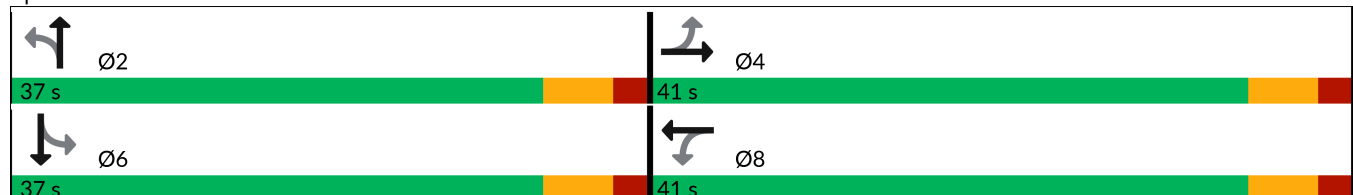
Queues
Existing 2025 AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	52	185	29	170	5	57	37	25
Future Volume (vph)	52	185	29	170	5	57	37	25
Lane Group Flow (vph)	65	244	36	258	6	169	46	109
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.10	0.21	0.05	0.23	0.04	0.46	0.22	0.31
Control Delay (s/veh)	5.3	5.6	5.0	5.4	19.8	14.3	22.8	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	5.3	5.6	5.0	5.4	19.8	14.3	22.8	11.3
Queue Length 50th (m)	2.5	9.8	1.3	9.8	0.6	6.8	4.4	2.9
Queue Length 95th (m)	6.2	17.5	4.0	17.8	2.8	17.4	10.6	11.4
Internal Link Dist (m)		276.0		225.7		218.9		271.3
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	681	1136	701	1127	490	905	626	882
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.21	0.05	0.23	0.01	0.19	0.07	0.12

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 58.8
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave



60 Dean Ave
2: Madelaine Dr & Dean Ave

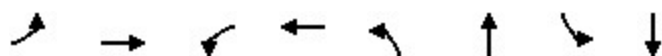
HCM Signalized Intersection Capacity Analysis
Existing 2025 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	185	10	29	170	36	5	57	78	37	25	62
Future Volume (vph)	52	185	10	29	170	36	5	57	78	37	25	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.91		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1753	1837		1784	1815		1287	1629		1739	1601	
Flt Permitted	0.60	1.00		0.61	1.00		0.69	1.00		0.65	1.00	
Satd. Flow (perm)	1107	1837		1140	1815		930	1629		1191	1601	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	65	231	12	36	212	45	6	71	98	46	31	78
RTOR Reduction (vph)	0	2	0	0	7	0	0	81	0	0	64	0
Lane Group Flow (vph)	65	242	0	36	251	0	6	89	0	46	45	0
Confl. Peds. (#/hr)	12		15	15		12	2		10	10		2
Heavy Vehicles (%)	2%	2%	10%	0%	1%	3%	40%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	36.3	36.3		36.3	36.3		10.5	10.5		10.5	10.5	
Effective Green, g (s)	36.3	36.3		36.3	36.3		10.5	10.5		10.5	10.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.18	0.18		0.18	0.18	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	683	1134		703	1120		166	290		212	285	
v/s Ratio Prot		0.13			c0.14			c0.05			0.03	
v/s Ratio Perm	0.06			0.03			0.01			0.04		
v/c Ratio	0.10	0.21		0.05	0.22		0.04	0.31		0.22	0.16	
Uniform Delay, d1	4.6	5.0		4.4	5.0		20.0	21.0		20.6	20.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.4		0.1	0.5		0.1	0.6		0.5	0.3	
Delay (s)	4.9	5.4		4.6	5.5		20.1	21.6		21.2	20.7	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s/veh)		5.3			5.4			21.5			20.8	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)	10.9			HCM 2000 Level of Service					B			
HCM 2000 Volume to Capacity ratio	0.24											
Actuated Cycle Length (s)	58.8			Sum of lost time (s)					12.0			
Intersection Capacity Utilization	79.9%			ICU Level of Service					D			
Analysis Period (min)	15											
c Critical Lane Group												

60 Dean Ave
3: Dean Ave & Library Driveway

HCM Unsignalized Intersection Capacity Analysis
Existing 2025 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	141	2	7	118
Future Volume (Veh/h)	0	2	141	2	7	118
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	2	170	2	8	142
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL		TWLTL	
Median storage veh			2		2	
Upstream signal (m)			295		81	
pX, platoon unblocked						
vC, conflicting volume	334	176			177	
vC1, stage 1 conf vol	176					
vC2, stage 2 conf vol	158					
vCu, unblocked vol	334	176			177	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	776	869			1405	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	2	172	8	142		
Volume Left	0	0	8	0		
Volume Right	2	2	0	0		
cSH	869	1700	1405	1700		
Volume to Capacity	0.00	0.10	0.01	0.08		
Queue Length 95th (m)	0.1	0.0	0.1	0.0		
Control Delay (s/veh)	9.2	0.0	7.6	0.0		
Lane LOS	A		A			
Approach Delay (s/veh)	9.2	0.0	0.4			
Approach LOS	A					
Intersection Summary						
Average Delay		0.2				
Intersection Capacity Utilization		18.4%		ICU Level of Service	A	
Analysis Period (min)		15				



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔	↔	↔	↔	↔
Traffic Volume (vph)	54	37	52	40	13	123	13	157
Future Volume (vph)	54	37	52	40	13	123	13	157
Lane Group Flow (vph)	0	128	0	120	15	213	15	252
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.41		0.39	0.02	0.18	0.02	0.21
Control Delay (s/veh)		21.7		22.4	5.3	4.5	5.3	5.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		21.7		22.4	5.3	4.5	5.3	5.1
Queue Length 50th (m)		10.4		10.4	0.5	6.3	0.5	8.5
Queue Length 95th (m)		23.0		22.5	2.6	15.8	2.6	19.7
Internal Link Dist (m)		153.8		232.5		58.8		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		663		656	767	1188	802	1181
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.19		0.18	0.02	0.18	0.02	0.21

Intersection Summary

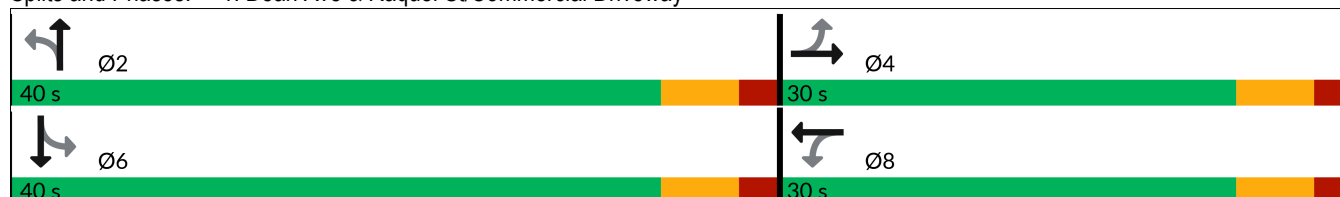
Cycle Length: 70

Actuated Cycle Length: 56.7

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	37	22	52	40	14	13	123	64	13	157	65
Future Volume (vph)	54	37	22	52	40	14	13	123	64	13	157	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.97			0.98		1.00	0.95		1.00	0.96	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1796			1795		1791	1732		1803	1729	
Flt Permitted		0.84			0.84		0.60	1.00		0.62	1.00	
Satd. Flow (perm)		1542			1536		1136	1732		1186	1729	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	61	42	25	59	45	16	15	140	73	15	178	74
RTOR Reduction (vph)	0	16	0	0	10	0	0	19	0	0	15	0
Lane Group Flow (vph)	0	112	0	0	110	0	15	194	0	15	237	0
Confl. Peds. (#/hr)			9	9			9		1	1		9
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	5%	0%	0%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.8			8.8		37.1	37.1		37.1	37.1	
Effective Green, g (s)		8.8			8.8		37.1	37.1		37.1	37.1	
Actuated g/C Ratio		0.15			0.15		0.64	0.64		0.64	0.64	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		234			233		727	1109		759	1107	
v/s Ratio Prot								0.11			c0.14	
v/s Ratio Perm		c0.07			0.07		0.01			0.01		
v/c Ratio		0.48			0.47		0.02	0.18		0.02	0.21	
Uniform Delay, d1		22.5			22.4		3.8	4.2		3.8	4.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.5			1.5		0.1	0.3		0.0	0.4	
Delay (s)		24.0			23.9		3.8	4.6		3.8	4.8	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		24.0			23.9			4.5			4.7	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			11.1				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.26									
Actuated Cycle Length (s)			57.9				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			49.3%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

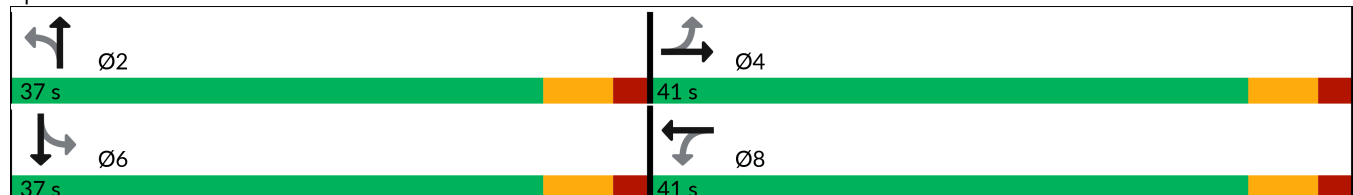
Queues
Existing 2025 PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	112	216	67	199	7	73	50	122
Future Volume (vph)	112	216	67	199	7	73	50	122
Lane Group Flow (vph)	122	257	73	258	8	128	54	259
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.18	0.24	0.11	0.24	0.04	0.32	0.20	0.62
Control Delay (s/veh)	7.3	6.9	6.8	6.7	18.4	15.2	21.0	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	7.3	6.9	6.8	6.7	18.4	15.2	21.0	21.8
Queue Length 50th (m)	5.4	11.3	3.1	11.0	0.8	7.7	5.1	19.0
Queue Length 95th (m)	15.4	26.9	9.8	26.3	3.7	19.7	13.2	39.2
Internal Link Dist (m)		276.0		225.7		218.9		269.6
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	664	1093	666	1091	499	927	660	934
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.24	0.11	0.24	0.02	0.14	0.08	0.28

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 59.7
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave



60 Dean Ave
2: Madelaine Dr & Dean Ave

HCM Signalized Intersection Capacity Analysis
Existing 2025 PM Peak Hour

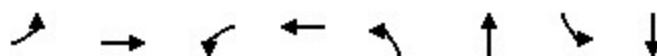
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	216	20	67	199	39	7	73	45	50	122	116
Future Volume (vph)	112	216	20	67	199	39	7	73	45	50	122	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1794	1855		1798	1845		1796	1738		1789	1729	
Flt Permitted	0.60	1.00		0.60	1.00		0.51	1.00		0.67	1.00	
Satd. Flow (perm)	1132	1855		1136	1845		960	1738		1271	1729	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	235	22	73	216	42	8	79	49	54	133	126
RTOR Reduction (vph)	0	3	0	0	7	0	0	38	0	0	58	0
Lane Group Flow (vph)	122	254	0	73	251	0	8	90	0	54	201	0
Confl. Peds. (#/hr)	8		5	5		8	8		11	11		8
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	3%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.1	35.1		35.1	35.1		12.6	12.6		12.6	12.6	
Effective Green, g (s)	35.1	35.1		35.1	35.1		12.6	12.6		12.6	12.6	
Actuated g/C Ratio	0.59	0.59		0.59	0.59		0.21	0.21		0.21	0.21	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	665	1090		667	1084		202	366		268	364	
v/s Ratio Prot		c0.14			0.14			0.05			c0.12	
v/s Ratio Perm	0.11			0.06			0.01			0.04		
v/c Ratio	0.18	0.23		0.11	0.23		0.04	0.25		0.20	0.55	
Uniform Delay, d1	5.7	5.9		5.4	5.9		18.7	19.6		19.4	21.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.5		0.3	0.5		0.1	0.4		0.4	1.8	
Delay (s)	6.3	6.4		5.7	6.4		18.8	20.0		19.8	22.9	
Level of Service	A	A		A	A		B	B		B	C	
Approach Delay (s/veh)		6.3			6.2			19.9			22.3	
Approach LOS		A			A			B			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			12.2				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			59.7				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			90.0%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
3: Dean Ave & Library Driveway

HCM Unsignalized Intersection Capacity Analysis
Existing 2025 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	24	176	13	23	208
Future Volume (Veh/h)	13	24	176	13	23	208
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	26	191	14	25	226
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			294		83	
pX, platoon unblocked						
vC, conflicting volume	479	203			210	
vC1, stage 1 conf vol	203					
vC2, stage 2 conf vol	276					
vCu, unblocked vol	479	203			210	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			98	
cM capacity (veh/h)	689	839			1367	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	40	205	25	226		
Volume Left	14	0	25	0		
Volume Right	26	14	0	0		
cSH	780	1700	1367	1700		
Volume to Capacity	0.05	0.12	0.02	0.13		
Queue Length 95th (m)	1.3	0.0	0.4	0.0		
Control Delay (s/veh)	9.9	0.0	7.7	0.0		
Lane LOS	A		A			
Approach Delay (s/veh)	9.9	0.0	0.8			
Approach LOS	A					
Intersection Summary						
Average Delay		1.2				
Intersection Capacity Utilization		27.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Appendix E – Synchro Analysis Output – Background Traffic Volumes



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔	↔	↔	↔	↔
Traffic Volume (vph)	58	13	8	5	9	125	6	111
Future Volume (vph)	58	13	8	5	9	125	6	111
Lane Group Flow (vph)	0	118	0	21	13	197	8	204
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.43		0.07	0.02	0.16	0.01	0.17
Control Delay (s/veh)		23.8		17.5	5.2	5.3	5.2	4.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		23.8		17.5	5.2	5.3	5.2	4.9
Queue Length 50th (m)		10.0		1.6	0.5	7.4	0.3	6.8
Queue Length 95th (m)		17.0		5.0	1.9	13.0	1.4	12.3
Internal Link Dist (m)		153.8		232.5		57.1		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		586		630	818	1217	824	1224
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.20		0.03	0.02	0.16	0.01	0.17

Intersection Summary

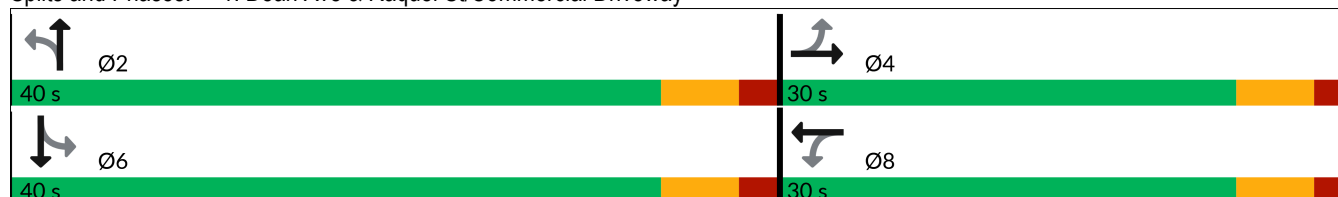
Cycle Length: 70

Actuated Cycle Length: 58.3

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	13	13	8	5	2	9	125	15	6	111	34
Future Volume (vph)	58	13	13	8	5	2	9	125	15	6	111	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.98		1.00	0.96	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1738			1805		1800	1770		1801	1770	
Flt Permitted		0.78			0.82		0.63	1.00		0.63	1.00	
Satd. Flow (perm)		1402			1525		1193	1770		1202	1770	
Peak-hour factor, PHF	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Adj. Flow (vph)	82	18	18	11	7	3	13	176	21	8	156	48
RTOR Reduction (vph)	0	12	0	0	3	0	0	4	0	0	11	0
Lane Group Flow (vph)	0	106	0	0	18	0	13	193	0	8	193	0
Confl. Peds. (#/hr)	3		4	4		3	3		2	2		3
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	6%	0%	0%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.8			8.8		38.7	38.7		38.7	38.7	
Effective Green, g (s)		8.8			8.8		38.7	38.7		38.7	38.7	
Actuated g/C Ratio		0.15			0.15		0.65	0.65		0.65	0.65	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		207			225		775	1151		781	1151	
v/s Ratio Prot								0.11			c0.11	
v/s Ratio Perm		c0.08			0.01		0.01			0.01		
v/c Ratio		0.51			0.08		0.02	0.17		0.01	0.17	
Uniform Delay, d1		23.4			21.9		3.7	4.1		3.7	4.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.1			0.2		0.0	0.3		0.0	0.3	
Delay (s)		25.5			22.0		3.7	4.4		3.7	4.4	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		25.5			22.0			4.4			4.4	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			9.5									
HCM 2000 Volume to Capacity ratio			0.23									
Actuated Cycle Length (s)			59.5									
Intersection Capacity Utilization			47.9%									
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

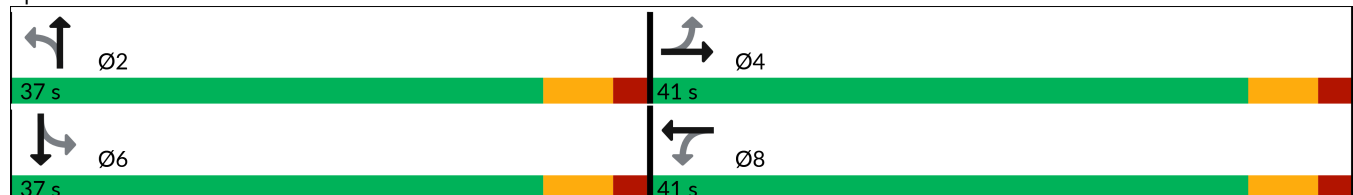
Queues
Background 2028 AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	55	196	31	180	5	60	39	26
Future Volume (vph)	55	196	31	180	5	60	39	26
Lane Group Flow (vph)	69	259	39	273	6	179	49	114
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.10	0.23	0.06	0.24	0.04	0.47	0.23	0.32
Control Delay (s/veh)	5.4	5.8	5.1	5.6	19.8	14.4	23.0	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	5.4	5.8	5.1	5.6	19.8	14.4	23.0	11.3
Queue Length 50th (m)	2.6	10.5	1.5	10.6	0.6	7.2	4.7	3.1
Queue Length 95th (m)	6.7	19.0	4.3	19.2	2.8	18.0	11.1	11.8
Internal Link Dist (m)		276.0		225.7		218.9		271.3
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	666	1127	687	1118	493	915	627	891
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.23	0.06	0.24	0.01	0.20	0.08	0.13

