

Traffic Impact Study

*MacLeod Quarries III and V – 17631 South Branch Rd.
Township of South Stormont, Ontario*

Prepared for:

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Executive Summary

This traffic impact study was commissioned to determine the traffic-related impacts of the proposed expansion of the MacLeod Quarry located at 17631 South Branch Road, 6.5 km north of downtown Cornwall, Ontario. The expansion consists of two separate properties with a combined area of approximately 78.3 hectares, upon which the developer wishes to operate a pit and quarry with a total extraction area of 64.6 hectares. The site will be serviced by existing accesses on Headline Road and South Branch Road. The sites are not anticipated to operate concurrently.

The proposed MacLeod Quarries III and V are anticipated to generate approximately 126 total trips (63 inbound, 63 outbound) during both the weekday a.m. and p.m. peak hours. Consideration should be given to the fact that this figure is based on a number of highly conservative assumptions, and in reality the production level of the proposed development is anticipated to generate considerably lower volumes of truck traffic on a daily basis.

Synchro 8 software was used to determine the level of service (LOS) of each intersection in the area for existing operating conditions as well as to the study horizons of 2021 and 2026. Analysis determined failures are expected to occur at the intersection of Highway 138 and Headline Road; however failures were found to occur regardless of the anticipated traffic generated by the MacLeod III and V Quarries.

Left-turn warrants were completed for the north and south site accesses for a 10 year horizon period (2026) in order to evaluate if these intersections require a dedicated left-turning lane. The results show that no dedicated left-turning lane is required at either entrance. Similarly, no signalization is warranted at either intersection.

Based on the analyses conducted as part of this study, McIntosh Perry concludes that the majority of intersections and approaches within the surrounding road network are anticipated to operate at acceptable levels of service to the horizon years of 2021 and 2026. Additionally, no roadway modifications are required as a result of the proposed MacLeod III and V Quarries.

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1.0 INTRODUCTION

McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) has been retained to complete a traffic impact study for a proposed expansion of the MacLeod quarry, located at 17631 South Branch Road on lands which are described as Lots 2 and 6 – Concession 4 in the geographic Township of Cornwall in the Township of South Stormont, United Counties of Stormont, Dundas and Glengarry. This investigation will outline the traffic related impacts that the proposed pit and quarry operation will have on the abutting roadway system. The site has been analyzed for both the weekday a.m. and p.m. peak hours, as these time periods represent the peak conditions for traffic on the adjacent road network.

The proposed development is located in the geographic Township of Cornwall, approximately 6.5 km north of Cornwall's city centre. See **Figure 1**, below, for more information.

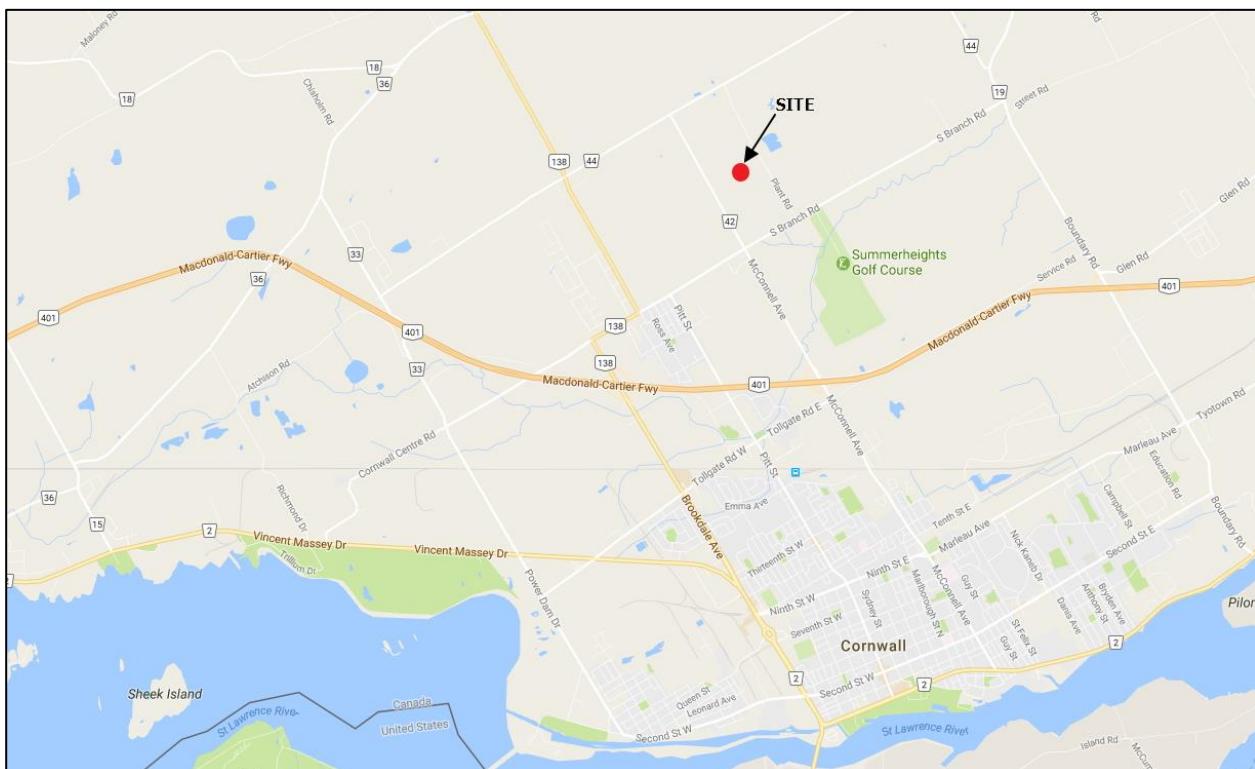


Figure 1: Key Plan (Google Maps)

2.0 PROPOSED DEVELOPMENT

The subject site consists of two separate properties, with a total combined area of approximately 78.3 hectares, upon which the developer wishes to operate a pit and quarry with a total extraction area of 64.6 hectares. See **Figure 2** below for the location of the subject area used for this study.



Figure 2: Location Plan (Google Maps)

The subject site will be serviced by two shared all-directional accesses via Plant Road, which connect to the existing road network via Headline Road to the north and South Branch Road to the south. The existing access currently services an existing pit and quarry operated by Cornwall Gravel Co.

At the time of completing this investigation, limited information was available with regards to the anticipated opening date of the proposed pit/quarry. As such, 5 and 10-year horizons of 2021 and 2026 will be used for this study based on present day, as it is anticipated that all new traffic generated by the subject site will be captured within the surrounding road network during this period. Should full build-out of pit/quarry operations be delayed beyond the 10-year horizon year of 2026, consideration should be given to background traffic volumes to ensure they do not vary significantly from traffic data used in preparing this report. It should also be noted that MacLeod Quarries III and V are not anticipated to operate independently and are therefore being treated as one site for the purposes of this study.

For the purposes of this study, the following intersections have been analyzed in detail as they are either the closest and/or busiest intersections adjacent to the study area:

- Hwy 138 (St Andrews Rd) & Headline Rd,
- Headline Rd & McConnell Ave,

- Headline Rd & North Site Access (Plant Rd),
- Hwy 138 (St Andrews Rd) & Cornwall Centre Rd (Signalized),
- McConnell Ave & South Branch Rd (Signalized),
- South Branch Rd & South Site Access (Plant Rd),
- McConnell Ave & Hwy 401 North Ramp Terminal/Service Rd,
- McConnell Ave & Hwy 401 South Ramp Terminal.

3.0 EXISTING CONDITIONS

3.1 Site Location

The proposed site is located at 17631 South Branch Rd. approximately 6.5 km north of the City of Cornwall in the geographic Township of Cornwall. The legal description of the site is Lots 2 and 6 – Concession 4 in the Township of South Stormont, United Counties of Stormont, Dundas and Glengarry, Ontario.

The subject site is primarily composed of agricultural land with a few bushes, trees and tall grass. A portion of the site is being used for stockpiling of material from the adjacent mineral extraction area. The site is primarily surrounded by a combination of rural residential properties, undeveloped forested areas and agricultural land.

The closest signalized intersections to the subject site are located at McConnell Ave & South Branch Rd and Hwy 138 (St Andrews Rd) & Cornwall Centre Rd, 0.7km and 2.4km southwest of the south site access, respectively.

3.2 Road Network

The following describes the existing roads within the study area:

- **Highway 138**, locally St Andrews Rd, is an undivided highway under the jurisdiction of the Province of Ontario. Presently, the posted speed limit in the vicinity of the subject site is 70 km/h, lowered from 80 km/h as it approaches the intersection with Headline Rd. Hwy 138 runs in a north-south direction and has a two-lane cross section. Hwy 138 extends from Cornwall north to Hwy 417 east of Casselman, and also provides access to Highway 401 southerly via interchanges along Brookdale Ave.
- **McConnell Ave** is an undivided rural arterial road under the jurisdiction of the United Counties of Stormont, Dundas and Glengarry (County Road 42). Presently, the posted speed limit in the study area varies between 80 km/h and 70 km/h north and south of South Branch Road, respectively. McConnell Ave runs in a north-south direction and has a two-lane cross-section. McConnell Ave provides a direct link between the study area and Highway 401.



Photo 1: McConnell Ave Looking North at Headline Rd

- **Headline Rd** is an undivided suburban collector road under the jurisdiction of the United Counties of Stormont, Dundas and Glengarry (County Road 44). Presently, the posted speed limit in the vicinity of the subject site is 50 km/h west of McConnell Ave and 80 km/h east of McConnell Ave. Headline Rd runs in an east-west direction and has a two-lane cross section.
- **Cornwall Centre Rd** is an undivided suburban collector road under the jurisdiction of the City of Cornwall. Cornwall Centre Road becomes **South Branch Rd** east of the intersection with Pitt St. Cornwall Centre Rd has a posted speed limit of 50 km/h, while South Branch Rd has a posted speed limit of 60 km/h in the vicinity of the subject site. Cornwall Centre/South Branch Rd runs in an east-west direction and has a two-lane cross section.



Photo 2: McConnell Ave Looking North at South Branch Rd

3.3 Existing Traffic

In order to understand and fully appreciate the traffic volumes within the study area, McIntosh Perry conducted a field visit to the subject site and surrounding area during both the a.m. and p.m. peak periods on November 15, 2016.

In addition to observing the overall performance of the subject area, traffic volume information was collected in the form of 15-minute turning movement counts at the intersections of McConnell Ave & Headline Rd, McConnell Ave & South Branch Rd, as well as the existing north and south site access's at Headline Rd and South Branch Rd. McIntosh Perry also obtained traffic data for the intersections of Hwy 138 & Headline Rd, Hwy 138 & Cornwall Centre Rd, as well as McConnell Ave at the North and South Hwy 401 interchanges. This data was originally compiled and processed by the Ministry of Transportation of Ontario based on data collected between 2014 and 2016.

Analysis of the available traffic data indicates that the morning peak hour for the study area occurs generally between **7:15** and **8:15 am**, while the afternoon peak hour occurs generally between **4:15** and **5:15 pm**.

It should be noted that at the time of preparing this report, information available suggested that the existing site access on South Branch Road was not being used, and truck traffic from existing quarry operations would be using the north access on Headline Rd. Upon completion of a site visit, however, it was observed that the south access was operational. As such, an analysis for both existing site accesses has been included in this investigation.

3.3.1 *Traffic Growth*

It has been noted that the available traffic information for the intersections of Hwy 138 & Headline Rd, and McConnell Ave at the North and South Hwy 401 interchanges was collected in 2014, and has not accounted for growth in the area between 2014 and 2016. As such, a growth factor has been applied to the volumes in order to produce reasonable values for the current conditions.

Although the subject site is located within the limits of the Township of South Stormont, the City of Cornwall offers a more accurate representation of background traffic growth, given its close proximity to the subject area. Stats Canada Census information for the City of Cornwall suggests that between 2006 and 2011 the city saw a total population growth of 0.8%. This translates to a yearly growth rate of 0.16%.

In a conservative approach, we have used an annual average growth rate of **1%** when calculating the 2016 peak hour traffic volumes from past counts. The above noted growth rate is most relevant for developing areas within the urban centre of Cornwall, however has been deemed suitable for the purposes of this investigation as it will yield conservative results when applied to the rural study area.

The calculated peak hour traffic volumes, as well as current traffic data collected during McIntosh Perry's field investigations have been compiled and are presented in **Figures 3A and 3B**. Blue text corresponds to the percentage of heavy vehicles observed during peak hours.

3.3.2 *Existing Pedestrian, Bicycle and Other Non-Auto Modes of Traffic*

Pedestrian and bicycle traffic observed during the study period was negligible during both the a.m. and p.m. peak periods. Additionally, the proposed development is not anticipated to generate pedestrian traffic. As such, it is anticipated that active transportation will not be unduly impacted by the proposed development. Furthermore, it should be noted that the study area is not located in close proximity to any major public transit routes or designated cycling routes.