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 58.2
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave



60 Dean Ave
2: Madelaine Dr & Dean Ave

HCM Signalized Intersection Capacity Analysis
Background 2028 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	196	11	31	180	38	5	60	83	39	26	65
Future Volume (vph)	55	196	11	31	180	38	5	60	83	39	26	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.91		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1754	1836		1785	1815		1287	1629		1740	1602	
Flt Permitted	0.59	1.00		0.60	1.00		0.68	1.00		0.64	1.00	
Satd. Flow (perm)	1092	1836		1125	1815		926	1629		1180	1602	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	69	245	14	39	225	48	6	75	104	49	32	81
RTOR Reduction (vph)	0	2	0	0	7	0	0	85	0	0	66	0
Lane Group Flow (vph)	69	257	0	39	266	0	6	94	0	49	48	0
Confl. Peds. (#/hr)	12		15	15		12	2		10	10		2
Heavy Vehicles (%)	2%	2%	10%	0%	1%	3%	40%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.6	35.6		35.6	35.6		10.5	10.5		10.5	10.5	
Effective Green, g (s)	35.6	35.6		35.6	35.6		10.5	10.5		10.5	10.5	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.18	0.18		0.18	0.18	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	669	1124		689	1112		167	294		213	289	
v/s Ratio Prot		0.14			c0.15			c0.06			0.03	
v/s Ratio Perm	0.06			0.03			0.01			0.04		
v/c Ratio	0.10	0.23		0.06	0.24		0.04	0.32		0.23	0.16	
Uniform Delay, d1	4.7	5.1		4.5	5.1		19.6	20.7		20.3	20.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.5		0.2	0.5		0.1	0.6		0.6	0.3	
Delay (s)	5.0	5.5		4.7	5.6		19.7	21.3		20.9	20.4	
Level of Service	A	A		A	A		B	C		C	C	
Approach Delay (s/veh)		5.4			5.5			21.3			20.5	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.9		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			0.26									
Actuated Cycle Length (s)			58.1		Sum of lost time (s)				12.0			
Intersection Capacity Utilization			82.7%		ICU Level of Service				E			
Analysis Period (min)			15									
c Critical Lane Group												

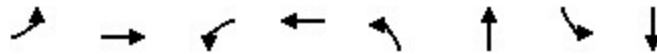
60 Dean Ave
3: Dean Ave & Library Driveway

HCM Unsignalized Intersection Capacity Analysis
Background 2028 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	148	2	7	125
Future Volume (Veh/h)	0	2	148	2	7	125
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	2	178	2	8	151
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh			2			2
Upstream signal (m)			295			81
pX, platoon unblocked						
vC, conflicting volume	351	184			185	
vC1, stage 1 conf vol	184					
vC2, stage 2 conf vol	167					
vCu, unblocked vol	351	184			185	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	766	860			1396	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	2	180	8	151		
Volume Left	0	0	8	0		
Volume Right	2	2	0	0		
cSH	860	1700	1396	1700		
Volume to Capacity	0.00	0.11	0.01	0.09		
Queue Length 95th (m)	0.1	0.0	0.1	0.0		
Control Delay (s/veh)	9.2	0.0	7.6	0.0		
Lane LOS	A		A			
Approach Delay (s/veh)	9.2	0.0	0.4			
Approach LOS	A					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			18.7%		ICU Level of Service	A
Analysis Period (min)			15			

1: Dean Ave & Raquel St/Commercial Driveway

Background 2028 PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	57	37	52	40	14	130	13	165
Future Volume (vph)	57	37	52	40	14	130	13	165
Lane Group Flow (vph)	0	133	0	120	16	221	15	266
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.43		0.39	0.02	0.19	0.02	0.23
Control Delay (s/veh)		22.0		22.3	5.4	4.7	5.4	5.2
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		22.0		22.3	5.4	4.7	5.4	5.2
Queue Length 50th (m)		11.0		10.4	0.6	6.8	0.5	9.2
Queue Length 95th (m)		23.8		22.5	2.8	17.0	2.6	21.4
Internal Link Dist (m)		153.8		232.5		58.8		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		659		652	756	1186	794	1179
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.20		0.18	0.02	0.19	0.02	0.23

Intersection Summary

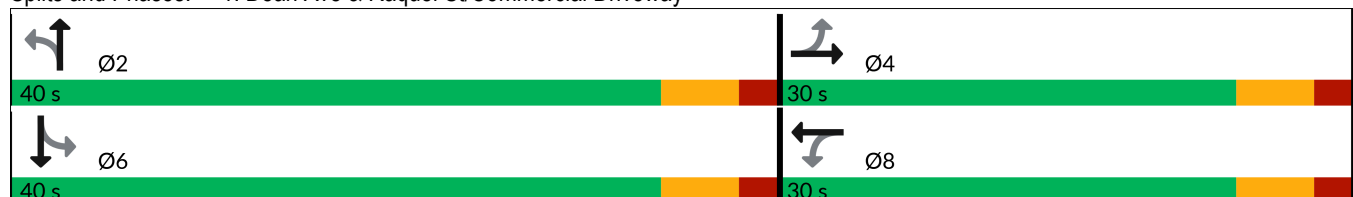
Cycle Length: 70

Actuated Cycle Length: 56.8

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	37	23	52	40	14	14	130	64	13	165	69
Future Volume (vph)	57	37	23	52	40	14	14	130	64	13	165	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.97			0.98		1.00	0.95		1.00	0.96	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1795			1795		1791	1735		1803	1729	
Flt Permitted		0.84			0.83		0.60	1.00		0.62	1.00	
Satd. Flow (perm)		1535			1531		1122	1735		1177	1729	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	65	42	26	59	45	16	16	148	73	15	188	78
RTOR Reduction (vph)	0	16	0	0	10	0	0	18	0	0	15	0
Lane Group Flow (vph)	0	117	0	0	110	0	16	203	0	15	251	0
Confl. Peds. (#/hr)			9	9			9		1	1		9
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	5%	0%	0%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.9			8.9		37.1	37.1		37.1	37.1	
Effective Green, g (s)		8.9			8.9		37.1	37.1		37.1	37.1	
Actuated g/C Ratio		0.15			0.15		0.64	0.64		0.64	0.64	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		235			234		717	1109		752	1105	
v/s Ratio Prot								0.12			c0.15	
v/s Ratio Perm		c0.08			0.07		0.01			0.01		
v/c Ratio		0.50			0.47		0.02	0.18		0.02	0.23	
Uniform Delay, d1		22.5			22.4		3.8	4.3		3.8	4.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.7			1.5		0.1	0.4		0.0	0.5	
Delay (s)		24.2			23.9		3.9	4.6		3.9	4.9	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		24.2			23.9			4.6			4.8	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			11.1									
HCM 2000 Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			58.0									
Intersection Capacity Utilization			49.3%									
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

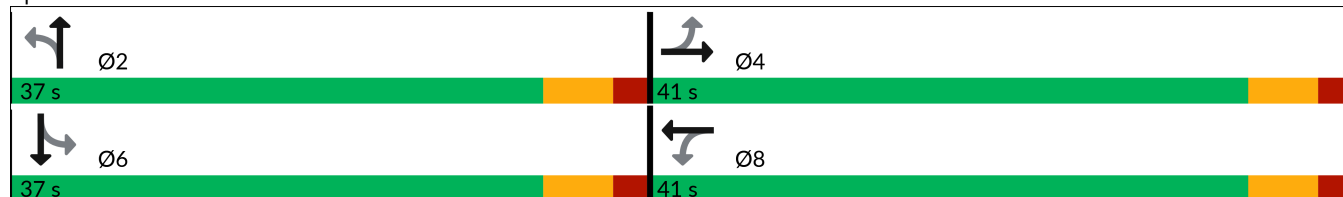
Queues
Background 2028 PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	118	229	71	211	7	77	53	129
Future Volume (vph)	118	229	71	211	7	77	53	129
Lane Group Flow (vph)	128	272	77	274	8	136	58	273
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.20	0.25	0.12	0.25	0.04	0.33	0.21	0.64
Control Delay (s/veh)	7.7	7.3	7.1	7.1	18.3	15.6	21.0	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	7.7	7.3	7.1	7.1	18.3	15.6	21.0	22.5
Queue Length 50th (m)	5.9	12.5	3.4	12.2	0.8	8.6	5.5	20.6
Queue Length 95th (m)	16.6	29.2	10.6	28.8	3.7	21.0	13.9	41.7
Internal Link Dist (m)		276.0		225.7		218.9		269.6
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	650	1086	653	1083	469	921	650	928
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.25	0.12	0.25	0.02	0.15	0.09	0.29

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 60.1
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave



60 Dean Ave
2: Madelaine Dr & Dean Ave

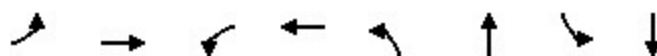
HCM Signalized Intersection Capacity Analysis
Background 2028 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	229	21	71	211	41	7	77	48	53	129	122
Future Volume (vph)	118	229	21	71	211	41	7	77	48	53	129	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1794	1855		1798	1844		1796	1738		1789	1729	
Flt Permitted	0.59	1.00		0.59	1.00		0.48	1.00		0.67	1.00	
Satd. Flow (perm)	1116	1855		1121	1844		910	1738		1262	1729	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	249	23	77	229	45	8	84	52	58	140	133
RTOR Reduction (vph)	0	3	0	0	7	0	0	37	0	0	57	0
Lane Group Flow (vph)	128	269	0	77	267	0	8	99	0	58	216	0
Confl. Peds. (#/hr)	8		5	5		8	8		11	11		8
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	3%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.1	35.1		35.1	35.1		13.0	13.0		13.0	13.0	
Effective Green, g (s)	35.1	35.1		35.1	35.1		13.0	13.0		13.0	13.0	
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.22	0.22		0.22	0.22	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	651	1083		654	1076		196	375		272	373	
v/s Ratio Prot		0.14			c0.14			0.06			c0.12	
v/s Ratio Perm	0.11			0.07			0.01			0.05		
v/c Ratio	0.20	0.25		0.12	0.25		0.04	0.26		0.21	0.58	
Uniform Delay, d1	5.9	6.1		5.6	6.1		18.6	19.6		19.3	21.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.5		0.4	0.6		0.1	0.4		0.4	2.2	
Delay (s)	6.5	6.6		6.0	6.6		18.7	20.0		19.7	23.3	
Level of Service	A	A		A	A		B	B		B	C	
Approach Delay (s/veh)		6.6			6.5			19.9			22.7	
Approach LOS		A			A			B			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			12.5									
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			60.1									
Intersection Capacity Utilization			103.9%									
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
3: Dean Ave & Library Driveway

HCM Unsignalized Intersection Capacity Analysis
Background 2028 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	24	183	13	23	218
Future Volume (Veh/h)	13	24	183	13	23	218
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	26	199	14	25	237
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			294		83	
pX, platoon unblocked						
vC, conflicting volume	498	211			218	
vC1, stage 1 conf vol	211					
vC2, stage 2 conf vol	287					
vCu, unblocked vol	498	211			218	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			98	
cM capacity (veh/h)	679	831			1358	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	40	213	25	237		
Volume Left	14	0	25	0		
Volume Right	26	14	0	0		
cSH	771	1700	1358	1700		
Volume to Capacity	0.05	0.13	0.02	0.14		
Queue Length 95th (m)	1.3	0.0	0.5	0.0		
Control Delay (s/veh)	9.9	0.0	7.7	0.0		
Lane LOS	A		A			
Approach Delay (s/veh)	9.9	0.0	0.7			
Approach LOS	A					
Intersection Summary						
Average Delay		1.1				
Intersection Capacity Utilization		27.6%		ICU Level of Service		A
Analysis Period (min)		15				



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔	↔	↔	↔	↔
Traffic Volume (vph)	64	13	8	5	10	144	6	130
Future Volume (vph)	64	13	8	5	10	144	6	130
Lane Group Flow (vph)	0	128	0	21	14	224	8	235
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.46		0.07	0.02	0.19	0.01	0.19
Control Delay (s/veh)		24.1		17.3	5.5	5.6	5.5	5.3
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		24.1		17.3	5.5	5.6	5.5	5.3
Queue Length 50th (m)		11.0		1.6	0.5	8.7	0.3	8.4
Queue Length 95th (m)		18.3		4.9	2.1	15.4	1.4	14.9
Internal Link Dist (m)		153.8		232.5		57.1		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		586		637	788	1209	798	1215
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.22		0.03	0.02	0.19	0.01	0.19

Intersection Summary

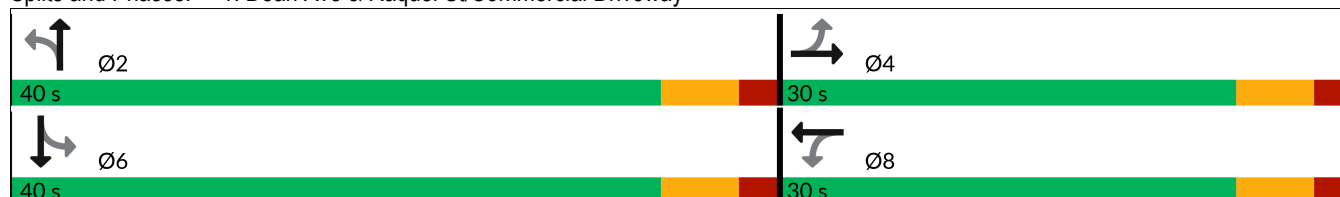
Cycle Length: 70

Actuated Cycle Length: 58

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	13	14	8	5	2	10	144	15	6	130	37
Future Volume (vph)	64	13	14	8	5	2	10	144	15	6	130	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.99		1.00	0.97	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1736			1805		1800	1773		1802	1774	
Flt Permitted		0.78			0.83		0.61	1.00		0.62	1.00	
Satd. Flow (perm)		1398			1536		1160	1773		1173	1774	
Peak-hour factor, PHF	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Adj. Flow (vph)	90	18	20	11	7	3	14	203	21	8	183	52
RTOR Reduction (vph)	0	12	0	0	3	0	0	4	0	0	10	0
Lane Group Flow (vph)	0	116	0	0	18	0	14	220	0	8	225	0
Confl. Peds. (#/hr)	3		4	4		3	3		2	2		3
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	6%	0%	0%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.1			9.1		38.2	38.2		38.2	38.2	
Effective Green, g (s)		9.1			9.1		38.2	38.2		38.2	38.2	
Actuated g/C Ratio		0.15			0.15		0.64	0.64		0.64	0.64	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		214			235		747	1142		755	1142	
v/s Ratio Prot								0.12			c0.13	
v/s Ratio Perm		c0.08			0.01		0.01			0.01		
v/c Ratio		0.54			0.08		0.02	0.19		0.01	0.20	
Uniform Delay, d1		23.2			21.5		3.8	4.3		3.8	4.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.8			0.1		0.0	0.4		0.0	0.4	
Delay (s)		26.0			21.7		3.8	4.7		3.8	4.7	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		26.0			21.7			4.6			4.7	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		9.5			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.26										
Actuated Cycle Length (s)		59.3			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		47.9%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

Queues
Background 2033 AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	60	215	34	197	6	71	45	30
Future Volume (vph)	60	215	34	197	6	71	45	30
Lane Group Flow (vph)	75	284	43	297	8	212	56	131
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.12	0.26	0.07	0.27	0.05	0.54	0.26	0.34
Control Delay (s/veh)	6.0	6.4	5.6	6.2	19.5	16.5	23.4	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	6.0	6.4	5.6	6.2	19.5	16.5	23.4	10.9
Queue Length 50th (m)	2.9	11.7	1.6	11.8	0.8	10.3	5.4	3.6
Queue Length 95th (m)	7.8	22.6	5.0	22.9	3.3	22.0	12.3	12.6
Internal Link Dist (m)		276.0		225.7		218.9		271.3
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	643	1108	661	1100	486	917	595	898
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.26	0.07	0.27	0.02	0.23	0.09	0.15