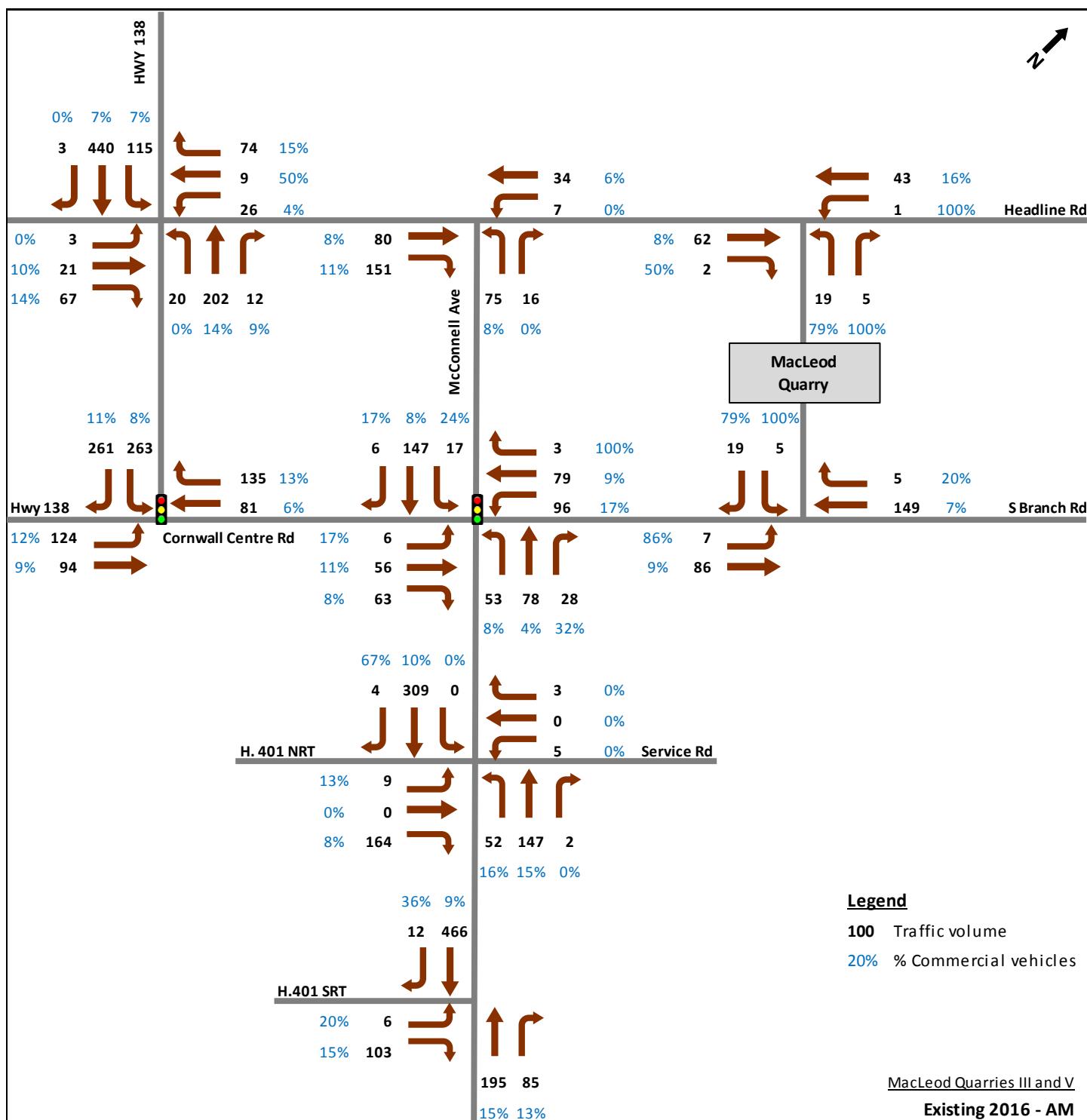


Figure 3A: Existing Traffic Volumes (2016) – AM Peak

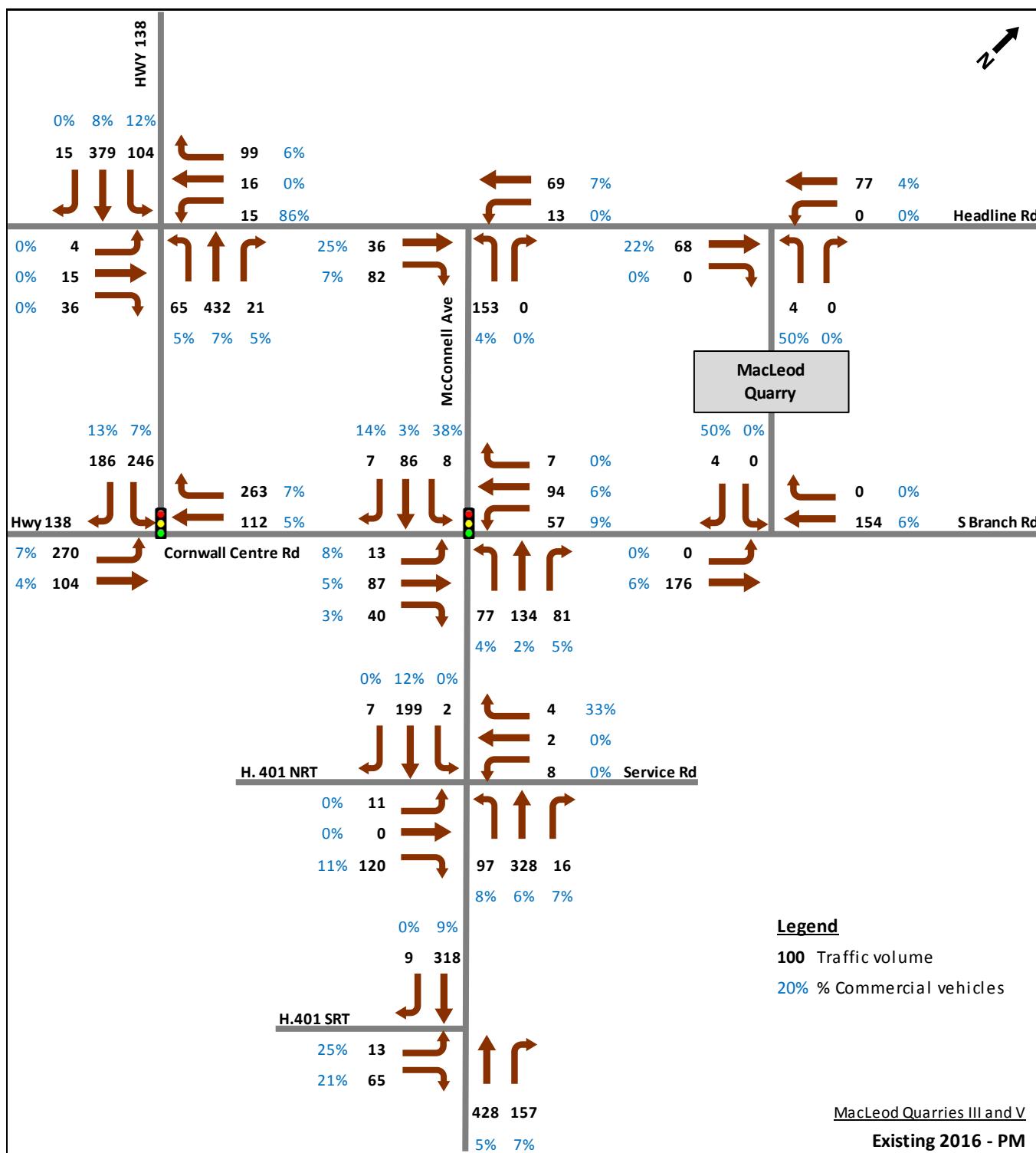


Figure 3B: Existing Traffic Volumes (2016) – PM Peak

3.4 Capacity and Level of Service Methodology

For the purposes of this report, a combination of the Synchro Control Delay (Percentile Method) and HCM 2000 methods have been used to define the Level of Service (LOS) for signalized and unsignalized intersections in the study area.

For definition purposes, the Level of Service (LOS) for an **unsignalized** intersection is determined by the average total delay for the specific turning or through movement. The average total delay and corresponding Level of Service category for an unsignalized intersection, as defined by the Highway Capacity Manual, are presented in **Table 3.4.1**. For an unsignalized intersection, a Level of Service of 'F' has an average total delay of greater than 50 seconds. These high delays are indicative of insufficient gaps of suitable size to permit vehicles to execute their turning movement.

Table 3.4.1: LOS for Unsignalized Intersections

Level of Service (LOS)	Average Total Delay (seconds)
A	Less than 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	Greater than 50.1

The Level of Service/Capacity of a **signalized** intersection is also determined by average total delay; however this delay is dependent on a number of factors for signalized intersections. Considerations include lane configuration, signal operation/phasing, turning radii, pedestrian traffic, other signalized intersections in the vicinity, etc. The average total delay and corresponding Level of Service category for a signalized intersection, as defined by the Highway Capacity Manual, are presented in **Table 3.4.2**. For a signalized intersection, a Level of Service of 'F' has an average total delay of greater than 80 seconds.

Table 3.4.2: LOS for Signalized Intersections

Level of Service (LOS)	Average Total Delay (seconds)
A	Less than 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	Greater than 80.1

Level of Service may be calculated per movement or per approach for any intersection configuration; however Level of Service for any intersection as a whole is only defined for signalized and all-way stop configurations.

3.5 Existing Operating Conditions

The existing traffic volumes were analyzed using *Synchro Studio 8* software. **Table 3.5.1** summarizes the 2016 existing traffic operations within the study area. Detailed intersection capacity analysis summaries are presented in **Appendix B**.

Table 3.5.1: Existing Traffic Operation (2016)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (sec)	LOS	v/c Ratio	Delay (sec)
Hwy 138 & Headline Rd						
Eastbound	C	0.26	17.8	C	0.23	22.9
Westbound	C	0.35	21.6	D	0.54	33.6
Northbound	A	0.02	0.9	A	0.06	1.7
Southbound	A	0.10	2.5	A	0.11	2.9
McConnell Ave & Headline Rd						
Eastbound	-	0.15	0.0	-	0.08	0.0
Westbound	A	0.01	1.4	A	0.01	1.2
Northbound	B	0.13	10.4	B	0.23	10.8
North Site Access & Headline Rd						
Eastbound	-	0.04	0.0	-	0.04	0.0
Westbound	A	0.00	0.2	-	0.00	0.0
Northbound	B	0.04	10.1	A	0.01	9.3
Hwy 138 & Cornwall Centre Rd *						
Eastbound	B	0.49	13.4	C	0.86	27.9
Westbound	A	0.45	6.9	A	0.48	4.3
Southbound	A	0.32	5.3	B	0.46	11.8
McConnell Ave & South Branch Rd *						
Eastbound	A	0.21	5.6	A	0.23	7.1
Westbound	B	0.39	11.4	A	0.30	9.6
Northbound	A	0.29	8.8	B	0.49	10.5
Southbound	A	0.29	9.5	A	0.09	7.2
South Branch Rd & South Site Access						
Eastbound	A	0.01	0.7	A	0.14	8.0
Westbound	-	0.10	0.0	-	0.10	0.0
Southbound	B	0.04	10.6	B	0.02	11.6

* - Denotes Signalized Intersection

Table 3.5.1 (cont'd): Existing Traffic Operation (2016)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (sec)	LOS	v/c Ratio	Delay (sec)
McConnell Ave & North Ramp Terminal						
Eastbound	B	0.28	12.6	B	0.21	11.6
Westbound	C	0.03	17.0	C	0.06	19.8
Northbound	A	0.05	2.5	A	0.08	2.4
Southbound	-	0.00	0.0	A	0.00	0.1
McConnell Ave & South Ramp Terminal						
Eastbound	B	0.22	13.6	B	0.17	13.6
Northbound	-	0.00	0.0	-	0.00	0.0
Southbound	-	0.31	0.0	-	0.21	0.0

Under existing (2016) traffic conditions, all turning movements at the intersections within the immediate area appear to be operating at acceptable levels of service during both the weekday a.m. and p.m. peak hours. Similarly, both signalized intersections immediately west of the south site access on South Branch Rd appear to be operating at overall acceptable levels of service. This indicates that the surrounding road network can accommodate increased traffic volumes before capacity is exceeded.

4.0 FUTURE BACKGROUND TRAFFIC CONDITIONS

4.1 Annual Background Traffic Growth

The existing traffic volumes within the study area can be expected to increase over time due to the overall growth anticipated within the area. In an approach similar to that outlined in [Section 3.3.1](#), the overall anticipated growth rate for the study area (1%) has been applied to the existing traffic volumes in order to estimate traffic growth to the horizon years of 2021 and 2026. For the purposes of this analysis, the horizon years of 2021 and 2026 will be analyzed as by this time it is anticipated that all new traffic generated by the proposed pit/quarry operations will be captured within the surrounding road network.

It should be noted that limited information was available with regards to the anticipated opening date of the proposed pit/quarry at the time of preparing this report and, as such, the 5 and 10 year horizons were selected based on present date. Should full build-out of pit/quarry operations be delayed beyond the 10-year horizon year of 2026, consideration should be given to background traffic volumes to ensure they do not vary significantly from traffic data used in preparing this report.

4.2 Other Developments within the Study Area

McIntosh Perry is unaware of any large commercial or high-density residential areas being developed in the study area at the time of preparing this report.

4.3 Future Background Operating Conditions

4.3.1 5-Year Horizon (2021)

The estimated future traffic growth as outlined in **Section 3.3.1** was applied to the existing (2016) peak-hour traffic volumes to produce the anticipated 2021 future background traffic volumes for the weekday a.m. and p.m. peak hours in the 5-year horizon year. Future (2021) background traffic volumes are presented in **Figures 4A and 4B**.