Intersection Summary

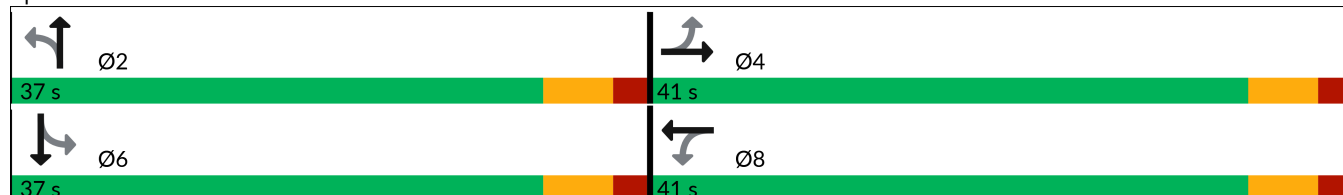
Cycle Length: 78

Actuated Cycle Length: 58.1

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave



60 Dean Ave
2: Madeline Dr & Dean Ave

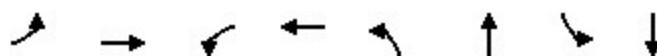
HCM Signalized Intersection Capacity Analysis
Background 2033 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	215	12	34	197	41	6	71	98	45	30	74
Future Volume (vph)	60	215	12	34	197	41	6	71	98	45	30	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.91		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1754	1837		1785	1816		1287	1629		1740	1602	
Flt Permitted	0.58	1.00		0.59	1.00		0.67	1.00		0.61	1.00	
Satd. Flow (perm)	1069	1837		1100	1816		912	1629		1117	1602	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	75	269	15	42	246	51	8	89	122	56	38	92
RTOR Reduction (vph)	0	2	0	0	7	0	0	86	0	0	75	0
Lane Group Flow (vph)	75	282	0	43	290	0	8	126	0	56	56	0
Confl. Peds. (#/hr)	12		15	15		12	2		10	10		2
Heavy Vehicles (%)	2%	2%	10%	0%	1%	3%	40%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.0	35.0		35.0	35.0		11.1	11.1		11.1	11.1	
Effective Green, g (s)	35.0	35.0		35.0	35.0		11.1	11.1		11.1	11.1	
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.19	0.19		0.19	0.19	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	643	1106		662	1093		174	311		213	306	
v/s Ratio Prot		0.15			c0.16			c0.08			0.03	
v/s Ratio Perm	0.07			0.04			0.01			0.05		
v/c Ratio	0.12	0.25		0.06	0.27		0.05	0.41		0.26	0.18	
Uniform Delay, d1	4.9	5.4		4.8	5.5		19.2	20.6		20.0	19.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.6		0.2	0.6		0.1	0.9		0.7	0.3	
Delay (s)	5.3	6.0		5.0	6.1		19.3	21.5		20.7	20.0	
Level of Service	A	A		A	A		B	C		C	B	
Approach Delay (s/veh)		5.8			5.9			21.4			20.2	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)	11.4			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.30											
Actuated Cycle Length (s)	58.1			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	87.9%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

60 Dean Ave
3: Dean Ave & Library Driveway

HCM Unsignalized Intersection Capacity Analysis
Background 2033 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	168	2	7	145
Future Volume (Veh/h)	0	2	168	2	7	145
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	2	202	2	8	175
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			295		81	
pX, platoon unblocked						
vC, conflicting volume	399	208			209	
vC1, stage 1 conf vol	208					
vC2, stage 2 conf vol	191					
vCu, unblocked vol	399	208			209	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	740	834			1368	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	2	204	8	175		
Volume Left	0	0	8	0		
Volume Right	2	2	0	0		
cSH	834	1700	1368	1700		
Volume to Capacity	0.00	0.12	0.01	0.10		
Queue Length 95th (m)	0.1	0.0	0.1	0.0		
Control Delay (s/veh)	9.3	0.0	7.6	0.0		
Lane LOS	A		A			
Approach Delay (s/veh)	9.3	0.0	0.3			
Approach LOS	A					
Intersection Summary						
Average Delay		0.2				
Intersection Capacity Utilization		19.6%		ICU Level of Service	A	
Analysis Period (min)		15				



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔	↔	↔	↔	↔
Traffic Volume (vph)	63	37	52	40	15	151	13	192
Future Volume (vph)	63	37	52	40	15	151	13	192
Lane Group Flow (vph)	0	142	0	120	17	245	15	303
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.45		0.39	0.02	0.21	0.02	0.26
Control Delay (s/veh)		22.4		22.1	5.7	5.2	5.6	5.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		22.4		22.1	5.7	5.2	5.6	5.7
Queue Length 50th (m)		11.9		10.4	0.6	8.2	0.5	11.1
Queue Length 95th (m)		25.3		22.4	3.0	20.1	2.7	25.8
Internal Link Dist (m)		153.8		232.5		58.8		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		651		643	728	1185	774	1176
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.22		0.19	0.02	0.21	0.02	0.26

Intersection Summary

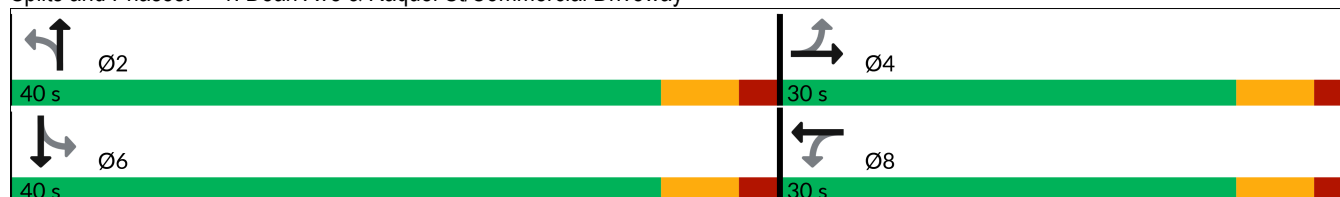
Cycle Length: 70

Actuated Cycle Length: 57.1

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	37	25	52	40	14	15	151	64	13	192	75
Future Volume (vph)	63	37	25	52	40	14	15	151	64	13	192	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.97			0.98		1.00	0.96		1.00	0.96	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1792			1795		1791	1742		1803	1732	
Flt Permitted		0.83			0.82		0.58	1.00		0.61	1.00	
Satd. Flow (perm)		1524			1516		1085	1742		1152	1732	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	72	42	28	59	45	16	17	172	73	15	218	85
RTOR Reduction (vph)	0	16	0	0	10	0	0	15	0	0	14	0
Lane Group Flow (vph)	0	126	0	0	110	0	17	230	0	15	289	0
Confl. Peds. (#/hr)			9	9			9		1	1		9
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	5%	0%	0%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.2			9.2		37.2	37.2		37.2	37.2	
Effective Green, g (s)		9.2			9.2		37.2	37.2		37.2	37.2	
Actuated g/C Ratio		0.16			0.16		0.64	0.64		0.64	0.64	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		240			238		691	1109		733	1103	
v/s Ratio Prot								0.13			c0.17	
v/s Ratio Perm		c0.08			0.07		0.02			0.01		
v/c Ratio		0.52			0.46		0.02	0.21		0.02	0.26	
Uniform Delay, d1		22.6			22.4		3.9	4.4		3.9	4.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.1			1.4		0.1	0.4		0.1	0.6	
Delay (s)		24.7			23.8		4.0	4.9		4.0	5.2	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		24.7			23.8			4.8			5.1	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			11.0				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			58.4				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			49.8%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

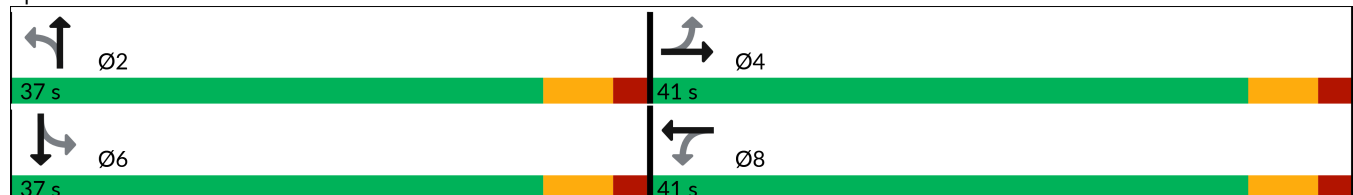
Queues
Background 2033 PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	127	251	78	231	9	90	62	152
Future Volume (vph)	127	251	78	231	9	90	62	152
Lane Group Flow (vph)	138	298	85	299	10	159	67	320
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.22	0.28	0.14	0.28	0.06	0.36	0.23	0.69
Control Delay (s/veh)	8.9	8.4	8.2	8.2	18.0	15.8	20.5	24.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.9	8.4	8.2	8.2	18.0	15.8	20.5	24.6
Queue Length 50th (m)	7.1	15.4	4.2	15.0	0.9	10.8	6.5	26.6
Queue Length 95th (m)	19.8	35.9	12.8	35.3	4.2	24.3	15.5	50.1
Internal Link Dist (m)		276.0		225.7		218.9		269.6
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	619	1057	621	1055	384	897	620	905
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.28	0.14	0.28	0.03	0.18	0.11	0.35

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 61.8
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave



60 Dean Ave
2: Madelaine Dr & Dean Ave

HCM Signalized Intersection Capacity Analysis
Background 2033 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	251	23	78	231	44	9	90	56	62	152	143
Future Volume (vph)	127	251	23	78	231	44	9	90	56	62	152	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1794	1855		1798	1846		1796	1737		1789	1729	
Flt Permitted	0.58	1.00		0.58	1.00		0.40	1.00		0.66	1.00	
Satd. Flow (perm)	1091	1855		1094	1846		764	1737		1236	1729	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	273	25	85	251	48	10	98	61	67	165	155
RTOR Reduction (vph)	0	3	0	0	7	0	0	37	0	0	55	0
Lane Group Flow (vph)	138	295	0	85	292	0	10	122	0	67	265	0
Confl. Peds. (#/hr)	8		5	5		8	8		11	11		8
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	3%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.1	35.1		35.1	35.1		14.6	14.6		14.6	14.6	
Effective Green, g (s)	35.1	35.1		35.1	35.1		14.6	14.6		14.6	14.6	
Actuated g/C Ratio	0.57	0.57		0.57	0.57		0.24	0.24		0.24	0.24	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	620	1055		622	1050		180	411		292	409	
v/s Ratio Prot		c0.16			0.16			0.07			c0.15	
v/s Ratio Perm	0.13			0.08			0.01			0.05		
v/c Ratio	0.22	0.28		0.14	0.28		0.06	0.30		0.23	0.65	
Uniform Delay, d1	6.6	6.8		6.2	6.8		18.2	19.3		19.0	21.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.7		0.5	0.7		0.1	0.4		0.4	3.5	
Delay (s)	7.4	7.5		6.7	7.5		18.3	19.7		19.4	24.8	
Level of Service	A	A		A	A		B	B		B	C	
Approach Delay (s/veh)		7.5			7.3			19.7			23.8	
Approach LOS		A			A			B			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			13.5				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			61.7				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			105.8%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

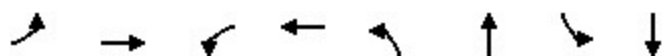
60 Dean Ave
3: Dean Ave & Library Driveway

HCM Unsignalized Intersection Capacity Analysis
Background 2033 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	24	206	13	23	246
Future Volume (Veh/h)	13	24	206	13	23	246
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	26	224	14	25	267
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			294		83	
pX, platoon unblocked						
vC, conflicting volume	553	236			243	
vC1, stage 1 conf vol	236					
vC2, stage 2 conf vol	317					
vCu, unblocked vol	553	236			243	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			98	
cM capacity (veh/h)	653	805			1330	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	40	238	25	267		
Volume Left	14	0	25	0		
Volume Right	26	14	0	0		
cSH	744	1700	1330	1700		
Volume to Capacity	0.05	0.14	0.02	0.16		
Queue Length 95th (m)	1.4	0.0	0.5	0.0		
Control Delay (s/veh)	10.1	0.0	7.8	0.0		
Lane LOS	B		A			
Approach Delay (s/veh)	10.1	0.0	0.7			
Approach LOS	B					
Intersection Summary						
Average Delay		1.1				
Intersection Capacity Utilization		28.6%		ICU Level of Service		A
Analysis Period (min)		15				

1: Dean Ave & Raquel St/Commercial Driveway

Background 2038 AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔	↔	↔	↔	↔
Traffic Volume (vph)	69	13	8	5	11	183	6	168
Future Volume (vph)	69	13	8	5	11	183	6	168
Lane Group Flow (vph)	0	136	0	21	15	279	8	293
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.48		0.07	0.02	0.23	0.01	0.24
Control Delay (s/veh)		24.4		17.3	5.6	6.1	5.7	5.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		24.4		17.3	5.6	6.1	5.7	5.9
Queue Length 50th (m)		11.9		1.6	0.5	11.4	0.3	11.3
Queue Length 95th (m)		19.2		4.9	2.2	19.7	1.5	19.4
Internal Link Dist (m)		153.8		232.5		57.1		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		586		642	743	1203	753	1212
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.23		0.03	0.02	0.23	0.01	0.24

Intersection Summary

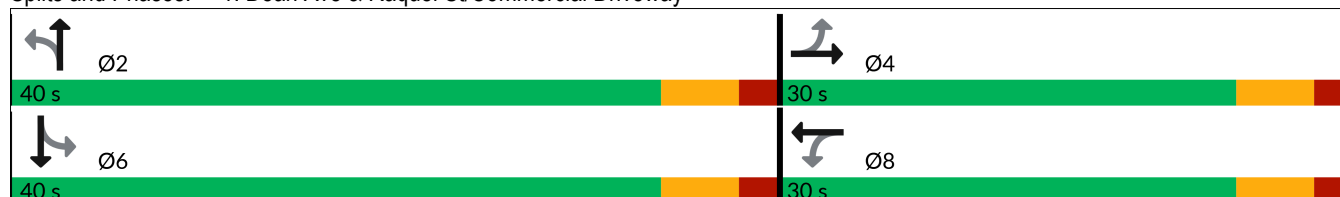
Cycle Length: 70

Actuated Cycle Length: 57.8

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	13	15	8	5	2	11	183	15	6	168	40
Future Volume (vph)	69	13	15	8	5	2	11	183	15	6	168	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.99		1.00	0.97	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1735			1806		1800	1777		1802	1784	
Flt Permitted		0.78			0.83		0.58	1.00		0.59	1.00	
Satd. Flow (perm)		1393			1541		1101	1777		1116	1784	
Peak-hour factor, PHF	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Adj. Flow (vph)	97	18	21	11	7	3	15	258	21	8	237	56
RTOR Reduction (vph)	0	12	0	0	3	0	0	3	0	0	9	0
Lane Group Flow (vph)	0	124	0	0	18	0	15	276	0	8	284	0
Confl. Peds. (#/hr)	3		4	4		3	3		2	2		3
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	6%	0%	0%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.3			9.3		37.8	37.8		37.8	37.8	
Effective Green, g (s)		9.3			9.3		37.8	37.8		37.8	37.8	
Actuated g/C Ratio		0.16			0.16		0.64	0.64		0.64	0.64	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		219			242		704	1136		713	1141	
v/s Ratio Prot								0.16			c0.16	
v/s Ratio Perm		c0.09			0.01		0.01			0.01		
v/c Ratio		0.57			0.08		0.02	0.24		0.01	0.25	
Uniform Delay, d1		23.0			21.2		3.9	4.5		3.9	4.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.3			0.1		0.1	0.5		0.0	0.5	
Delay (s)		26.4			21.4		3.9	5.1		3.9	5.1	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		26.4			21.4			5.0			5.1	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		9.3										
HCM 2000 Volume to Capacity ratio		0.31										
Actuated Cycle Length (s)		59.1										
Intersection Capacity Utilization		47.9%										
Analysis Period (min)		15										
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

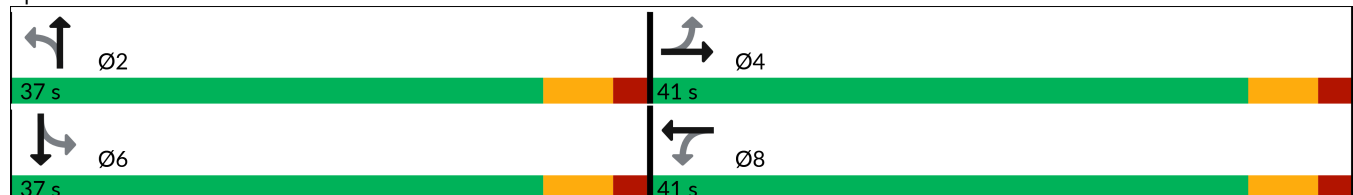
Queues
Background 2038 AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	64	231	36	212	8	92	57	38
Future Volume (vph)	64	231	36	212	8	92	57	38
Lane Group Flow (vph)	80	304	45	320	10	275	71	163
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.13	0.28	0.07	0.30	0.05	0.64	0.39	0.38
Control Delay (s/veh)	7.1	7.5	6.7	7.3	18.8	20.2	26.5	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	7.1	7.5	6.7	7.3	18.8	20.2	26.5	10.1
Queue Length 50th (m)	3.4	14.0	1.8	14.3	0.9	17.1	7.1	4.5
Queue Length 95th (m)	9.5	28.4	6.1	29.0	3.7	30.9	15.1	14.0
Internal Link Dist (m)		276.0		225.7		218.9		271.3
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	613	1081	632	1071	460	896	450	888
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.28	0.07	0.30	0.02	0.31	0.16	0.18

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 59.8
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave



60 Dean Ave
2: Madelaine Dr & Dean Ave

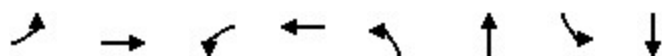
HCM Signalized Intersection Capacity Analysis
Background 2038 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	231	12	36	212	44	8	92	128	57	38	92
Future Volume (vph)	64	231	12	36	212	44	8	92	128	57	38	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.91		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1839		1785	1816		1287	1628		1741	1603	
Flt Permitted	0.57	1.00		0.57	1.00		0.65	1.00		0.47	1.00	
Satd. Flow (perm)	1046	1839		1080	1816		886	1628		870	1603	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	80	289	15	45	265	55	10	115	160	71	48	115
RTOR Reduction (vph)	0	2	0	0	7	0	0	84	0	0	91	0
Lane Group Flow (vph)	80	302	0	45	313	0	10	191	0	71	72	0
Confl. Peds. (#/hr)	12		15	15		12	2		10	10		2
Heavy Vehicles (%)	2%	2%	10%	0%	1%	3%	40%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.1	35.1		35.1	35.1		12.7	12.7		12.7	12.7	
Effective Green, g (s)	35.1	35.1		35.1	35.1		12.7	12.7		12.7	12.7	
Actuated g/C Ratio	0.59	0.59		0.59	0.59		0.21	0.21		0.21	0.21	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	613	1079		633	1065		188	345		184	340	
v/s Ratio Prot		0.16			c0.17			c0.12			0.05	
v/s Ratio Perm	0.08			0.04			0.01			0.08		
v/c Ratio	0.13	0.28		0.07	0.29		0.05	0.55		0.39	0.21	
Uniform Delay, d1	5.5	6.1		5.3	6.2		18.8	21.0		20.2	19.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.6		0.2	0.7		0.1	1.9		1.3	0.3	
Delay (s)	6.0	6.8		5.5	6.9		18.9	22.9		21.5	19.7	
Level of Service	A	A		A	A		B	C		C	B	
Approach Delay (s/veh)		6.6			6.7			22.8			20.3	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			12.8			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			59.8			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			93.4%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
3: Dean Ave & Library Driveway