A summary of the future 5-year horizon (2021) background traffic operations at intersections within the study area are presented in **Table 4.3.1**. Detailed intersection capacity analysis summaries can be found in **Appendix B**.

Table 4.3.1: Future Background Traffic Operation (2021)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (sec)	LOS	v/c Ratio	Delay (sec)
Hwy 138 & Headline Rd						
Eastbound	C	0.28	18.4	D	0.26	25.5
Westbound	C	0.40	23.9	E	0.63	42.9
Northbound	A	0.02	0.9	A	0.07	1.7
Southbound	A	0.10	2.6	A	0.12	3.0
McConnell Ave & Headline Rd						
Eastbound	-	0.16	0.0	-	0.08	0.0
Westbound	A	0.01	1.3	A	0.01	1.3
Northbound	B	0.14	10.5	B	0.24	11.0
North Site Access & Headline Rd						
Eastbound	-	0.04	0.0	-	0.05	0.0
Westbound	A	0.0	0.2	A	0.01	1.3
Northbound	A	0.04	9.9	B	0.24	10.9
Hwy 138 & Cornwall Centre Rd *						
Eastbound	B	0.52	14.0	C	0.90	33.0
Westbound	A	0.46	6.9	A	0.48	4.3
Southbound	A	0.34	5.5	B	0.36	13.0
McConnell Ave & South Branch Rd *						
Eastbound	A	0.22	5.6	A	0.25	4.3
Westbound	B	0.41	11.7	A	0.03	8.6
Northbound	A	0.32	8.8	B	0.73	18.0
Southbound	A	0.31	9.6	A	0.32	8.8

* - Denotes Signalized Intersection

Table 4.3.1 (cont'd): Future Background Traffic Operation (2021)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (sec)	LOS	v/c Ratio	Delay (sec)
South Branch Rd & South Site Access						
Eastbound	A	0.01	0.7	-	0.00	0.0
Westbound	-	0.10	0.0	-	0.10	0.0
Southbound	B	0.04	10.3	B	0.01	10.5
McConnell Ave & North Ramp Terminal						
Eastbound	B	0.30	13.0	B	0.22	11.9
Westbound	C	0.03	18.1	C	0.05	17.2
Northbound	A	0.05	2.5	A	0.09	2.5
Southbound	-	0.00	0.0	A	0.00	0.1
McConnell Ave & South Ramp Terminal						
Eastbound	B	0.25	14.7	B	0.19	14.2
Northbound	-	0.00	0.0	-	0.00	0.0
Southbound	-	0.32	0.0	-	0.22	0.0

Under anticipated future background 2021 traffic conditions, all turning movements at the intersections within the study area are expected to continue to operate at acceptable levels of service during both the weekday a.m. and p.m. peak hours. Similarly, both signalized intersections in close proximity to the subject site are expected to operate at acceptable levels of service. This indicates that the surrounding road network can accommodate increased volumes of traffic before capacity is exceeded with the exception of the westbound approach at the intersection of Hwy 138 & Headline Rd, which is expected to operate at a **Level of Service E** during the p.m. peak hour, with a total delay of 42.9 seconds. Detailed Synchro analysis for each intersection is presented in **Appendix B**.

4.3.2 10-Year Horizon (2026)

The estimated future traffic growth as outlined in previous sections was applied to the existing (2016) peak-hour traffic volumes in order to produce the anticipated 2026 future background traffic volumes for the weekday a.m. and p.m. peak hours in the 10-year horizon year. Future (2026) background traffic volumes are presented in **Figures 5A and 5B**.