HCM Unsignalized Intersection Capacity Analysis
Background 2038 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	207	2	7	183
Future Volume (Veh/h)	0	2	207	2	7	183
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	2	249	2	8	220
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			295		81	
pX, platoon unblocked	1.00					
vC, conflicting volume	491	255			256	
vC1, stage 1 conf vol	255					
vC2, stage 2 conf vol	236					
vCu, unblocked vol	487	255			256	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	692	785			1315	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	2	251	8	220		
Volume Left	0	0	8	0		
Volume Right	2	2	0	0		
cSH	785	1700	1315	1700		
Volume to Capacity	0.00	0.15	0.01	0.13		
Queue Length 95th (m)	0.1	0.0	0.1	0.0		
Control Delay (s/veh)	9.6	0.0	7.8	0.0		
Lane LOS	A		A			
Approach Delay (s/veh)	9.6	0.0	0.3			
Approach LOS	A					
Intersection Summary						
Average Delay		0.2				
Intersection Capacity Utilization		21.4%		ICU Level of Service	A	
Analysis Period (min)		15				



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔	↔	↔	↔	↔
Traffic Volume (vph)	67	37	52	40	16	193	13	244
Future Volume (vph)	67	37	52	40	16	193	13	244
Lane Group Flow (vph)	0	149	0	120	18	292	15	369
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.47		0.39	0.03	0.25	0.02	0.31
Control Delay (s/veh)		22.5		22.0	5.8	5.8	5.7	6.4
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		22.5		22.0	5.8	5.8	5.7	6.4
Queue Length 50th (m)		12.5		10.4	0.7	11.0	0.5	15.0
Queue Length 95th (m)		26.2		22.4	3.2	25.7	2.8	34.0
Internal Link Dist (m)		153.8		232.5		58.8		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		648		636	685	1185	739	1177
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.23		0.19	0.03	0.25	0.02	0.31

Intersection Summary

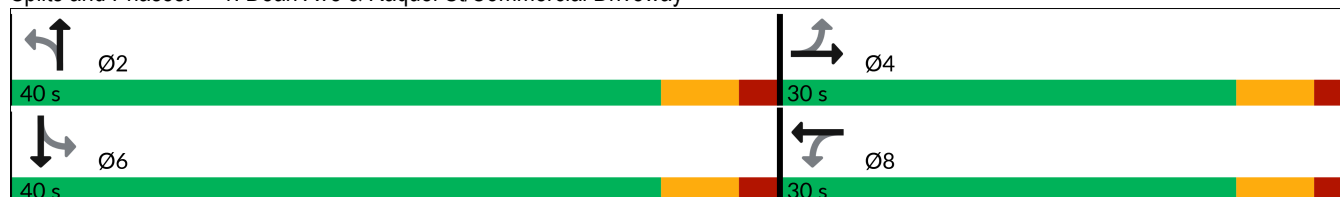
Cycle Length: 70

Actuated Cycle Length: 57.3

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	37	27	52	40	14	16	193	64	13	244	81
Future Volume (vph)	67	37	27	52	40	14	16	193	64	13	244	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.97			0.98		1.00	0.96		1.00	0.96	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1789			1795		1793	1753		1803	1741	
Flt Permitted		0.83			0.82		0.54	1.00		0.58	1.00	
Satd. Flow (perm)		1518			1504		1022	1753		1103	1741	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	76	42	31	59	45	16	18	219	73	15	277	92
RTOR Reduction (vph)	0	18	0	0	10	0	0	12	0	0	12	0
Lane Group Flow (vph)	0	131	0	0	110	0	18	280	0	15	357	0
Confl. Peds. (#/hr)			9	9			9		1	1		9
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	5%	0%	0%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.4			9.4		37.2	37.2		37.2	37.2	
Effective Green, g (s)		9.4			9.4		37.2	37.2		37.2	37.2	
Actuated g/C Ratio		0.16			0.16		0.63	0.63		0.63	0.63	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		243			241		648	1112		700	1105	
v/s Ratio Prot								0.16			c0.21	
v/s Ratio Perm		c0.09			0.07		0.02			0.01		
v/c Ratio		0.54			0.46		0.03	0.25		0.02	0.32	
Uniform Delay, d1		22.6			22.3		4.0	4.7		4.0	4.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.4			1.4		0.1	0.5		0.1	0.8	
Delay (s)		25.1			23.7		4.1	5.2		4.0	5.7	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		25.1			23.7			5.1			5.6	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.7				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			58.6				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			50.1%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

Queues
Background 2038 PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	136	270	84	249	11	116	79	198
Future Volume (vph)	136	270	84	249	11	116	79	198
Lane Group Flow (vph)	148	320	91	322	12	206	86	414
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.26	0.32	0.16	0.32	0.08	0.39	0.26	0.77
Control Delay (s/veh)	11.9	11.0	10.9	10.7	17.2	15.9	19.5	27.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.9	11.0	10.9	10.7	17.2	15.9	19.5	27.5
Queue Length 50th (m)	9.4	20.4	5.4	20.0	1.1	15.8	8.5	39.9
Queue Length 95th (m)	26.6	48.2	16.9	47.7	4.6	31.0	18.4	68.4
Internal Link Dist (m)		276.0		225.7		218.9		269.6
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	559	993	561	992	262	846	555	854
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.32	0.16	0.32	0.05	0.24	0.15	0.48

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 66.1
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave

	Ø2		Ø4
37 s		41 s	
	Ø6		Ø8
37 s		41 s	

60 Dean Ave
2: Madelaine Dr & Dean Ave

HCM Signalized Intersection Capacity Analysis
Background 2038 PM Peak Hour

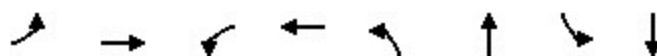
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	270	25	84	249	47	11	116	74	79	198	183
Future Volume (vph)	136	270	25	84	249	47	11	116	74	79	198	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1794	1855		1798	1846		1797	1736		1789	1730	
Flt Permitted	0.55	1.00		0.56	1.00		0.29	1.00		0.62	1.00	
Satd. Flow (perm)	1047	1855		1053	1846		556	1736		1177	1730	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	148	293	27	91	271	51	12	126	80	86	215	199
RTOR Reduction (vph)	0	4	0	0	7	0	0	35	0	0	51	0
Lane Group Flow (vph)	148	316	0	91	315	0	12	171	0	86	363	0
Confl. Peds. (#/hr)	8		5	5		8	8		11	11		8
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	3%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.3	35.3		35.3	35.3		18.7	18.7		18.7	18.7	
Effective Green, g (s)	35.3	35.3		35.3	35.3		18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.53	0.53		0.53	0.53		0.28	0.28		0.28	0.28	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	559	992		563	987		157	491		333	490	
v/s Ratio Prot		c0.17			0.17			0.10			c0.21	
v/s Ratio Perm	0.14			0.09			0.02			0.07		
v/c Ratio	0.26	0.32		0.16	0.32		0.08	0.35		0.26	0.74	
Uniform Delay, d1	8.3	8.6		7.8	8.6		17.3	18.8		18.3	21.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.8		0.6	0.9		0.2	0.4		0.4	6.0	
Delay (s)	9.5	9.5		8.4	9.5		17.5	19.2		18.7	27.4	
Level of Service	A	A		A	A		B	B		B	C	
Approach Delay (s/veh)		9.5			9.2			19.1			25.9	
Approach LOS		A			A			B			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			15.9			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			66.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			109.6%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
3: Dean Ave & Library Driveway

HCM Unsignalized Intersection Capacity Analysis
Background 2038 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	24	249	13	23	301
Future Volume (Veh/h)	13	24	249	13	23	301
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	26	271	14	25	327
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			294		83	
pX, platoon unblocked	0.97					
vC, conflicting volume	660	283			290	
vC1, stage 1 conf vol	283					
vC2, stage 2 conf vol	377					
vCu, unblocked vol	635	283			290	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			98	
cM capacity (veh/h)	607	758			1278	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	40	285	25	327		
Volume Left	14	0	25	0		
Volume Right	26	14	0	0		
cSH	697	1700	1278	1700		
Volume to Capacity	0.06	0.17	0.02	0.19		
Queue Length 95th (m)	1.5	0.0	0.5	0.0		
Control Delay (s/veh)	10.5	0.0	7.9	0.0		
Lane LOS	B		A			
Approach Delay (s/veh)	10.5	0.0	0.6			
Approach LOS	B					
Intersection Summary						
Average Delay		0.9				
Intersection Capacity Utilization		29.1%		ICU Level of Service		A
Analysis Period (min)		15				

Appendix F – Synchro Analysis Output – Total Traffic Volumes



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔	↔	↔	↔	↔
Traffic Volume (vph)	58	13	8	5	9	138	6	115
Future Volume (vph)	58	13	8	5	9	138	6	115
Lane Group Flow (vph)	0	118	0	21	13	215	8	210
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.43		0.07	0.02	0.18	0.01	0.17
Control Delay (s/veh)		23.8		17.5	5.2	5.4	5.2	4.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		23.8		17.5	5.2	5.4	5.2	4.9
Queue Length 50th (m)		10.0		1.6	0.5	8.2	0.3	7.1
Queue Length 95th (m)		17.0		5.0	1.9	14.2	1.4	12.7
Internal Link Dist (m)		153.8		232.5		57.1		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		586		630	813	1218	811	1225
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.20		0.03	0.02	0.18	0.01	0.17

Intersection Summary

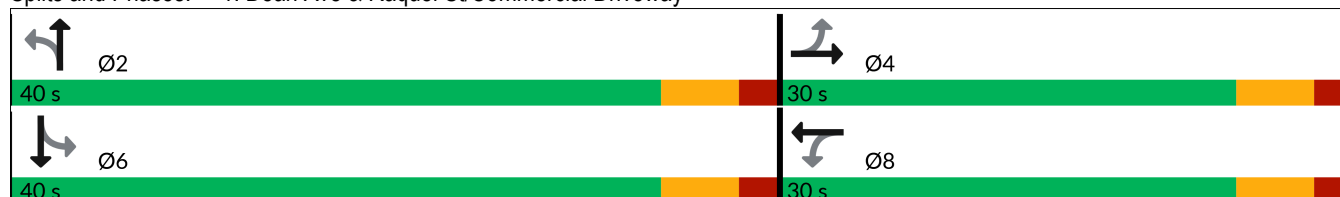
Cycle Length: 70

Actuated Cycle Length: 58.3

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	13	13	8	5	2	9	138	15	6	115	34
Future Volume (vph)	58	13	13	8	5	2	9	138	15	6	115	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.99		1.00	0.97	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1738			1805		1800	1772		1802	1772	
Flt Permitted		0.78			0.82		0.63	1.00		0.62	1.00	
Satd. Flow (perm)		1402			1525		1187	1772		1183	1772	
Peak-hour factor, PHF	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Adj. Flow (vph)	82	18	18	11	7	3	13	194	21	8	162	48
RTOR Reduction (vph)	0	12	0	0	3	0	0	4	0	0	10	0
Lane Group Flow (vph)	0	106	0	0	18	0	13	211	0	8	200	0
Confl. Peds. (#/hr)	3		4	4		3	3		2	2		3
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	6%	0%	0%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.8			8.8		38.7	38.7		38.7	38.7	
Effective Green, g (s)		8.8			8.8		38.7	38.7		38.7	38.7	
Actuated g/C Ratio		0.15			0.15		0.65	0.65		0.65	0.65	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		207			225		772	1152		769	1152	
v/s Ratio Prot							c0.12				0.11	
v/s Ratio Perm		c0.08			0.01		0.01			0.01		
v/c Ratio		0.51			0.08		0.02	0.18		0.01	0.17	
Uniform Delay, d1		23.4			21.9		3.7	4.1		3.7	4.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.1			0.2		0.0	0.4		0.0	0.3	
Delay (s)		25.5			22.0		3.7	4.5		3.7	4.4	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		25.5			22.0			4.4			4.4	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		9.3			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.24										
Actuated Cycle Length (s)		59.5			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		47.9%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

Queues
Total 2028 AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	60	196	31	180	5	61	43	29
Future Volume (vph)	60	196	31	180	5	61	43	29
Lane Group Flow (vph)	75	259	39	274	6	180	54	136
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.11	0.23	0.06	0.25	0.04	0.47	0.25	0.36
Control Delay (s/veh)	5.5	5.8	5.1	5.7	19.8	14.4	23.4	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	5.5	5.8	5.1	5.7	19.8	14.4	23.4	11.0
Queue Length 50th (m)	2.9	10.5	1.5	10.6	0.6	7.3	5.2	3.4
Queue Length 95th (m)	7.2	19.0	4.3	19.3	2.8	18.2	12.0	12.7
Internal Link Dist (m)		276.0		225.7		218.9		271.3
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	662	1119	682	1109	489	924	633	907
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.23	0.06	0.25	0.01	0.19	0.09	0.15

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 57.5
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave

 Ø2	 Ø4
37 s	41 s
 Ø6	 Ø8
37 s	41 s

60 Dean Ave
2: Madelaine Dr & Dean Ave

HCM Signalized Intersection Capacity Analysis
Total 2028 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	196	11	31	180	39	5	61	83	43	29	80
Future Volume (vph)	60	196	11	31	180	39	5	61	83	43	29	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.91		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1754	1836		1785	1814		1287	1630		1740	1598	
Flt Permitted	0.59	1.00		0.60	1.00		0.67	1.00		0.64	1.00	
Satd. Flow (perm)	1091	1836		1126	1814		908	1630		1179	1598	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	75	245	14	39	225	49	6	76	104	54	36	100
RTOR Reduction (vph)	0	2	0	0	7	0	0	85	0	0	82	0
Lane Group Flow (vph)	75	257	0	39	267	0	6	95	0	54	54	0
Confl. Peds. (#/hr)	12		15	15		12	2		10	10		2
Heavy Vehicles (%)	2%	2%	10%	0%	1%	3%	40%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.0	35.0		35.0	35.0		10.5	10.5		10.5	10.5	
Effective Green, g (s)	35.0	35.0		35.0	35.0		10.5	10.5		10.5	10.5	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.18	0.18		0.18	0.18	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	664	1117		685	1104		165	297		215	291	
v/s Ratio Prot		0.14			c0.15			c0.06			0.03	
v/s Ratio Perm	0.07			0.03			0.01			0.05		
v/c Ratio	0.11	0.23		0.06	0.24		0.04	0.32		0.25	0.19	
Uniform Delay, d1	4.7	5.1		4.6	5.2		19.3	20.4		20.1	19.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.5		0.2	0.5		0.1	0.6		0.6	0.3	
Delay (s)	5.1	5.6		4.7	5.7		19.4	21.0		20.7	20.2	
Level of Service	A	A		A	A		B	C		C	C	
Approach Delay (s/veh)		5.5			5.6			21.0			20.4	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)	11.1			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.26											
Actuated Cycle Length (s)	57.5			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	86.9%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

60 Dean Ave
3: Dean Ave & Shared Site Access

HCM Unsignalized Intersection Capacity Analysis
Total 2028 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	22	15	148	9	11	125
Future Volume (Veh/h)	22	15	148	9	11	125
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	27	18	178	11	13	151
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			295		81	
pX, platoon unblocked						
vC, conflicting volume	366	189			194	
vC1, stage 1 conf vol	189					
vC2, stage 2 conf vol	177					
vCu, unblocked vol	366	189			194	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			99	
cM capacity (veh/h)	757	855			1385	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	45	189	13	151		
Volume Left	27	0	13	0		
Volume Right	18	11	0	0		
cSH	793	1700	1385	1700		
Volume to Capacity	0.06	0.11	0.01	0.09		
Queue Length 95th (m)	1.4	0.0	0.2	0.0		
Control Delay (s/veh)	9.8	0.0	7.6	0.0		
Lane LOS	A		A			
Approach Delay (s/veh)	9.8	0.0	0.6			
Approach LOS	A					
Intersection Summary						
Average Delay		1.4				
Intersection Capacity Utilization		19.1%		ICU Level of Service		A
Analysis Period (min)		15				

60 Dean Ave
1: Dean Ave & Raquel St/Commercial Driveway

Queues
Total 2028 PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	57	37	52	40	14	137	13	176
Future Volume (vph)	57	37	52	40	14	137	13	176
Lane Group Flow (vph)	0	133	0	120	16	229	15	278
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.43		0.39	0.02	0.19	0.02	0.24
Control Delay (s/veh)		22.0		22.3	5.4	4.8	5.4	5.4
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		22.0		22.3	5.4	4.8	5.4	5.4
Queue Length 50th (m)		11.0		10.4	0.6	7.2	0.5	9.9
Queue Length 95th (m)		23.8		22.5	2.8	17.7	2.6	22.5
Internal Link Dist (m)		153.8		232.5		58.8		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		659		652	748	1188	789	1181
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.20		0.18	0.02	0.19	0.02	0.24