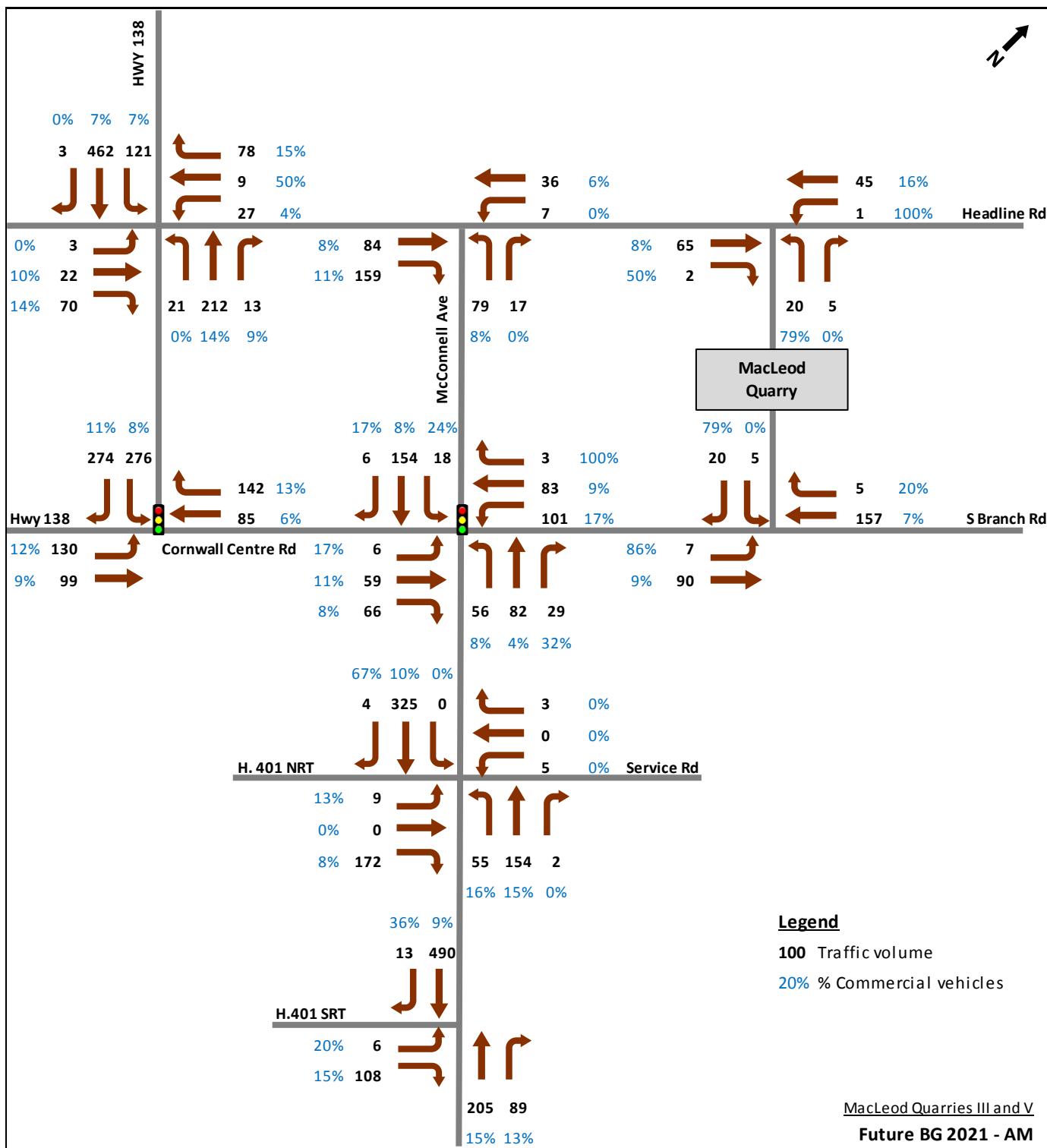


Figure 4A: 5-Year Horizon Background Traffic Volumes (2021) – AM Peak

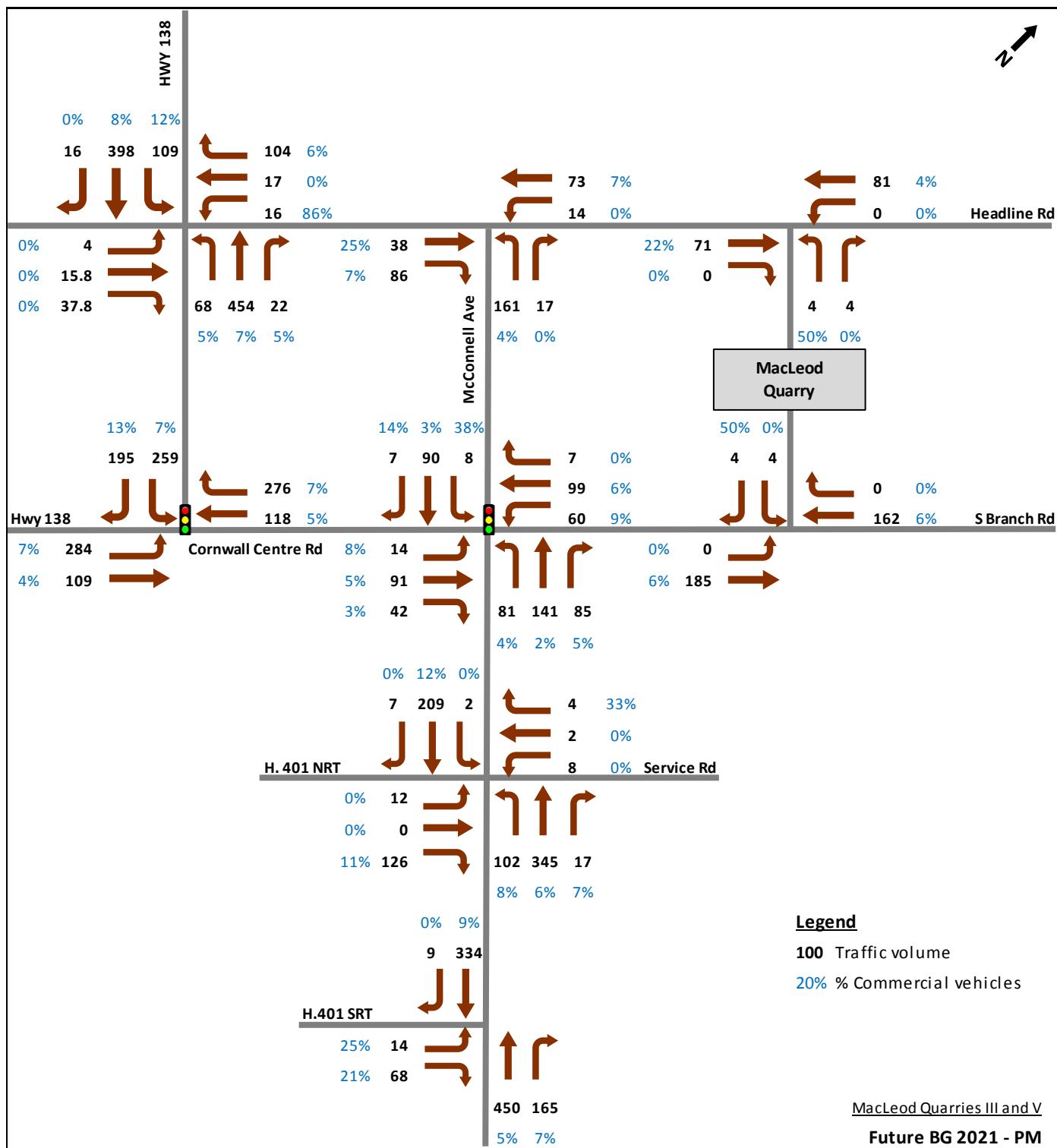


Figure 4B: 5-Year Horizon Background Traffic Volumes (2021) – PM Peak

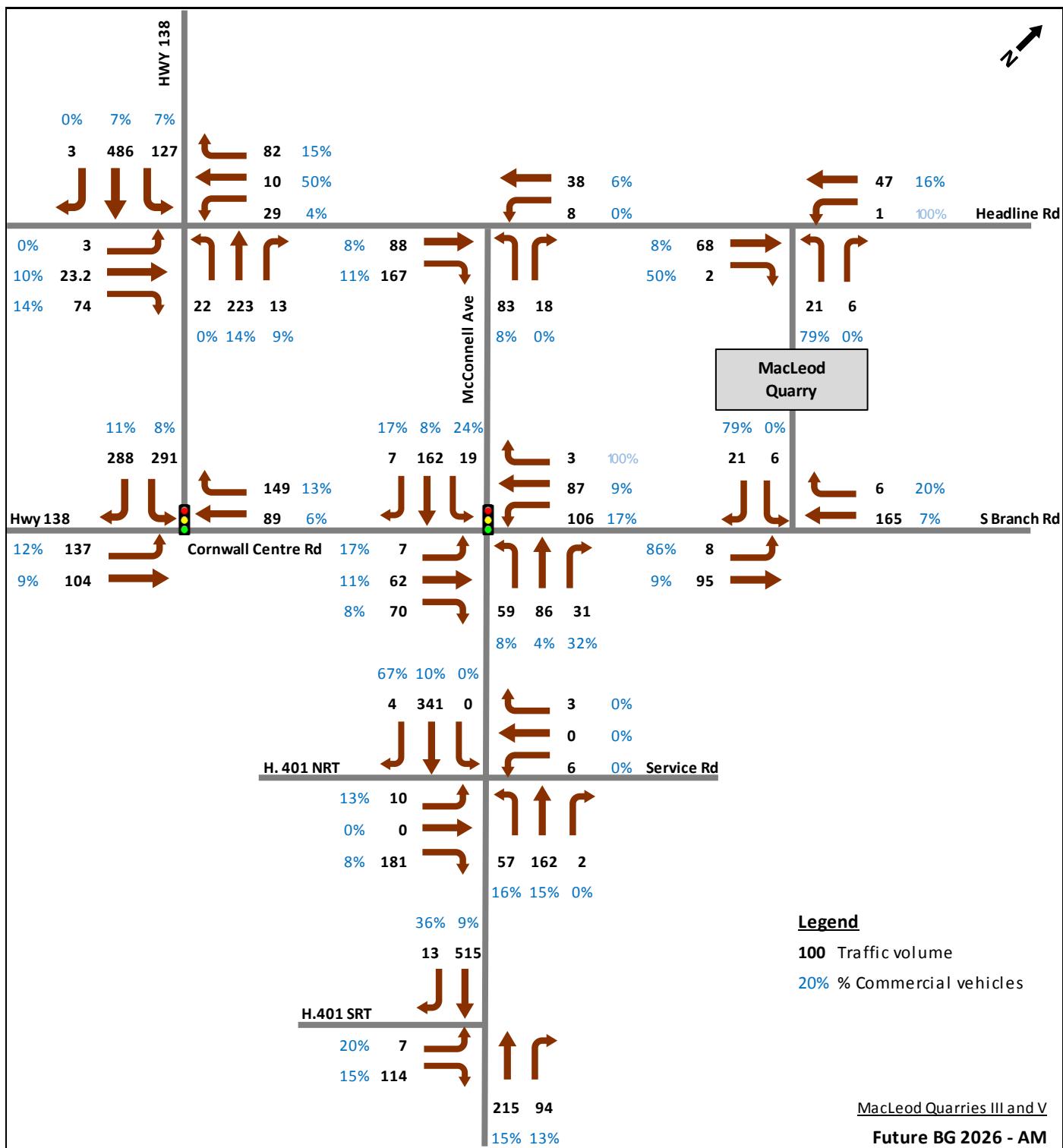


Figure 5A: 10-Year Horizon Background Traffic Volumes (2026) – AM Peak

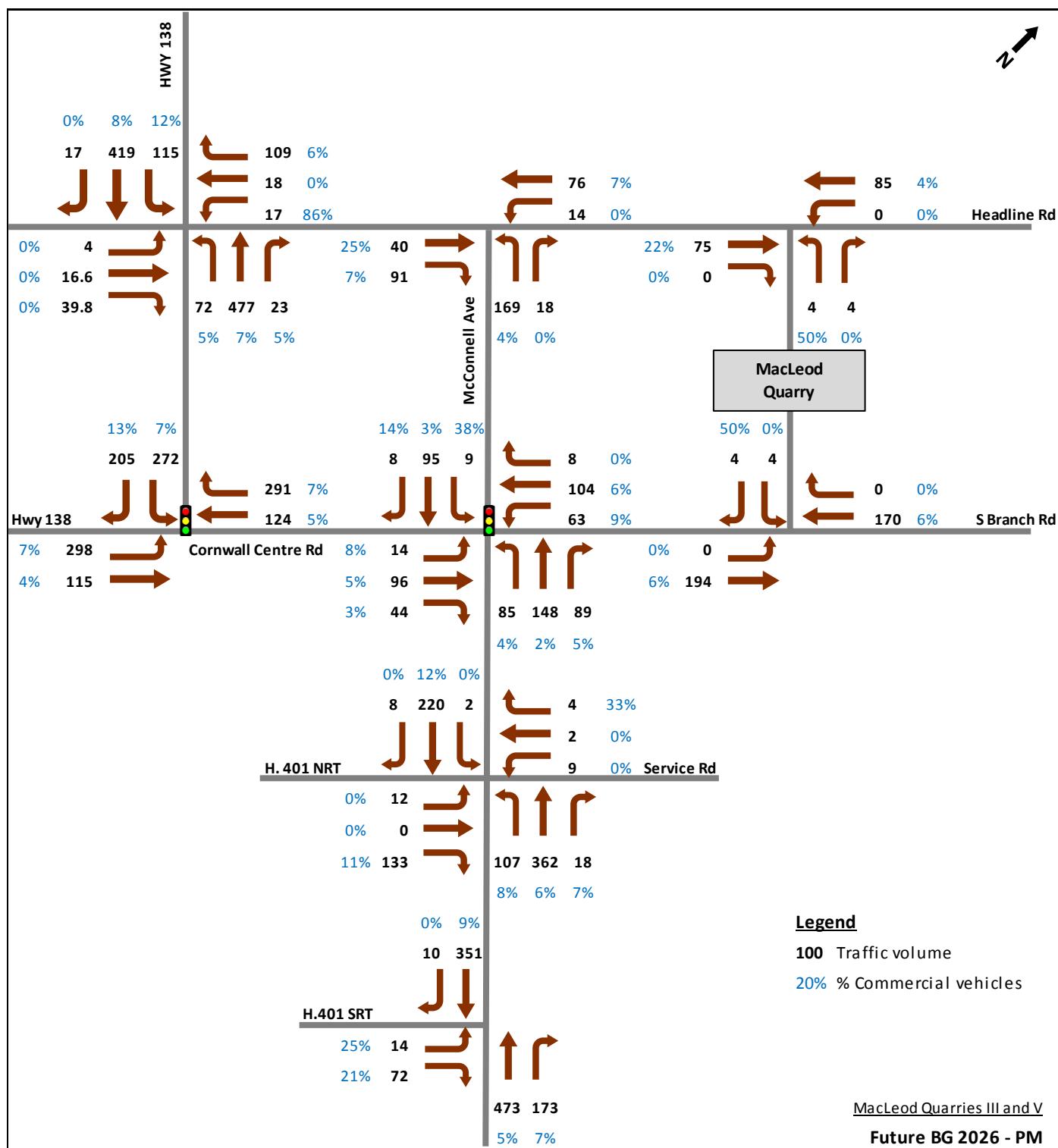


Figure 5B: 10-Year Horizon Background Traffic Volumes (2026) – PM Peak

A summary of the future 10-year horizon (2026) background traffic operations at intersections within the study area are presented in **Table 4.3.2**. Detailed intersection capacity analysis summaries can be found in **Appendix B**.

Table 4.3.2: Future Background Traffic Operation (2026)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (sec)	LOS	v/c Ratio	Delay (sec)
Hwy 138 & Headline Rd						
Eastbound	C	0.32	20.5	D	0.31	29.0
Westbound	D	0.47	28.8	F	0.75	60.1
Northbound	A	0.02	0.9	A	0.07	1.8
Southbound	A	0.11	2.7	A	0.13	3.2
McConnell Ave & Headline Rd						
Eastbound	-	0.16	0.0	-	0.08	0.0
Westbound	A	0.01	1.4	A	0.01	1.2
Northbound	B	0.15	10.7	B	0.26	11.2
North Site Access & Headline Rd						
Eastbound	-	0.04	0.0	-	0.05	0.0
Westbound	A	0.05	8.3	-	0.00	0.0
Northbound	B	0.04	10.5	A	0.01	9.4
Hwy 138 & Cornwall Centre Rd *						
Eastbound	B	0.56	14.9	D	0.92	36.1
Westbound	A	0.47	7.0	A	0.48	4.3
Southbound	A	0.36	5.7	B	0.54	14.1
McConnell Ave & South Branch Rd *						
Eastbound	A	0.23	5.7	A	0.25	7.1
Westbound	B	0.43	12.1	A	0.33	10.0
Northbound	A	0.34	9.0	B	0.55	11.7
Southbound	A	0.32	9.8	A	0.19	8.3
South Branch Rd & South Site Access						
Eastbound	A	0.01	0.7	-	0.00	0.0
Westbound	-	0.11	0.0	-	0.11	0.0
Southbound	B	0.04	10.4	B	0.01	10.4
McConnell Ave & North Ramp Terminal						
Eastbound	B	0.33	13.5	B	0.24	12.2
Westbound	C	0.04	20.0	C	0.08	23.2
Northbound	A	0.06	2.6	A	0.09	2.5
Southbound	-	0.00	0.0	A	0.00	0.1
McConnell Ave & South Ramp Terminal						
Eastbound	C	0.28	15.5	B	0.20	14.7
Northbound	-	0.00	0.0	-	0.00	0.0
Southbound	-	0.34	0.0	-	0.23	0.0

* - Denotes Signalized Intersection

Under anticipated future 2026 traffic conditions, all turning movements at the intersections within the study area are expected to operate at acceptable levels of service during both the weekday a.m. and p.m. peak hours, with the exception of the intersection of Hwy 138 & Headline Rd, which is expected to operate at a **Level of Service F** during the p.m. peak hour, with a total delay of 60.1 seconds. During the p.m. peak hour, the westbound approach at this intersection is anticipated to have an unacceptable delay, however further analysis indicated that with a v/c ratio of 0.75, the approach is not expected to exceed its capacity under 10-year horizon conditions. Both signalized intersections in close proximity to the subject site are expected to operate at acceptable levels of service. Detailed Synchro analysis for each intersection is presented in **Appendix B**.

5.0 SITE GENERATED TRAFFIC

5.1 Traffic Generation

As outlined in previous sections of this report, the proposed development will consist of a quarry expansion with an additional mineral extraction area of 64.6 hectares. Based on information available at the time of preparing this report, the subject site is seeking approval for an anticipated annual production of approximately **3,400,000 tonnes** of material per year.