Intersection Summary

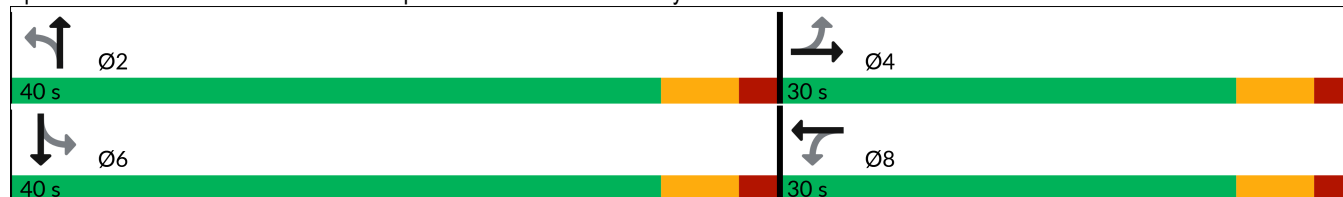
Cycle Length: 70

Actuated Cycle Length: 56.8

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	37	23	52	40	14	14	137	64	13	176	69
Future Volume (vph)	57	37	23	52	40	14	14	137	64	13	176	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.97			0.98		1.00	0.95		1.00	0.96	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1795			1795		1791	1738		1803	1732	
Flt Permitted		0.84			0.83		0.59	1.00		0.62	1.00	
Satd. Flow (perm)		1535			1531		1110	1738		1169	1732	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	65	42	26	59	45	16	16	156	73	15	200	78
RTOR Reduction (vph)	0	16	0	0	10	0	0	17	0	0	14	0
Lane Group Flow (vph)	0	117	0	0	110	0	16	212	0	15	264	0
Confl. Peds. (#/hr)			9	9			9		1	1		9
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	5%	0%	0%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.9			8.9		37.1	37.1		37.1	37.1	
Effective Green, g (s)		8.9			8.9		37.1	37.1		37.1	37.1	
Actuated g/C Ratio		0.15			0.15		0.64	0.64		0.64	0.64	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		235			234		710	1111		747	1107	
v/s Ratio Prot								0.12			c0.15	
v/s Ratio Perm		c0.08			0.07		0.01			0.01		
v/c Ratio		0.50			0.47		0.02	0.19		0.02	0.24	
Uniform Delay, d1		22.5			22.4		3.8	4.3		3.8	4.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.7			1.5		0.1	0.4		0.0	0.5	
Delay (s)		24.2			23.9		3.9	4.7		3.9	5.0	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		24.2			23.9			4.6			4.9	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.9									
HCM 2000 Volume to Capacity ratio			0.29									
Actuated Cycle Length (s)			58.0									
Intersection Capacity Utilization			49.3%									
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

Queues
Total 2028 PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	131	229	71	211	7	79	55	131
Future Volume (vph)	131	229	71	211	7	79	55	131
Lane Group Flow (vph)	142	272	77	277	8	138	60	283
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.22	0.25	0.12	0.26	0.04	0.33	0.22	0.65
Control Delay (s/veh)	8.1	7.4	7.3	7.2	18.3	15.7	20.9	22.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.1	7.4	7.3	7.2	18.3	15.7	20.9	22.7
Queue Length 50th (m)	6.7	12.8	3.4	12.5	0.8	8.9	5.8	21.5
Queue Length 95th (m)	18.7	29.9	10.8	29.6	3.6	21.4	14.3	42.9
Internal Link Dist (m)		276.0		225.7		218.9		269.6
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	646	1081	650	1077	449	916	647	924
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.25	0.12	0.26	0.02	0.15	0.09	0.31

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 60.4
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave

	Ø2		Ø4
37 s		41 s	
	Ø6		Ø8
37 s		41 s	

60 Dean Ave
2: Madelaine Dr & Dean Ave

HCM Signalized Intersection Capacity Analysis
Total 2028 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	229	21	71	211	44	7	79	48	55	131	130
Future Volume (vph)	131	229	21	71	211	44	7	79	48	55	131	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1794	1855		1798	1841		1796	1739		1789	1725	
Flt Permitted	0.59	1.00		0.59	1.00		0.46	1.00		0.67	1.00	
Satd. Flow (perm)	1113	1855		1120	1841		874	1739		1260	1725	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	249	23	77	229	48	8	86	52	60	142	141
RTOR Reduction (vph)	0	3	0	0	8	0	0	36	0	0	59	0
Lane Group Flow (vph)	142	269	0	77	269	0	8	102	0	60	224	0
Confl. Peds. (#/hr)	8		5	5		8	8		11	11		8
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	3%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.1	35.1		35.1	35.1		13.2	13.2		13.2	13.2	
Effective Green, g (s)	35.1	35.1		35.1	35.1		13.2	13.2		13.2	13.2	
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.22	0.22		0.22	0.22	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	647	1079		651	1071		191	380		275	377	
v/s Ratio Prot		0.14			c0.15			0.06			c0.13	
v/s Ratio Perm	0.13			0.07			0.01			0.05		
v/c Ratio	0.22	0.25		0.12	0.25		0.04	0.27		0.22	0.59	
Uniform Delay, d1	6.0	6.2		5.7	6.2		18.6	19.5		19.3	21.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.6		0.4	0.6		0.1	0.4		0.4	2.5	
Delay (s)	6.8	6.7		6.0	6.7		18.7	19.9		19.7	23.6	
Level of Service	A	A		A	A		B	B		B	C	
Approach Delay (s/veh)		6.7			6.6			19.9			23.0	
Approach LOS		A			A			B			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			12.6				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			60.3				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			104.4%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
3: Dean Ave & Shared Site Access

HCM Unsignalized Intersection Capacity Analysis
Total 2028 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	31	183	31	34	218
Future Volume (Veh/h)	25	31	183	31	34	218
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	34	199	34	37	237
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			294		83	
pX, platoon unblocked						
vC, conflicting volume	532	221			238	
vC1, stage 1 conf vol	221					
vC2, stage 2 conf vol	311					
vCu, unblocked vol	532	221			238	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	96			97	
cM capacity (veh/h)	657	820			1335	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	61	233	37	237		
Volume Left	27	0	37	0		
Volume Right	34	34	0	0		
cSH	739	1700	1335	1700		
Volume to Capacity	0.08	0.14	0.03	0.14		
Queue Length 95th (m)	2.2	0.0	0.7	0.0		
Control Delay (s/veh)	10.3	0.0	7.8	0.0		
Lane LOS	B		A			
Approach Delay (s/veh)	10.3	0.0	1.0			
Approach LOS	B					
Intersection Summary						
Average Delay		1.6				
Intersection Capacity Utilization		28.5%		ICU Level of Service		A
Analysis Period (min)		15				

60 Dean Ave
1: Dean Ave & Raquel St/Commercial Driveway

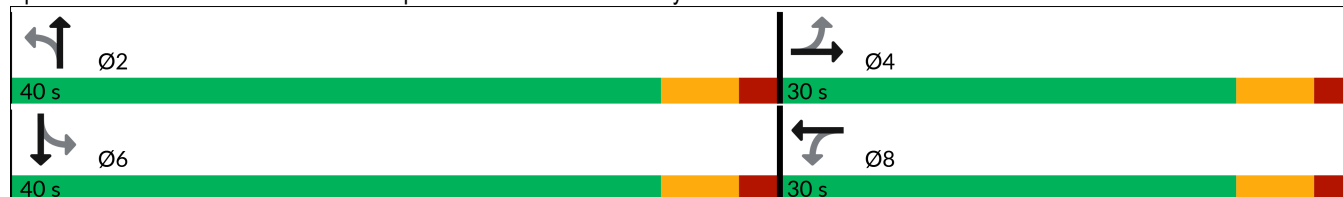
Queues
Total 2033 AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	64	13	8	5	10	157	6	134
Future Volume (vph)	64	13	8	5	10	157	6	134
Lane Group Flow (vph)	0	128	0	21	14	242	8	241
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.46		0.07	0.02	0.20	0.01	0.20
Control Delay (s/veh)		24.1		17.3	5.5	5.7	5.5	5.3
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		24.1		17.3	5.5	5.7	5.5	5.3
Queue Length 50th (m)		11.0		1.6	0.5	9.5	0.3	8.6
Queue Length 95th (m)		18.3		4.9	2.1	16.5	1.4	15.3
Internal Link Dist (m)		153.8		232.5		57.1		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		586		637	784	1209	784	1216
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.22		0.03	0.02	0.20	0.01	0.20

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 58
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	13	14	8	5	2	10	157	15	6	134	37
Future Volume (vph)	64	13	14	8	5	2	10	157	15	6	134	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.99		1.00	0.97	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1736			1805		1800	1774		1802	1776	
Flt Permitted		0.78			0.83		0.61	1.00		0.61	1.00	
Satd. Flow (perm)		1398			1536		1154	1774		1154	1776	
Peak-hour factor, PHF	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Adj. Flow (vph)	90	18	20	11	7	3	14	221	21	8	189	52
RTOR Reduction (vph)	0	12	0	0	3	0	0	4	0	0	10	0
Lane Group Flow (vph)	0	116	0	0	18	0	14	238	0	8	231	0
Confl. Peds. (#/hr)	3		4	4		3	3		2	2		3
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	6%	0%	0%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.1			9.1		38.2	38.2		38.2	38.2	
Effective Green, g (s)		9.1			9.1		38.2	38.2		38.2	38.2	
Actuated g/C Ratio		0.15			0.15		0.64	0.64		0.64	0.64	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		214			235		743	1142		743	1144	
v/s Ratio Prot								c0.13			0.13	
v/s Ratio Perm		c0.08			0.01		0.01			0.01		
v/c Ratio		0.54			0.08		0.02	0.21		0.01	0.20	
Uniform Delay, d1		23.2			21.5		3.8	4.3		3.8	4.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.8			0.1		0.0	0.4		0.0	0.4	
Delay (s)		26.0			21.7		3.8	4.8		3.8	4.7	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		26.0			21.7			4.7			4.7	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		9.4			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.27										
Actuated Cycle Length (s)		59.3			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		47.9%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

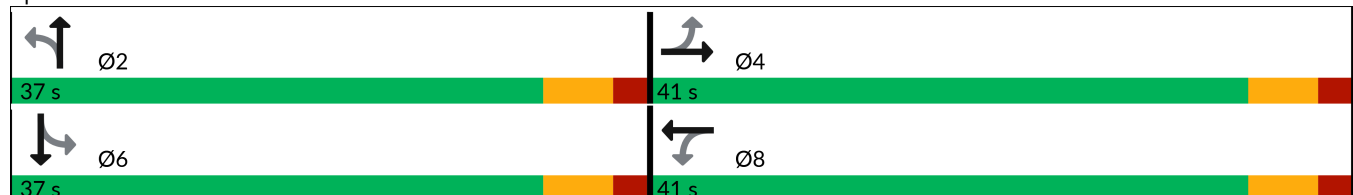
Queues
Total 2033 AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	65	215	34	197	6	72	49	33
Future Volume (vph)	65	215	34	197	6	72	49	33
Lane Group Flow (vph)	81	284	43	299	8	213	61	152
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.13	0.26	0.07	0.27	0.05	0.54	0.29	0.38
Control Delay (s/veh)	6.1	6.4	5.6	6.2	19.5	16.7	23.9	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	6.1	6.4	5.6	6.2	19.5	16.7	23.9	10.7
Queue Length 50th (m)	3.1	11.7	1.6	11.8	0.8	10.6	5.9	3.9
Queue Length 95th (m)	8.3	22.8	5.1	23.1	3.3	22.4	13.1	13.4
Internal Link Dist (m)		276.0		225.7		218.9		271.3
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	641	1108	661	1098	477	916	591	904
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.26	0.07	0.27	0.02	0.23	0.10	0.17

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 58.2
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave



60 Dean Ave
2: Madelaine Dr & Dean Ave

HCM Signalized Intersection Capacity Analysis
Total 2033 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	215	12	34	197	42	6	72	98	49	33	89
Future Volume (vph)	65	215	12	34	197	42	6	72	98	49	33	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.91		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1837		1785	1814		1287	1630		1740	1598	
Flt Permitted	0.58	1.00		0.59	1.00		0.66	1.00		0.61	1.00	
Satd. Flow (perm)	1067	1837		1100	1814		895	1630		1113	1598	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	81	269	15	42	246	52	8	90	122	61	41	111
RTOR Reduction (vph)	0	2	0	0	7	0	0	85	0	0	90	0
Lane Group Flow (vph)	81	282	0	43	292	0	8	128	0	61	62	0
Confl. Peds. (#/hr)	12		15	15		12	2		10	10		2
Heavy Vehicles (%)	2%	2%	10%	0%	1%	3%	40%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.0	35.0		35.0	35.0		11.1	11.1		11.1	11.1	
Effective Green, g (s)	35.0	35.0		35.0	35.0		11.1	11.1		11.1	11.1	
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.19	0.19		0.19	0.19	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	642	1106		662	1092		170	311		212	305	
v/s Ratio Prot		0.15			c0.16			c0.08			0.04	
v/s Ratio Perm	0.08			0.04			0.01			0.05		
v/c Ratio	0.13	0.25		0.06	0.27		0.05	0.41		0.29	0.20	
Uniform Delay, d1	5.0	5.4		4.8	5.5		19.2	20.6		20.1	19.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.6		0.2	0.6		0.1	0.9		0.8	0.3	
Delay (s)	5.4	6.0		5.0	6.1		19.3	21.5		20.9	20.1	
Level of Service	A	A		A	A		B	C		C	C	
Approach Delay (s/veh)		5.8			5.9			21.4			20.3	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			11.6			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			58.1			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			92.1%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
3: Dean Ave & Shared Site Access

HCM Unsignalized Intersection Capacity Analysis
Total 2033 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	22	15	168	9	11	145
Future Volume (Veh/h)	22	15	168	9	11	145
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	27	18	202	11	13	175
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			295		81	
pX, platoon unblocked						
vC, conflicting volume	414	213			218	
vC1, stage 1 conf vol	213					
vC2, stage 2 conf vol	201					
vCu, unblocked vol	414	213			218	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			99	
cM capacity (veh/h)	730	829			1358	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	45	213	13	175		
Volume Left	27	0	13	0		
Volume Right	18	11	0	0		
cSH	767	1700	1358	1700		
Volume to Capacity	0.06	0.13	0.01	0.10		
Queue Length 95th (m)	1.5	0.0	0.2	0.0		
Control Delay (s/veh)	10.0	0.0	7.7	0.0		
Lane LOS	A		A			
Approach Delay (s/veh)	10.0	0.0	0.5			
Approach LOS	A					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			20.0%		ICU Level of Service	A
Analysis Period (min)			15			

60 Dean Ave
1: Dean Ave & Raquel St/Commercial Driveway

Queues
Total 2033 PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	63	37	52	40	15	158	13	203
Future Volume (vph)	63	37	52	40	15	158	13	203
Lane Group Flow (vph)	0	142	0	120	17	253	15	316
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.45		0.39	0.02	0.21	0.02	0.27
Control Delay (s/veh)		22.4		22.1	5.7	5.3	5.6	5.8
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		22.4		22.1	5.7	5.3	5.6	5.8
Queue Length 50th (m)		11.9		10.4	0.6	8.6	0.5	11.9
Queue Length 95th (m)		25.3		22.4	3.0	21.0	2.7	27.4
Internal Link Dist (m)		153.8		232.5		58.8		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		651		643	720	1186	768	1178
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.22		0.19	0.02	0.21	0.02	0.27

Intersection Summary

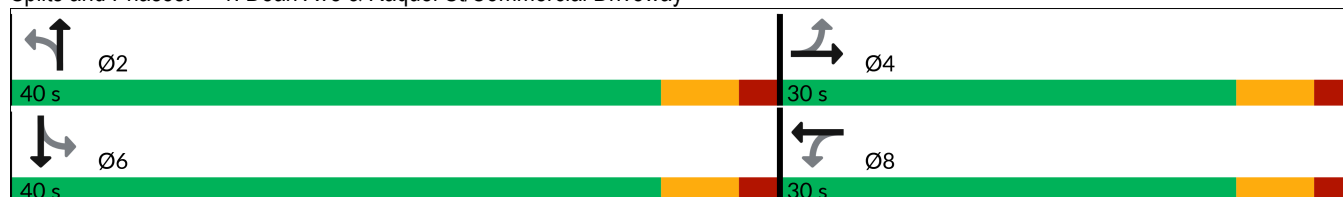
Cycle Length: 70

Actuated Cycle Length: 57.1

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	37	25	52	40	14	15	158	64	13	203	75
Future Volume (vph)	63	37	25	52	40	14	15	158	64	13	203	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.97			0.98		1.00	0.96		1.00	0.96	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1792			1795		1792	1745		1803	1735	
Flt Permitted		0.83			0.82		0.57	1.00		0.60	1.00	
Satd. Flow (perm)		1524			1516		1072	1745		1143	1735	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	72	42	28	59	45	16	17	180	73	15	231	85
RTOR Reduction (vph)	0	16	0	0	10	0	0	15	0	0	13	0
Lane Group Flow (vph)	0	126	0	0	110	0	17	238	0	15	303	0
Confl. Peds. (#/hr)			9	9			9		1	1		9
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	5%	0%	0%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.2			9.2		37.2	37.2		37.2	37.2	
Effective Green, g (s)		9.2			9.2		37.2	37.2		37.2	37.2	
Actuated g/C Ratio		0.16			0.16		0.64	0.64		0.64	0.64	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		240			238		682	1111		728	1105	
v/s Ratio Prot								0.14			c0.17	
v/s Ratio Perm		c0.08			0.07		0.02			0.01		
v/c Ratio		0.52			0.46		0.02	0.21		0.02	0.27	
Uniform Delay, d1		22.6			22.4		3.9	4.5		3.9	4.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.1			1.4		0.1	0.4		0.1	0.6	
Delay (s)		24.7			23.8		4.0	4.9		4.0	5.3	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		24.7			23.8			4.8			5.2	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.9									
HCM 2000 Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			58.4									
Intersection Capacity Utilization			49.8%									
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

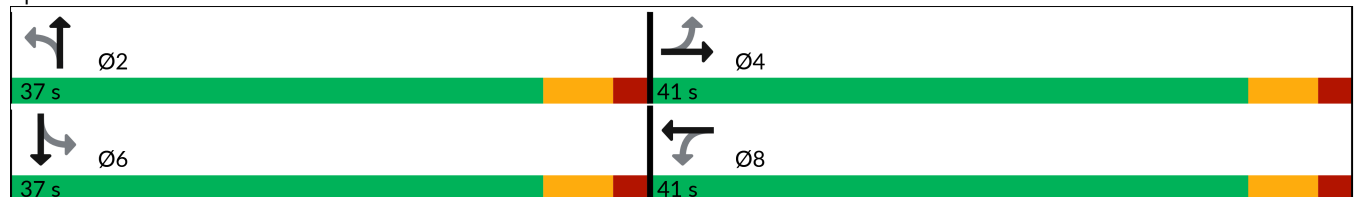
Queues
Total 2033 PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	140	251	78	231	9	92	64	154
Future Volume (vph)	140	251	78	231	9	92	64	154
Lane Group Flow (vph)	152	298	85	302	10	161	70	331
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.25	0.28	0.14	0.29	0.06	0.36	0.24	0.70
Control Delay (s/veh)	9.4	8.6	8.4	8.4	18.0	15.8	20.5	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	9.4	8.6	8.4	8.4	18.0	15.8	20.5	24.9
Queue Length 50th (m)	8.1	15.7	4.2	15.4	0.9	11.1	6.8	27.7
Queue Length 95th (m)	22.2	36.5	13.1	36.2	4.2	24.7	15.8	51.7
Internal Link Dist (m)		276.0		225.7		218.9		269.6
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	614	1052	618	1050	365	893	616	901
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.28	0.14	0.29	0.03	0.18	0.11	0.37

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 62.2
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave



60 Dean Ave
2: Madelaine Dr & Dean Ave

HCM Signalized Intersection Capacity Analysis
Total 2033 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	251	23	78	231	47	9	92	56	64	154	151
Future Volume (vph)	140	251	23	78	231	47	9	92	56	64	154	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1794	1855		1798	1843		1797	1739		1789	1726	
Flt Permitted	0.58	1.00		0.58	1.00		0.39	1.00		0.66	1.00	
Satd. Flow (perm)	1088	1855		1094	1843		731	1739		1234	1726	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	273	25	85	251	51	10	100	61	70	167	164
RTOR Reduction (vph)	0	3	0	0	7	0	0	36	0	0	57	0
Lane Group Flow (vph)	152	295	0	85	295	0	10	125	0	70	274	0
Confl. Peds. (#/hr)	8		5	5		8	8		11	11		8
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	3%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.2	35.2		35.2	35.2		14.9	14.9		14.9	14.9	
Effective Green, g (s)	35.2	35.2		35.2	35.2		14.9	14.9		14.9	14.9	
Actuated g/C Ratio	0.57	0.57		0.57	0.57		0.24	0.24		0.24	0.24	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	616	1051		620	1044		175	417		296	414	
v/s Ratio Prot		0.16			c0.16			0.07			c0.16	
v/s Ratio Perm	0.14			0.08			0.01			0.06		
v/c Ratio	0.25	0.28		0.14	0.28		0.06	0.30		0.24	0.66	
Uniform Delay, d1	6.8	6.9		6.3	6.9		18.2	19.3		19.0	21.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.7		0.5	0.7		0.1	0.4		0.4	3.9	
Delay (s)	7.7	7.6		6.8	7.6		18.3	19.7		19.4	25.3	
Level of Service	A	A		A	A		B	B		B	C	
Approach Delay (s/veh)		7.6			7.4			19.7			24.3	
Approach LOS		A			A			B			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			13.8				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			62.1				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			106.3%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
3: Dean Ave & Shared Site Access

HCM Unsignalized Intersection Capacity Analysis
Total 2033 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	31	206	31	34	246
Future Volume (Veh/h)	25	31	206	31	34	246
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	34	224	34	37	267
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			294		83	
pX, platoon unblocked						
vC, conflicting volume	587	246			263	
vC1, stage 1 conf vol	246					
vC2, stage 2 conf vol	341					
vCu, unblocked vol	587	246			263	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	96			97	
cM capacity (veh/h)	632	794			1307	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	61	258	37	267		
Volume Left	27	0	37	0		
Volume Right	34	34	0	0		
cSH	713	1700	1307	1700		
Volume to Capacity	0.09	0.15	0.03	0.16		
Queue Length 95th (m)	2.2	0.0	0.7	0.0		
Control Delay (s/veh)	10.5	0.0	7.8	0.0		
Lane LOS	B		A			
Approach Delay (s/veh)	10.5	0.0	1.0			
Approach LOS	B					
Intersection Summary						
Average Delay		1.5				
Intersection Capacity Utilization		29.5%		ICU Level of Service		A
Analysis Period (min)		15				

60 Dean Ave
1: Dean Ave & Raquel St/Commercial Driveway

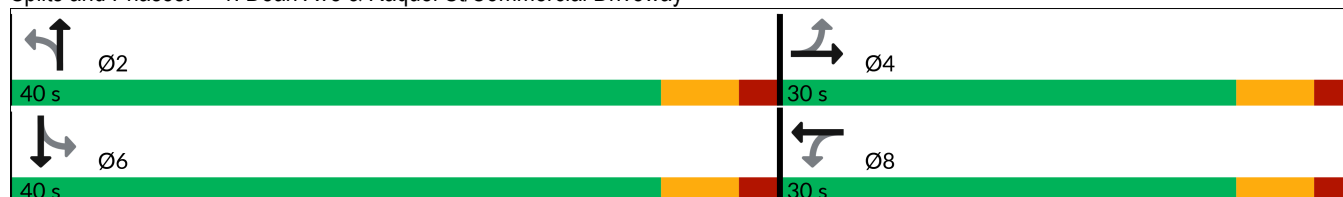
Queues
Total 2038 AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	69	13	8	5	11	196	6	172
Future Volume (vph)	69	13	8	5	11	196	6	172
Lane Group Flow (vph)	0	136	0	21	15	297	8	298
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.48		0.07	0.02	0.25	0.01	0.25
Control Delay (s/veh)		24.4		17.3	5.6	6.2	5.7	5.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		24.4		17.3	5.6	6.2	5.7	5.9
Queue Length 50th (m)		11.9		1.6	0.5	12.4	0.3	11.6
Queue Length 95th (m)		19.2		4.9	2.2	21.0	1.5	19.9
Internal Link Dist (m)		153.8		232.5		57.1		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		586		642	739	1203	741	1213
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.23		0.03	0.02	0.25	0.01	0.25

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 57.8
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	13	15	8	5	2	11	196	15	6	172	40
Future Volume (vph)	69	13	15	8	5	2	11	196	15	6	172	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.98		1.00	0.99		1.00	0.97	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1735			1806		1800	1778		1802	1785	
Flt Permitted		0.78			0.83		0.58	1.00		0.58	1.00	
Satd. Flow (perm)		1393			1541		1096	1778		1098	1785	
Peak-hour factor, PHF	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Adj. Flow (vph)	97	18	21	11	7	3	15	276	21	8	242	56
RTOR Reduction (vph)	0	12	0	0	3	0	0	3	0	0	8	0
Lane Group Flow (vph)	0	124	0	0	18	0	15	294	0	8	290	0
Confl. Peds. (#/hr)	3		4	4		3	3		2	2		3
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	6%	0%	0%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.3			9.3		37.8	37.8		37.8	37.8	
Effective Green, g (s)		9.3			9.3		37.8	37.8		37.8	37.8	
Actuated g/C Ratio		0.16			0.16		0.64	0.64		0.64	0.64	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		219			242		700	1137		702	1141	
v/s Ratio Prot							c0.17				0.16	
v/s Ratio Perm		c0.09			0.01		0.01			0.01		
v/c Ratio		0.57			0.08		0.02	0.26		0.01	0.25	
Uniform Delay, d1		23.0			21.2		3.9	4.6		3.9	4.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.3			0.1		0.1	0.6		0.0	0.5	
Delay (s)		26.4			21.4		3.9	5.2		3.9	5.1	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		26.4			21.4			5.1			5.1	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		9.3										
HCM 2000 Volume to Capacity ratio		0.32										
Actuated Cycle Length (s)		59.1										
Intersection Capacity Utilization		47.9%										
Analysis Period (min)		15										
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

Queues
Total 2038 AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	69	231	36	212	8	93	61	41
Future Volume (vph)	69	231	36	212	8	93	61	41
Lane Group Flow (vph)	86	304	45	321	10	276	76	185
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.14	0.28	0.07	0.30	0.05	0.64	0.42	0.42
Control Delay (s/veh)	7.2	7.5	6.8	7.4	18.6	20.3	27.4	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	7.2	7.5	6.8	7.4	18.6	20.3	27.4	10.0
Queue Length 50th (m)	3.7	14.1	1.8	14.4	0.9	17.3	7.6	4.8
Queue Length 95th (m)	10.2	28.7	6.1	29.3	3.7	31.2	16.0	14.8
Internal Link Dist (m)		276.0		225.7		218.9		271.3
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	611	1079	631	1070	450	895	448	894
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.28	0.07	0.30	0.02	0.31	0.17	0.21

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 59.9
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave

 Ø2	 Ø4
37 s	41 s
 Ø6	 Ø8
37 s	41 s

60 Dean Ave
2: Madelaine Dr & Dean Ave

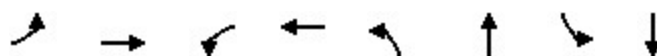
HCM Signalized Intersection Capacity Analysis
Total 2038 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	231	12	36	212	45	8	93	128	61	41	107
Future Volume (vph)	69	231	12	36	212	45	8	93	128	61	41	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.91		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1839		1785	1815		1287	1629		1741	1599	
Flt Permitted	0.57	1.00		0.57	1.00		0.64	1.00		0.47	1.00	
Satd. Flow (perm)	1045	1839		1080	1815		868	1629		866	1599	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	86	289	15	45	265	56	10	116	160	76	51	134
RTOR Reduction (vph)	0	2	0	0	7	0	0	83	0	0	106	0
Lane Group Flow (vph)	86	302	0	45	314	0	10	193	0	76	79	0
Confl. Peds. (#/hr)	12		15	15		12	2		10	10		2
Heavy Vehicles (%)	2%	2%	10%	0%	1%	3%	40%	7%	3%	3%	10%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.1	35.1		35.1	35.1		12.7	12.7		12.7	12.7	
Effective Green, g (s)	35.1	35.1		35.1	35.1		12.7	12.7		12.7	12.7	
Actuated g/C Ratio	0.59	0.59		0.59	0.59		0.21	0.21		0.21	0.21	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	613	1079		633	1065		184	345		183	339	
v/s Ratio Prot		0.16			c0.17			c0.12			0.05	
v/s Ratio Perm	0.08			0.04			0.01			0.09		
v/c Ratio	0.14	0.28		0.07	0.29		0.05	0.56		0.42	0.23	
Uniform Delay, d1	5.6	6.1		5.3	6.2		18.8	21.0		20.3	19.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.6		0.2	0.7		0.1	2.0		1.5	0.4	
Delay (s)	6.0	6.8		5.5	6.9		18.9	23.0		21.9	19.9	
Level of Service	A	A		A	A		B	C		C	B	
Approach Delay (s/veh)		6.6			6.7			22.9			20.5	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			13.0			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			59.8			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			97.6%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
3: Dean Ave & Shared Site Access

HCM Unsignalized Intersection Capacity Analysis
Total 2038 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	22	15	207	9	11	183
Future Volume (Veh/h)	22	15	207	9	11	183
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	27	18	249	11	13	220
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			295		81	
pX, platoon unblocked	1.00					
vC, conflicting volume	506	260			265	
vC1, stage 1 conf vol	260					
vC2, stage 2 conf vol	246					
vCu, unblocked vol	503	260			265	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			99	
cM capacity (veh/h)	683	781			1305	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	45	260	13	220		
Volume Left	27	0	13	0		
Volume Right	18	11	0	0		
cSH	719	1700	1305	1700		
Volume to Capacity	0.06	0.15	0.01	0.13		
Queue Length 95th (m)	1.6	0.0	0.2	0.0		
Control Delay (s/veh)	10.3	0.0	7.8	0.0		
Lane LOS	B		A			
Approach Delay (s/veh)	10.3	0.0	0.4			
Approach LOS	B					
Intersection Summary						
Average Delay		1.1				
Intersection Capacity Utilization		21.7%		ICU Level of Service		A
Analysis Period (min)		15				



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔	↔	↔	↔	↔
Traffic Volume (vph)	67	37	52	40	16	200	13	255
Future Volume (vph)	67	37	52	40	16	200	13	255
Lane Group Flow (vph)	0	149	0	120	18	300	15	382
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	34.0	34.0	34.0	34.0
Minimum Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio		0.47		0.39	0.03	0.25	0.02	0.32
Control Delay (s/veh)		22.5		22.0	5.8	5.9	5.7	6.5
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		22.5		22.0	5.8	5.9	5.7	6.5
Queue Length 50th (m)		12.5		10.4	0.7	11.4	0.5	15.8
Queue Length 95th (m)		26.2		22.4	3.2	26.6	2.8	35.6
Internal Link Dist (m)		153.8		232.5		58.8		209.3
Turn Bay Length (m)					27.0		22.0	
Base Capacity (vph)		648		636	676	1186	734	1178
Starvation Cap Reductn		0		0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.23		0.19	0.03	0.25	0.02	0.32

Intersection Summary

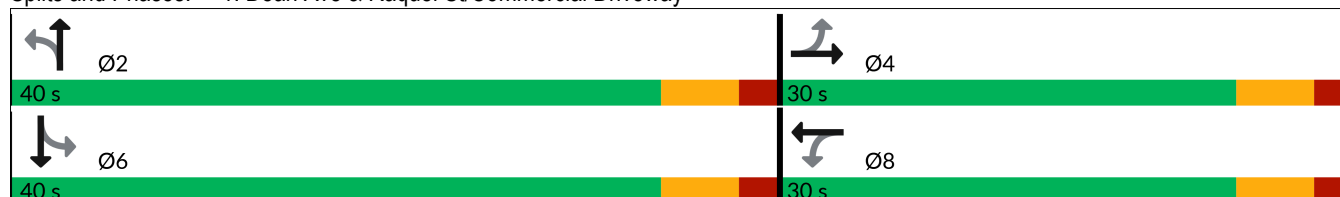
Cycle Length: 70

Actuated Cycle Length: 57.3

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Dean Ave & Raquel St/Commercial Driveway



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	37	27	52	40	14	16	200	64	13	255	81
Future Volume (vph)	67	37	27	52	40	14	16	200	64	13	255	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.97			0.98		1.00	0.96		1.00	0.96	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1789			1795		1793	1755		1803	1743	
Flt Permitted		0.83			0.82		0.54	1.00		0.58	1.00	
Satd. Flow (perm)		1518			1504		1010	1755		1095	1743	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	76	42	31	59	45	16	18	227	73	15	290	92
RTOR Reduction (vph)	0	18	0	0	10	0	0	12	0	0	12	0
Lane Group Flow (vph)	0	131	0	0	110	0	18	288	0	15	370	0
Confl. Peds. (#/hr)			9	9			9		1	1		9
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	5%	0%	0%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.4			9.4		37.2	37.2		37.2	37.2	
Effective Green, g (s)		9.4			9.4		37.2	37.2		37.2	37.2	
Actuated g/C Ratio		0.16			0.16		0.63	0.63		0.63	0.63	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		243			241		641	1114		695	1106	
v/s Ratio Prot								0.16			c0.21	
v/s Ratio Perm		c0.09			0.07		0.02			0.01		
v/c Ratio		0.54			0.46		0.03	0.26		0.02	0.33	
Uniform Delay, d1		22.6			22.3		4.0	4.7		4.0	5.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.4			1.4		0.1	0.6		0.1	0.8	
Delay (s)		25.1			23.7		4.1	5.2		4.0	5.8	
Level of Service		C			C		A	A		A	A	
Approach Delay (s/veh)		25.1			23.7			5.2			5.7	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.7									
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			58.6									
Intersection Capacity Utilization			50.1%									
Analysis Period (min)			15									
c Critical Lane Group												

60 Dean Ave
2: Madelaine Dr & Dean Ave

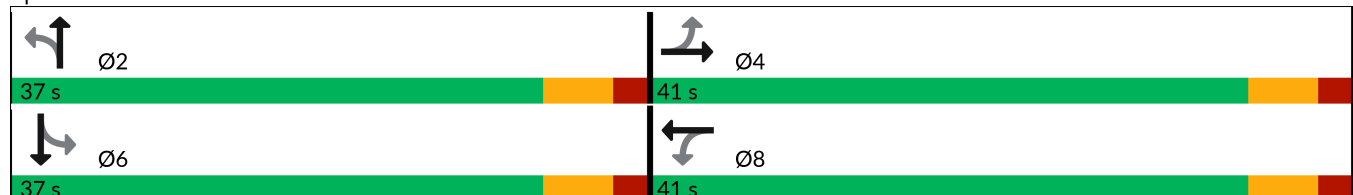
Queues
Total 2038 PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	149	270	84	249	11	118	81	200
Future Volume (vph)	149	270	84	249	11	118	81	200
Lane Group Flow (vph)	162	320	91	325	12	208	88	425
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	35.0	35.0	35.0	35.0	10.0	10.0	10.0	10.0
Minimum Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (s)	41.0	41.0	41.0	41.0	37.0	37.0	37.0	37.0
Total Split (%)	52.6%	52.6%	52.6%	52.6%	47.4%	47.4%	47.4%	47.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.29	0.32	0.16	0.33	0.08	0.39	0.26	0.77
Control Delay (s/veh)	12.5	11.2	11.1	11.0	17.1	15.9	19.4	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	12.5	11.2	11.1	11.0	17.1	15.9	19.4	27.7
Queue Length 50th (m)	10.6	20.7	5.5	20.4	1.1	16.1	8.7	41.4
Queue Length 95th (m)	29.9	49.1	17.1	48.9	4.6	31.4	18.8	70.3
Internal Link Dist (m)		276.0		225.7		218.9		269.6
Turn Bay Length (m)	50.0		50.0		22.0		22.0	
Base Capacity (vph)	550	986	556	985	252	840	549	849
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.32	0.16	0.33	0.05	0.25	0.16	0.50