In order to estimate the number of trips generated by the site during regular operation, it is assumed that 50% of trucks exiting the pit will carry 20 tonnes of material, while the other 50% will carry 32 tonnes. Based on discussion with the developer, it has been assumed that the site will be in operation for approximately 220 working days per year. This translates to a total of approximately 628 outbound trips (1,256 total trips) each day. To account for additional employee trips and peaks in production from time to time, an additional 20% has been added to the average daily trips in order to maintain a conservative approach in estimating the site generated traffic. As such, the pit can be expected to generate approximately 753 outbound trips (1,507 total trips) on a good day.

For a regular 12-hour work day, the approximate peak-hour traffic volumes (including employee trips) has been assumed to be 8.3% of the total daily site generated traffic. The site is therefore expected to generate approximately **126 total trips** (63 inbound, 63 outbound) during both the weekday a.m. and p.m. peak hours. Consideration should be given to the fact that this figure is based on a number of highly conservative assumptions, and in reality the production level of the proposed development is anticipated to generate considerably lower volumes of truck traffic on a daily basis.

Traffic generated by the quarry expansion is anticipated to consist solely of ‘primary trips’ for which the new development is the ultimate destination. In this case, the presence of site generated traffic on the adjacent road network is directly attributed to the new development. Conversely, ‘pass-by’ trips consist of traffic that is already present on the adjacent road network and access the site as a matter of convenience. Pass-by trips are generally applied in commercial studies and have not been considered for this report.

As a result of the nature of this development, a pit / quarry, it was assumed that the majority of generated traffic would be classified as heavy vehicles. Since quarry staff is expected to access the site via passenger cars the percentage of heavy vehicles could not be 100%. As such, it was assumed that 85% of all site generated traffic would be heavy vehicles and 15% would be passenger cars.

5.2 Traffic Distribution

For the purposes of this investigation, the origin-destination distribution of the site generated traffic volumes for the proposed development has been estimated with consideration given to several factors, including existing traffic volumes and population densities. Approximately 50% of site generated traffic is anticipated to travel south in order to access Highway 401 via the interchanges on McConnell Ave. Approximately 25% of site generated traffic is anticipated to travel north via headline road and Hwy 138 in order to access the 417, while the remaining 25% is expected to travel south and east in order to access the City of Cornwall and surrounding municipalities.

The estimated distribution for site generated traffic during both the a.m. and p.m. peak hours is presented in **Figure 6**.

6.0 TOTAL FUTURE OPERATING CONDITIONS

This section presents the analysis and summary of the effects of adding the total subject site generated traffic volumes to the anticipated future network in the a.m. and p.m. peak hours for both the 5-year (2021) and 10-year (2026) horizon years.

6.1 5-Year Horizon Year (2021)

The results of combining the subject site generated traffic volumes with the anticipated 2021 background traffic volumes for both the a.m. and p.m. peak hours are presented in **Figures 7A and 7B**.