Intersection Summary

Cycle Length: 78
Actuated Cycle Length: 66.6
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Madelaine Dr & Dean Ave



60 Dean Ave
2: Madelaine Dr & Dean Ave

HCM Signalized Intersection Capacity Analysis
Total 2038 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	270	25	84	249	50	11	118	74	81	200	191
Future Volume (vph)	149	270	25	84	249	50	11	118	74	81	200	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1794	1855		1798	1844		1798	1737		1789	1727	
Flt Permitted	0.55	1.00		0.55	1.00		0.28	1.00		0.62	1.00	
Satd. Flow (perm)	1039	1855		1050	1844		536	1737		1171	1727	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	162	293	27	91	271	54	12	128	80	88	217	208
RTOR Reduction (vph)	0	4	0	0	8	0	0	34	0	0	52	0
Lane Group Flow (vph)	162	316	0	91	317	0	12	174	0	88	373	0
Confl. Peds. (#/hr)	8		5	5		8	8		11	11		8
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	3%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	35.3	35.3		35.3	35.3		19.2	19.2		19.2	19.2	
Effective Green, g (s)	35.3	35.3		35.3	35.3		19.2	19.2		19.2	19.2	
Actuated g/C Ratio	0.53	0.53		0.53	0.53		0.29	0.29		0.29	0.29	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	551	984		557	978		154	501		338	498	
v/s Ratio Prot		0.17			c0.17			0.10			c0.22	
v/s Ratio Perm	0.16			0.09			0.02			0.08		
v/c Ratio	0.29	0.32		0.16	0.32		0.08	0.35		0.26	0.75	
Uniform Delay, d1	8.7	8.8		8.0	8.8		17.2	18.7		18.2	21.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.9		0.6	0.9		0.2	0.4		0.4	6.1	
Delay (s)	10.0	9.7		8.6	9.7		17.4	19.1		18.6	27.6	
Level of Service	B	A		A	A		B	B		B	C	
Approach Delay (s/veh)		9.8			9.5			19.0			26.0	
Approach LOS		A			A			B			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		16.1			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.47										
Actuated Cycle Length (s)		66.5			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		110.0%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

60 Dean Ave
3: Dean Ave & Shared Site Access

HCM Unsignalized Intersection Capacity Analysis
Total 2038 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	31	249	31	34	301
Future Volume (Veh/h)	25	31	249	31	34	301
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	34	271	34	37	327
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL		TWLTL	
Median storage veh			2		2	
Upstream signal (m)			294		83	
pX, platoon unblocked	0.97					
vC, conflicting volume	694	293			310	
vC1, stage 1 conf vol	293					
vC2, stage 2 conf vol	401					
vCu, unblocked vol	671	293			310	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	95			97	
cM capacity (veh/h)	586	748			1257	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	61	305	37	327		
Volume Left	27	0	37	0		
Volume Right	34	34	0	0		
cSH	667	1700	1257	1700		
Volume to Capacity	0.09	0.18	0.03	0.19		
Queue Length 95th (m)	2.4	0.0	0.7	0.0		
Control Delay (s/veh)	10.9	0.0	8.0	0.0		
Lane LOS	B		A			
Approach Delay (s/veh)	10.9	0.0	0.8			
Approach LOS	B					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			31.7%		ICU Level of Service	A
Analysis Period (min)			15			

Appendix G – OTM Signal Justification Sheets

Justification No. 7 - 2038 Total Traffic (Critical Case)

Dean Avenue / Shared Site Access

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
			Rest. Flow	Numerical			
1. Minimum Vehiclur Volume	A. Vehicle volume, all aproaches (average hour)	720	279	39%	8%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	255	23	9%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	720	246	34%	13%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	75	12	16%		NO	NO

Appendix H – Transportation Tomorrow Survey Excerpt

Mon Jan 13 2025 16:39:57 GMT-0500 (Eastern Standard Time) - Run Time: 3229ms Cross Tabulation Query Form - Trip - 2016 Row: Planning district of destination - pd_dest Column: 2006 GTA zone of household - gta06_hhld Filters: (2006 GTA zone of household - gta06_hhld In 8529); and (Start time of trip - start_time In 700 - 900); and (Trip purpose of destination - purp_dest In W, R) Trip 2016 ROW : pd_dest COLUMN : gta06_hhld	Mon Jan 13 2025 16:40:42 GMT-0500 (Eastern Standard Time) - Run Time: 2835ms Cross Tabulation Query Form - Trip - 2016 Row: 2006 GTA zone of destination - gta06_dest Column: 2006 GTA zone of household - gta06_hhld Filters: (2006 GTA zone of household - gta06_hhld In 8529); and (Start time of trip - start_time In 700 - 900); and (Trip purpose of destination - purp_dest In W, R); and (Planning district of destination - pd_dest In 81)
--	--

TTS Cross Tabulation

Cross Tabulation Query Form - Trip - 2022

Filter Variables

Planning district of desti... ✕ ▾ 2006 GTA zone of hous... ✕ ▾ (Optional) Table Attribute ▾

Group Attributes

Row Grouping Column Grouping Table Grouping

Grouping file: Choose File No file chosen

Filter Selection +

☐ 2006 GTA zone of household ▾ In ▾ 8529

And ▾

☐ Start time of trip ▾ In ▾ 700 - 900

And ▾

☐ Trip Purpose of Destination ▾ In ▾ W, R

Add Delete

Output

☒ Comma-delimited table ☐ Column format Expansion Factor On Click to Select Load Load

Execute Query Select All Save As

Wed Feb 12 2025 16:47:03 GMT-0500 (Eastern Standard Time) - Run Time: 3114ms

Cross Tabulation Query Form - Trip - 2022

Row: Planning district of destination - pd_dest
Column: 2006 GTA zone of household - gta06_hhld

Filters:
2006 GTA zone of household - gta06_hhld In 8529
and
Start time of trip - start_time In 700 - 900
and
Trip Purpose of Destination - purp_dest In W, R

Trip 2022

Table:

,8529
PD 10 of Toronto,62
Newmarket,16
Mississauga,38
Barrie,543
Innisfil,140
Bradford-West Gwillimbury,72
New Tecumseth,15
Haliburton,44
Oro-Medonte,12
Severn,27
Ramara,18
Orillia,41

TTS Cross Tabulation

Cross Tabulation Query Form - Trip - 2022

Filter Variables

2006 GTA zone of desti... ✕ ▾ 2006 GTA zone of hous... ✕ ▾ (Optional) Table Attribute ▾

Group Attributes

Row Grouping Column Grouping Table Grouping
Grouping file: Choose File No file chosen

Filter Selection +

☐ 2006 GTA zone of household ▾ In ▾ 8529

And ▾

☐ Start time of trip ▾ In ▾ 700 - 900

And ▾

☐ Trip Purpose of Destination ▾ In ▾ W, R

And ▾

☐ Planning district of destination ▾ In ▾ 81,

Add Delete

Output

☒ Comma-delimited table ☐ Column format Expansion Factor On Click to Select Load Load

Execute Query Select All Save As

Wed Feb 12 2025 16:48:28 GMT-0500 (Eastern Standard Time) - Run Time: 3212ms

Cross Tabulation Query Form - Trip - 2022

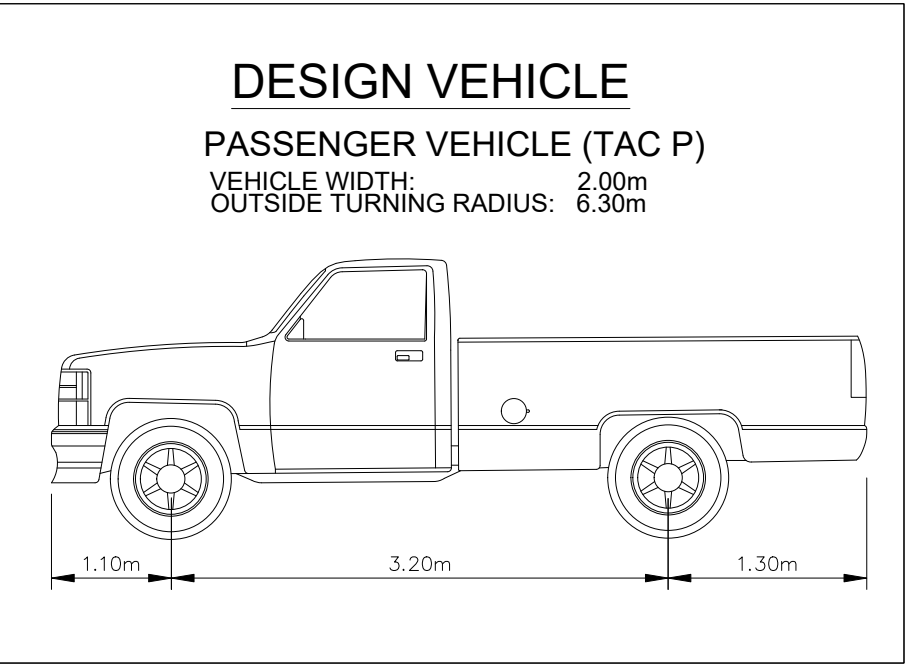
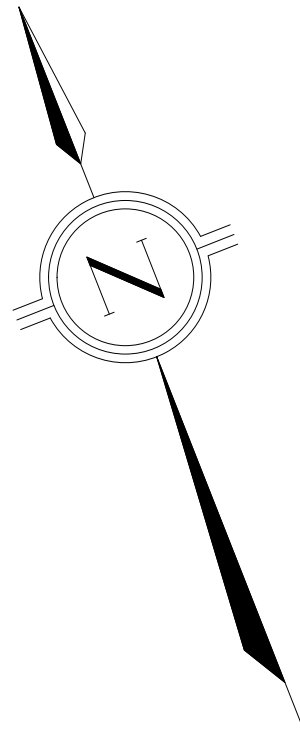
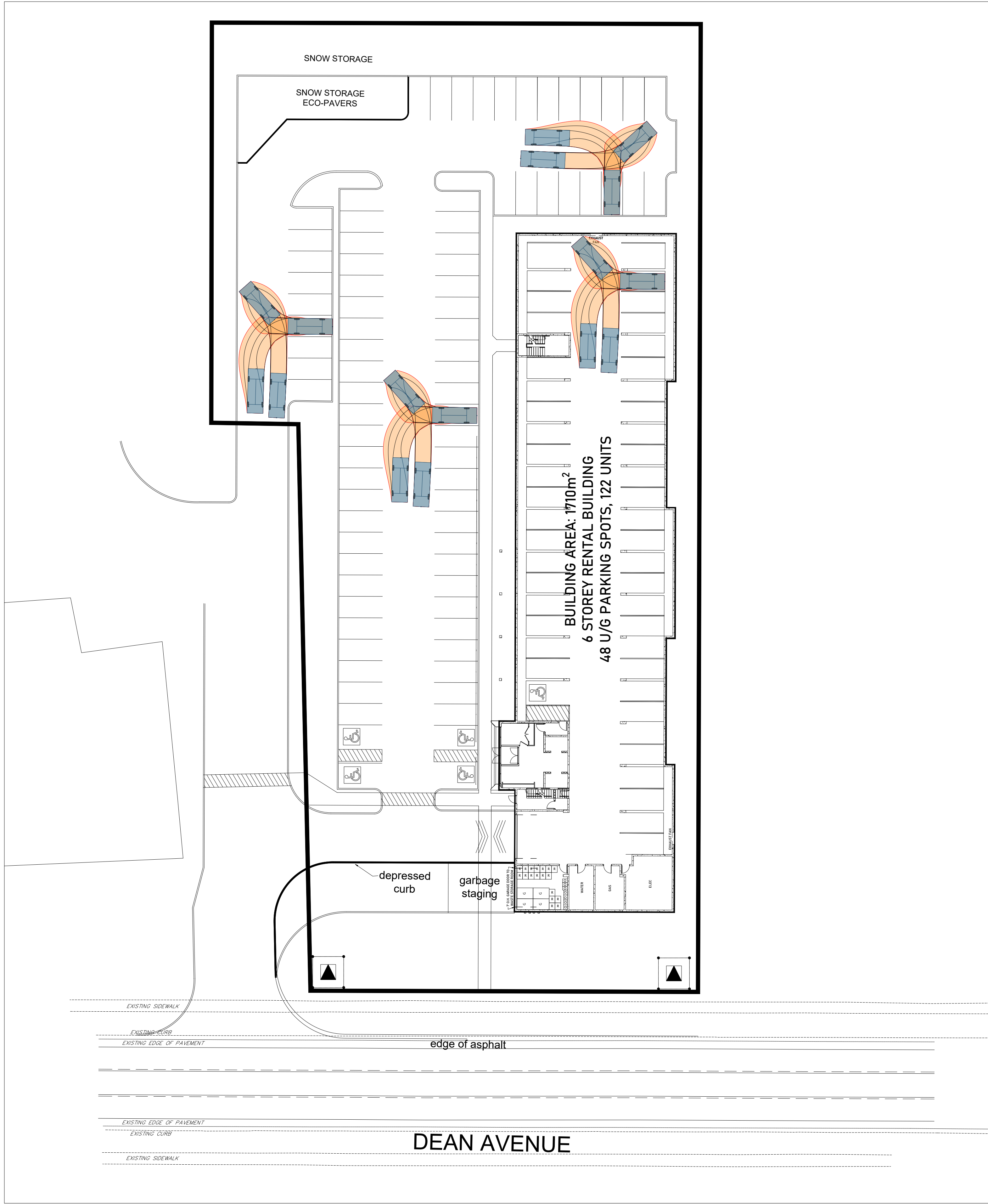
Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of household - gta06_hhld

Filters:
2006 GTA zone of household - gta06_hhld In 8529
and
Start time of trip - start_time In 700 - 900
and
Trip Purpose of Destination - purp_dest In W, R
and
Planning district of destination - pd_dest In 81,

Trip 2022
Table:

,8529
8501,58
8504,37
8509,20
8521,31
8523,103
8524,55
8527,158
8529,81

Appendix I – Transportation Tomorrow Survey Excerpt



GENERAL NOTES
1. THIS DRAWING IS NOT INTENDED FOR CONSTRUCTION.
2. DO NOT SCALE DRAWINGS.
3. THE DRAWINGS ARE THE PROPERTY OF JD ENGINEERING AND MUST BE RETURNED ON COMPLETION OF THE PROJECT.
4. BASE DRAWING PROVIDED BY JONES CONSULTING GROUP LTD. ON FEBRUARY 11TH, 2025.

1.	FEB 2025	JN	FIRST SUBMISSION
NO.	DATE	APPROVED	REVISIONS



JD Northcote Engineering Inc.
Phone: 705.725.4035
86 Cumberland Street
Barrie, ON L4N 2P6
www.JDEngineering.ca

PROJECT

60 DEAN AVENUE

AREA MUNICIPALITY

CITY OF BARRIE

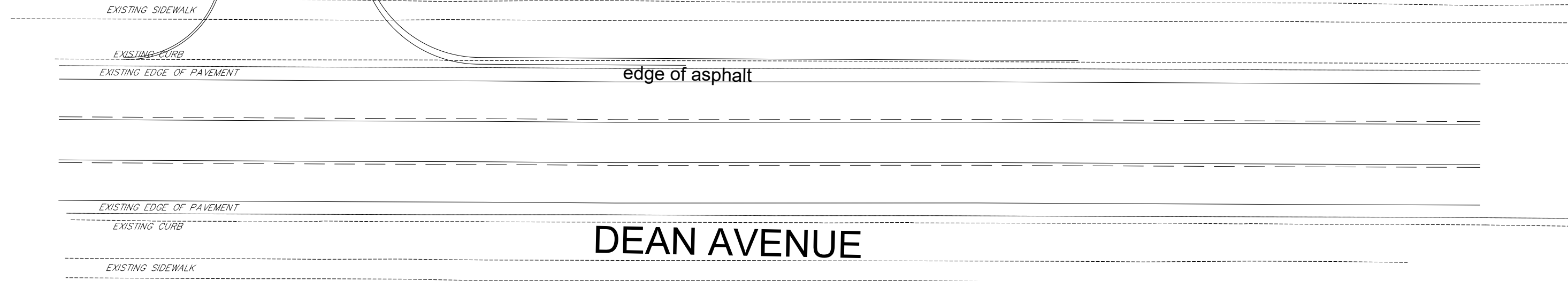
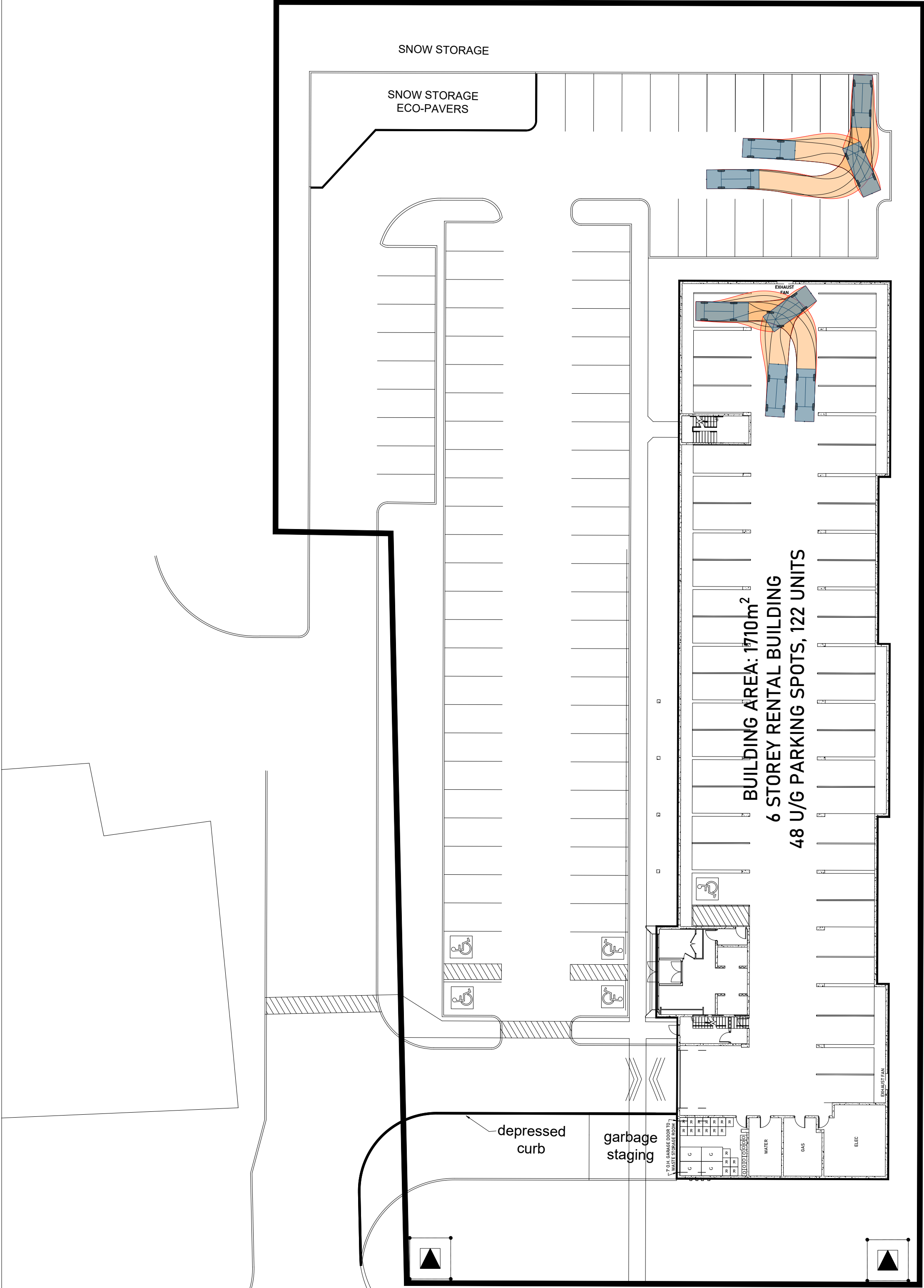
DRAWING TITLE

VEHICLE SWEEP PATH REVIEW

SUBTITLE

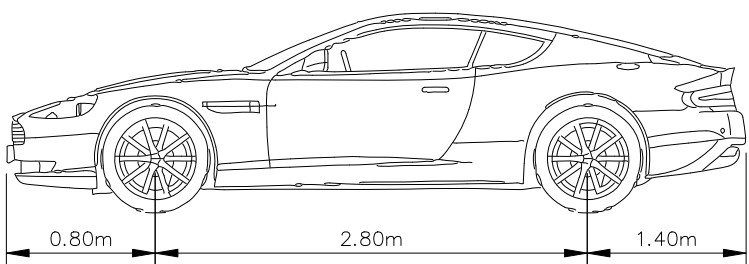
TAC PASSENGER VEHICLE

DESIGN: JN	DATE: 02/25
DRAWN: JN	DATE: 02/25
REVIEWED: JN	DATE: 02/25
SCALE HOR. 1:300	SCALE VERT. N/A
SHEET NO. 24089 - TURN A	



DESIGN VEHICLE

COMPACT VEHICLE
VEHICLE WIDTH: 2.00m
OUTSIDE TURNING RADIUS: 5.50m



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1.	FEB 2025	JN	FIRST SUBMISSION
NO.	DATE	APPROVED	REVISIONS



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PROJECT

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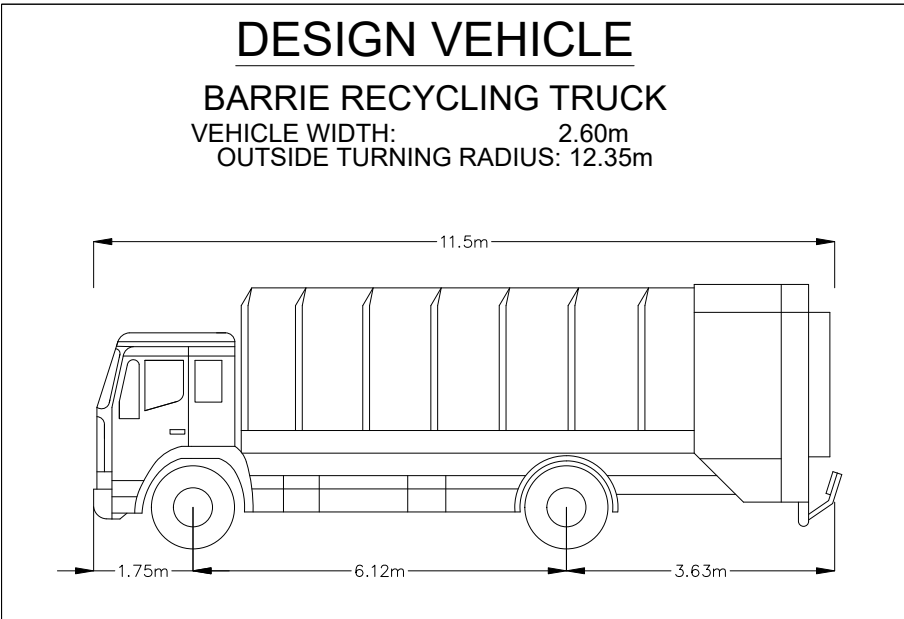
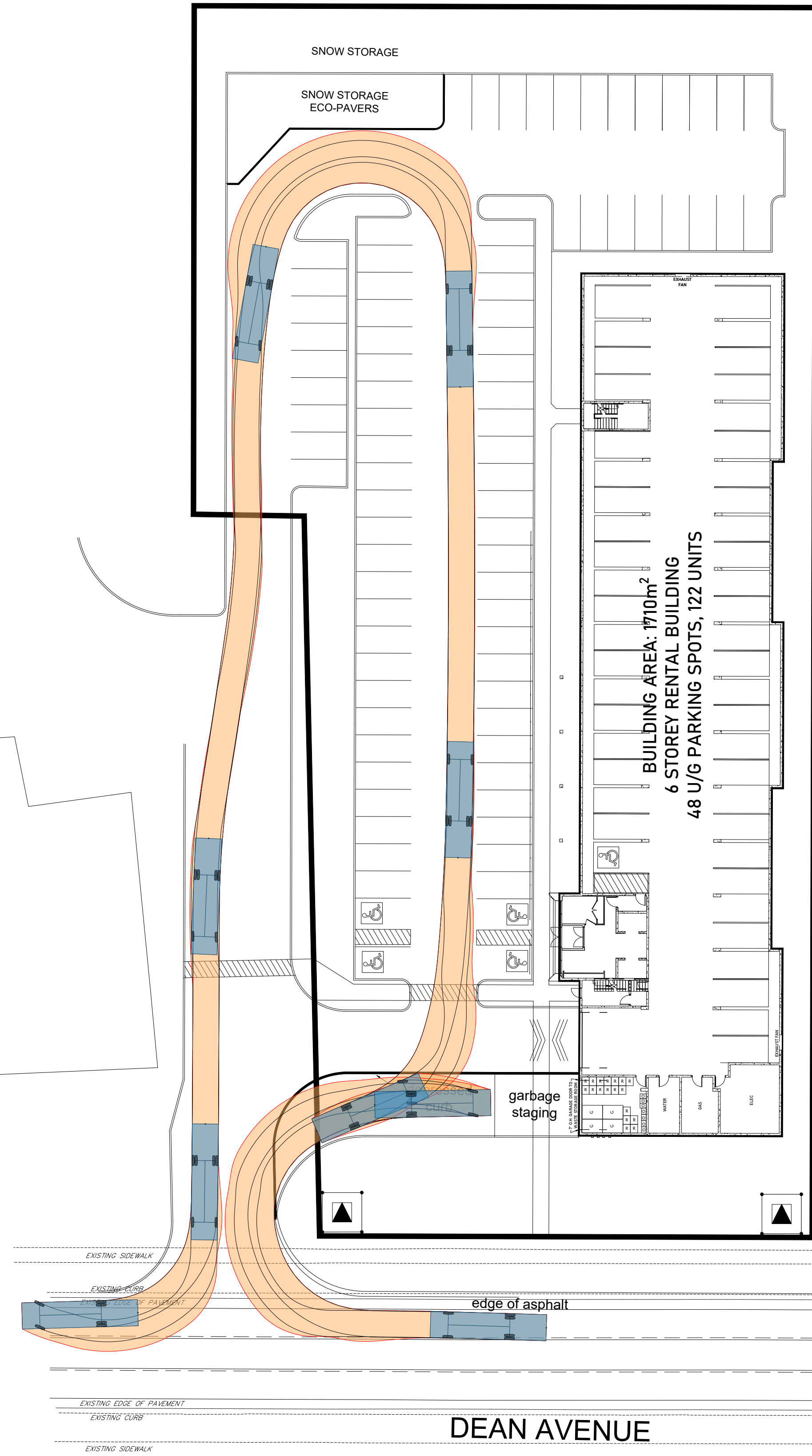
DRAWING TITLE

VEHICLE SWEPT PATH REVIEW

SUBTITLE

COMPACT VEHICLE

DESIGN:	JN	DATE:	02/25
DRAWN:	JN	DATE:	02/25
REVIEWED:	JN	DATE:	02/25
SCALE HOR.	1:300	SCALE VERT.	N/A
SHEET NO.	24089 - TURN B		



GENERAL NOTES
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DRAWING TITLE

VEHICLE SWEEP PATH REVIEW

SUBTITLE

BARRIE RECYCLING TRUCK – REAR - LOAD

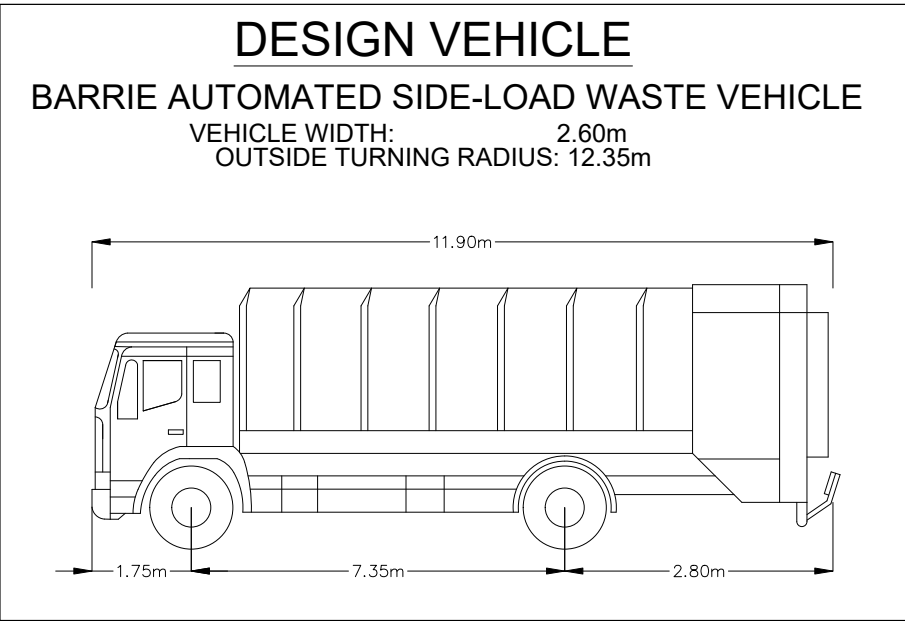
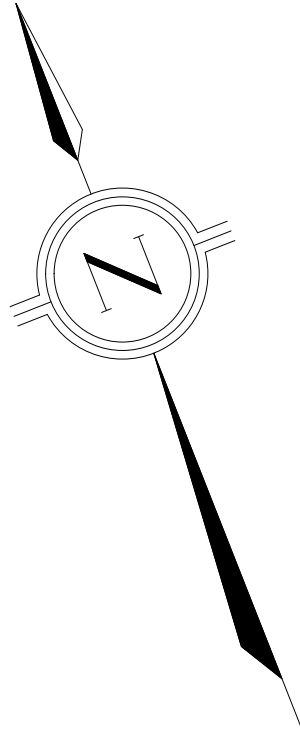
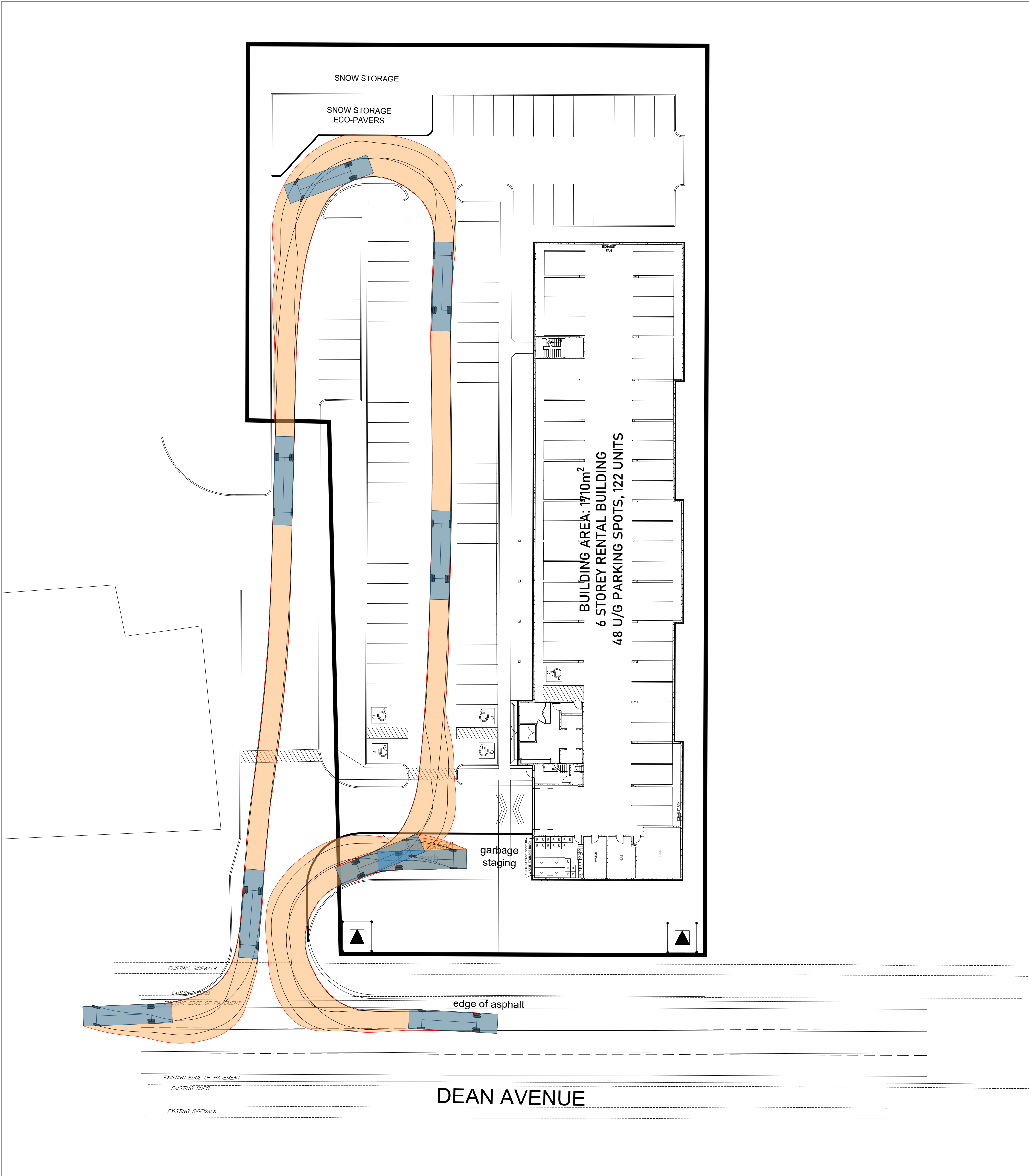
DESIGN: JN DATE: 02/25

DRAWN: JN DATE: 02/25

REVIEWED: JN DATE: 02/25

SCALE HOR. 1:300 SCALE VERT. N/A

SHEET NO. 24089 - TURN C



GENERAL NOTES
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4. BASE DRAWING PROVIDED BY JONES CONSULTING GROUP LTD. ON FEBRUARY 11TH, 2025.

1.	FEB 2025	JN	FIRST SUBMISSION
NO.	DATE	APPROVED	REVISIONS



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PROJECT

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AREA MUNICIPALITY

CITY OF BARRIE

DRAWING TITLE

VEHICLE SWEEP PATH REVIEW

SUBTITLE

BARRIE AUTOMATED SIDE - LOAD WASTE VEHICLE

DESIGN: JN

DATE: 02/25

DRAWN: JN

DATE: 02/25

REVIEWED: JN

DATE: 02/25

SCALE HOR.
1:300

SCALE VERT.
N/A

SHEET NO.

24089 - TURN D