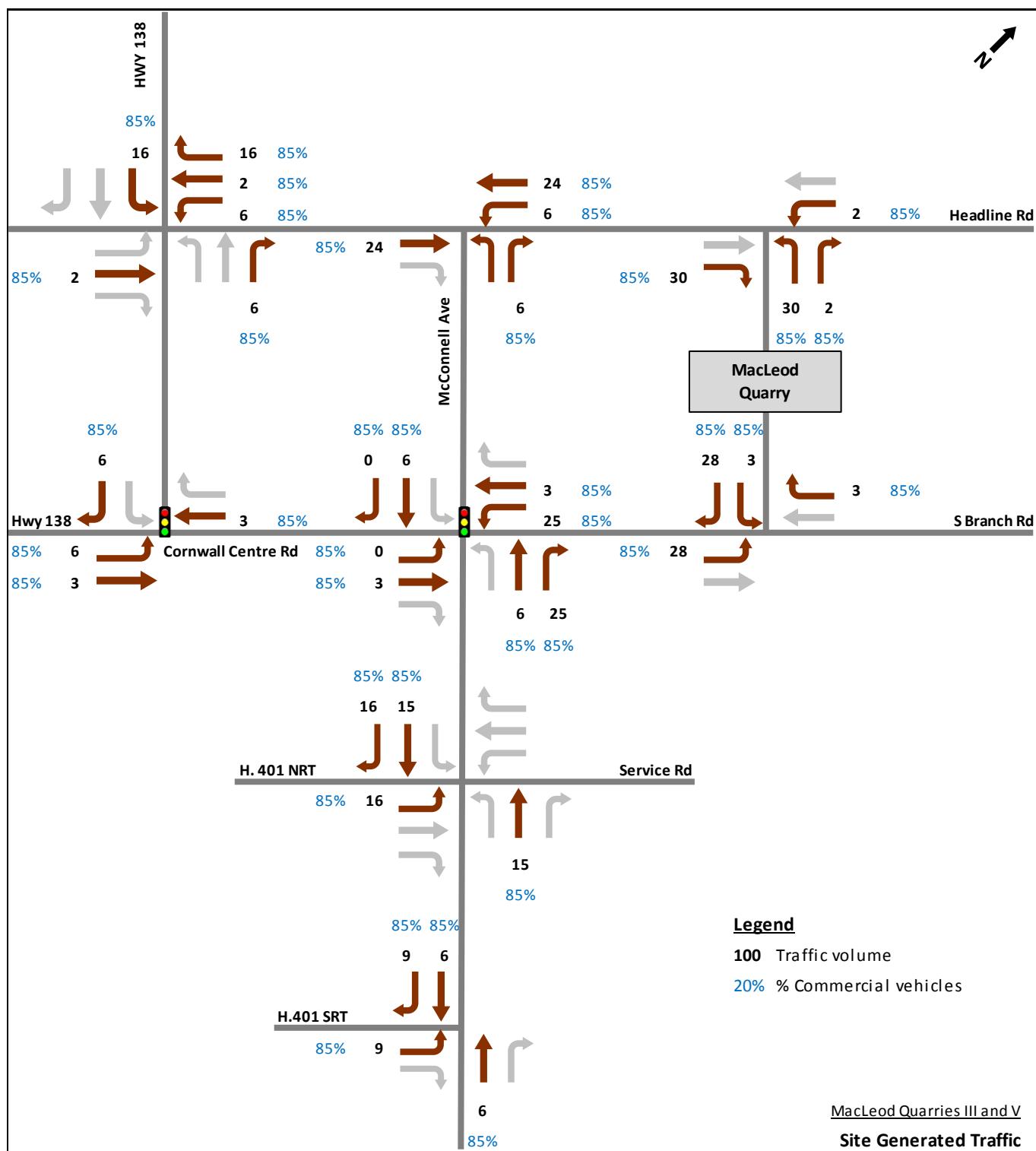


Figure 6: Anticipated Development Traffic – AM and PM Peak

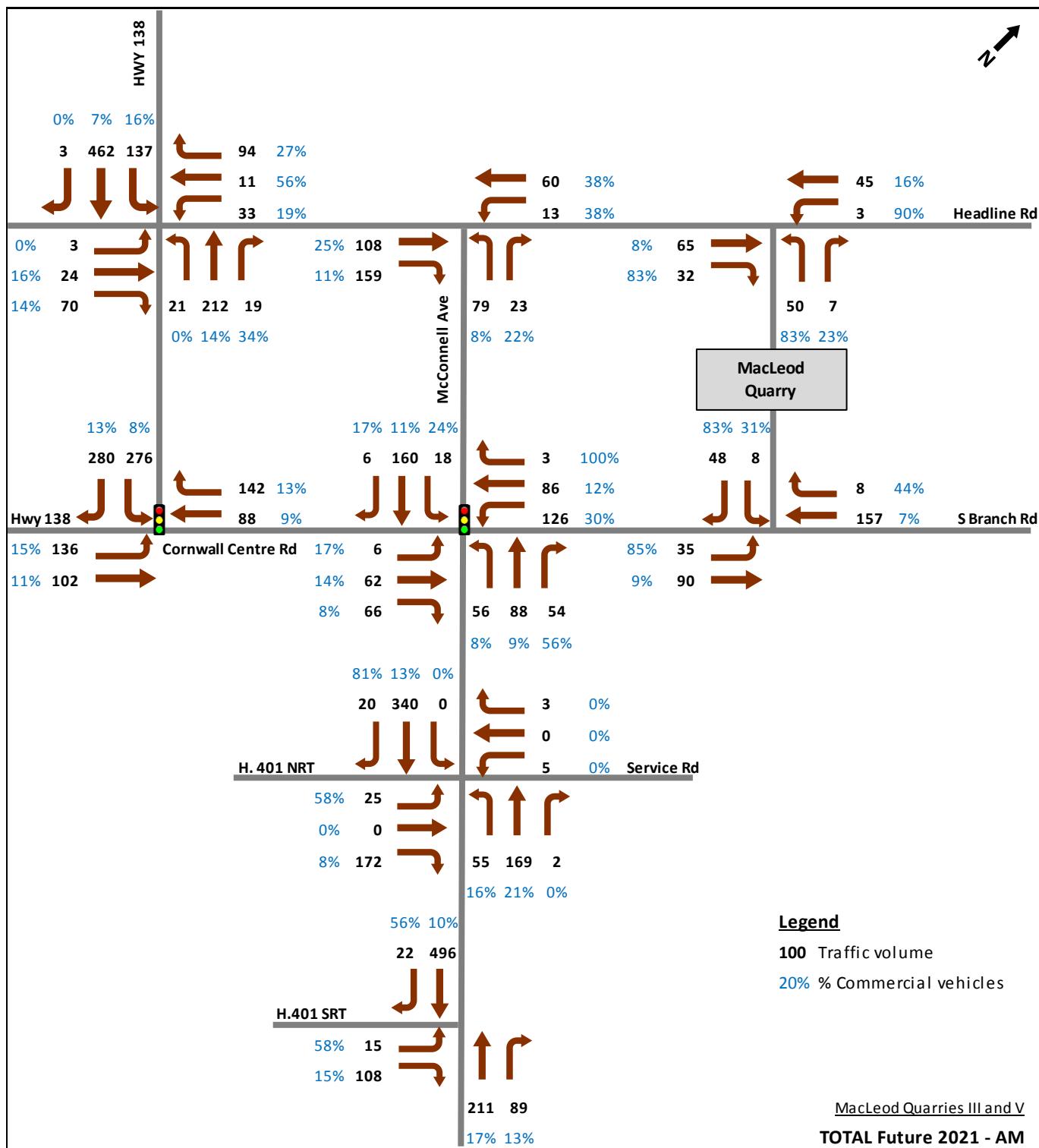


Figure 7A: 5-Year Horizon Total Traffic Volumes (2021) – AM Peak

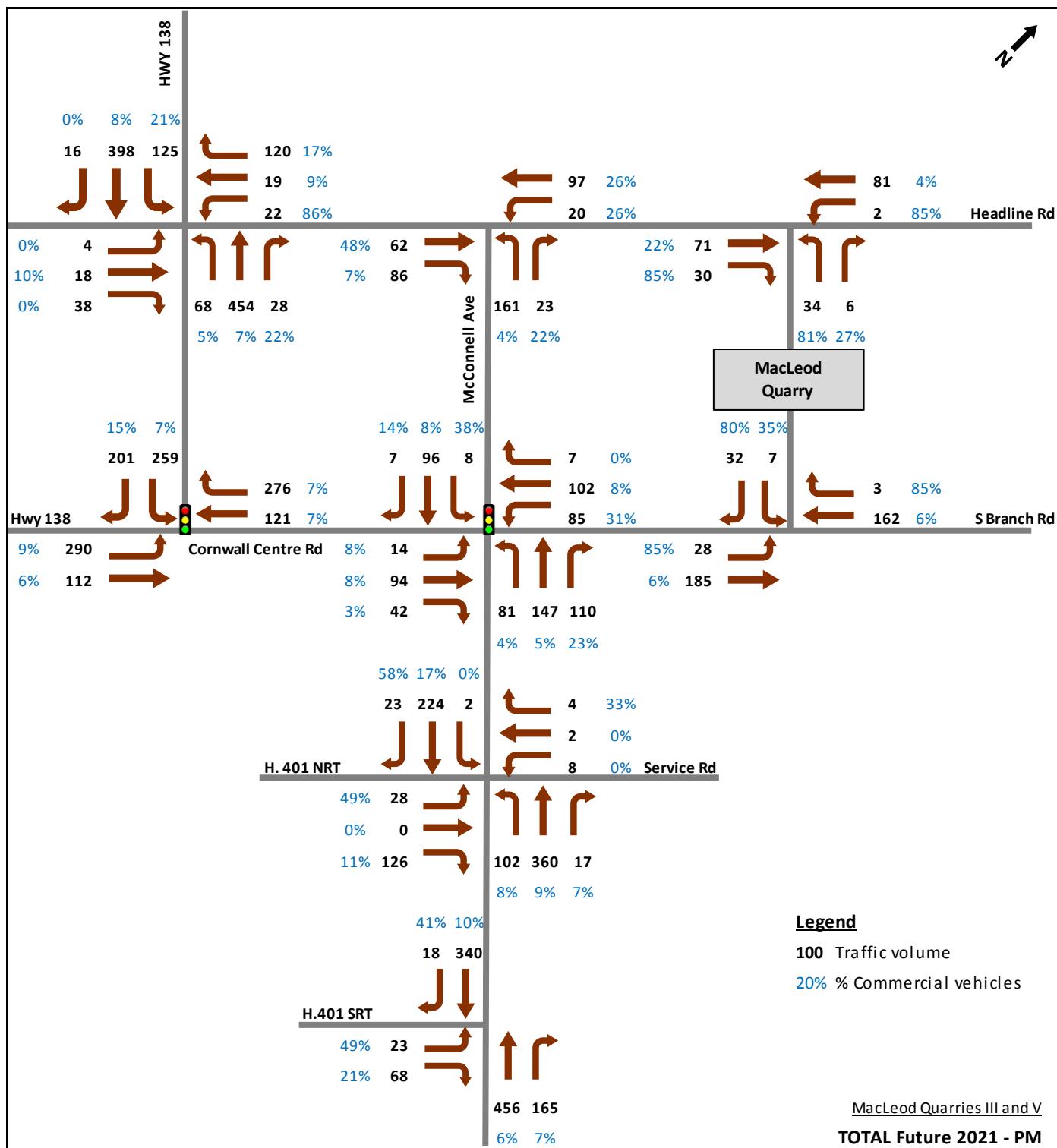


Figure 7B: 5-Year Horizon Total Traffic Volumes (2021) – PM Peak

A summary of the total future 5-year horizon (2021) traffic operations at intersections within the study area are presented in **Table 6.1.1**. Detailed intersection capacity analysis summaries can be found in **Appendix B**.

Table 6.1.1: Total Future Traffic Operation (2021)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (sec)	LOS	v/c Ratio	Delay (sec)
Hwy 138 & Headline Rd						
Eastbound	C	0.32	20.8	D	0.32	30.3
Westbound	D	0.55	33.0	F	0.86	80.2
Northbound	A	0.02	1.0	A	0.07	1.8
Southbound	A	0.12	3.0	A	0.14	3.6
McConnell Ave & Headline Rd						
Eastbound	-	0.17	0.0	-	0.09	0.0
Westbound	A	0.01	1.6	A	0.02	1.5
Northbound	B	0.16	11.2	B	0.27	11.8
North Site Access & Headline Rd						
Eastbound	-	0.06	0.0	-	0.06	0.0
Westbound	A	0.00	0.5	A	0.00	0.2
Northbound	B	0.09	10.6	B	0.06	10.7
Hwy 138 & Cornwall Centre Rd *						
Eastbound	B	0.56	18.5	C	0.91	34.4
Westbound	A	0.46	7.0	A	0.48	4.3
Southbound	A	0.34	8.6	B	0.50	13.3
McConnell Ave & South Branch Rd *						
Eastbound	A	0.23	5.8	A	0.26	8.5
Westbound	B	0.53	14.5	B	0.45	14.0
Northbound	A	0.40	9.2	B	0.55	11.2
Southbound	A	0.33	9.9	A	0.17	7.9
South Branch Rd & South Site Access						
Eastbound	A	0.04	2.7	A	0.03	1.4
Westbound	-	0.11	0.0	-	0.11	0.0
Southbound	B	0.09	2.4	B	0.06	10.9
McConnell Ave & North Ramp Terminal						
Eastbound	C	0.38	15.4	C	0.33	15.6
Westbound	C	0.03	19.1	C	0.07	22.3
Northbound	A	0.05	2.5	A	0.09	2.5
Southbound	-	0.00	0.0	A	0.00	0.1
McConnell Ave & South Ramp Terminal						
Eastbound	C	0.30	16.5	C	0.25	16.9
Northbound	-	0.00	0.0	-	0.00	0.0
Southbound	-	0.33	0.0	-	0.23	0.0

* - Denotes Signalized Intersection

Under anticipated 5-year horizon (2021) total traffic conditions, all turning movements at intersections within the study area are expected to continue to operate at acceptable levels of service during both the weekday a.m. and p.m. peak hours with the exception of the westbound approach at the intersection of Hwy 138 & Headline Rd, which is expected to operate at a **Level of Service F** during the a.m. and p.m. peak hours.

When compared to the operating conditions under anticipated background traffic conditions in 2021, it is evident that the failure observed at the westbound approach is a result of background traffic and cannot be attributed directly to the traffic volumes generated by the proposed development. This is apparent as the westbound approach has a Level of Service E under background conditions alone. Increased delays at the westbound approach are a result of peak hour traffic volumes travelling along Hwy 138 and, as such, no intersection modifications are warranted in conjunction with the proposed development.

Both signalized intersections immediately west of the south site access on South Branch Rd appear to be operating at overall acceptable levels of service. Similarly, both site accesses are expected to operate at high levels of service throughout the a.m. and p.m. peak hours.

Detailed Synchro analysis for each intersection is presented in **Appendix B**.

6.2 10-Year Horizon (2026)

The results of combining the subject site generated traffic volumes with the anticipated 2026 background traffic volumes for both the a.m. and p.m. peak hours are presented in **Figures 8A and 8B**.

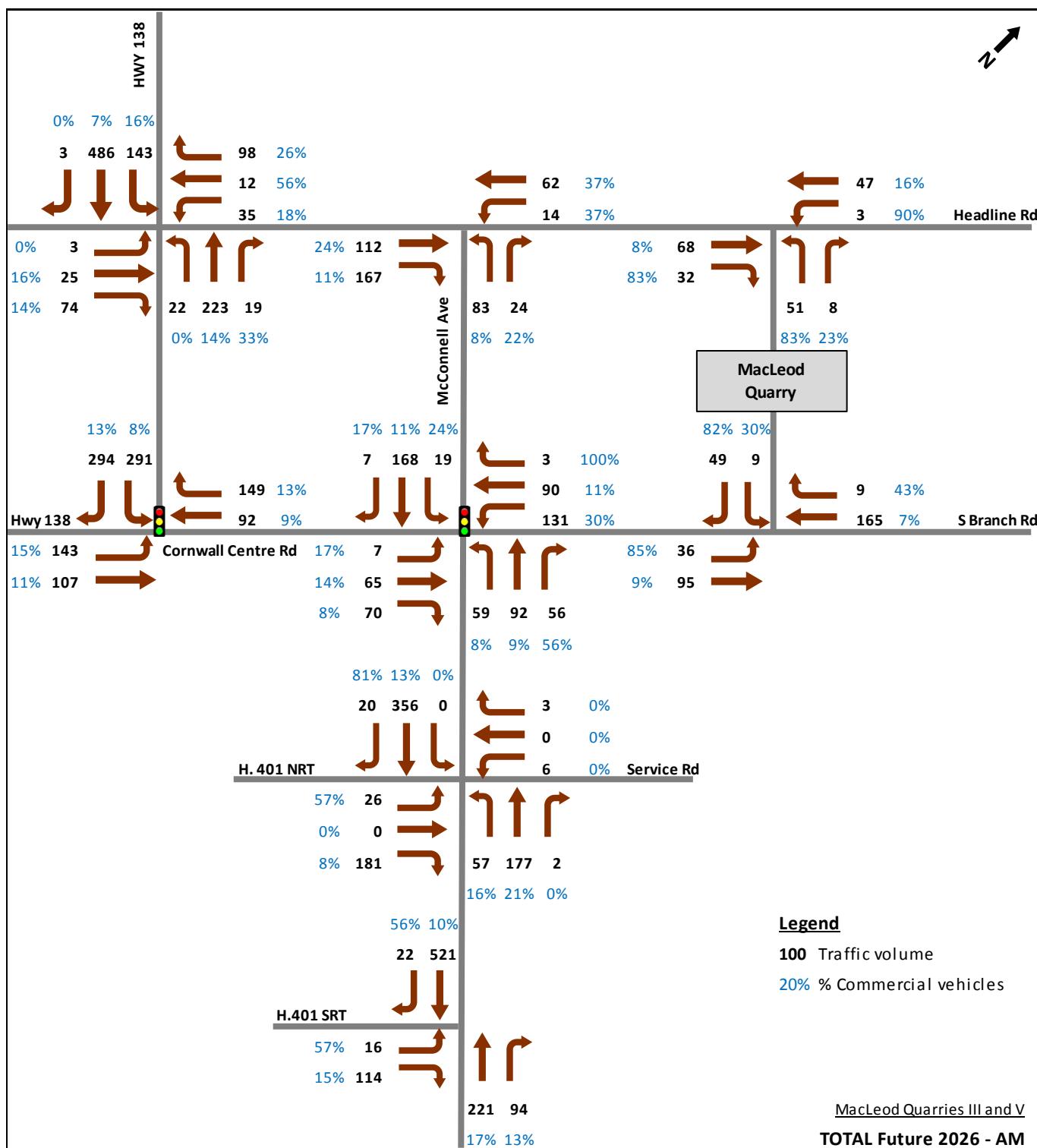


Figure 8A: 10-Year Horizon Total Traffic Volumes (2026) – AM Peak

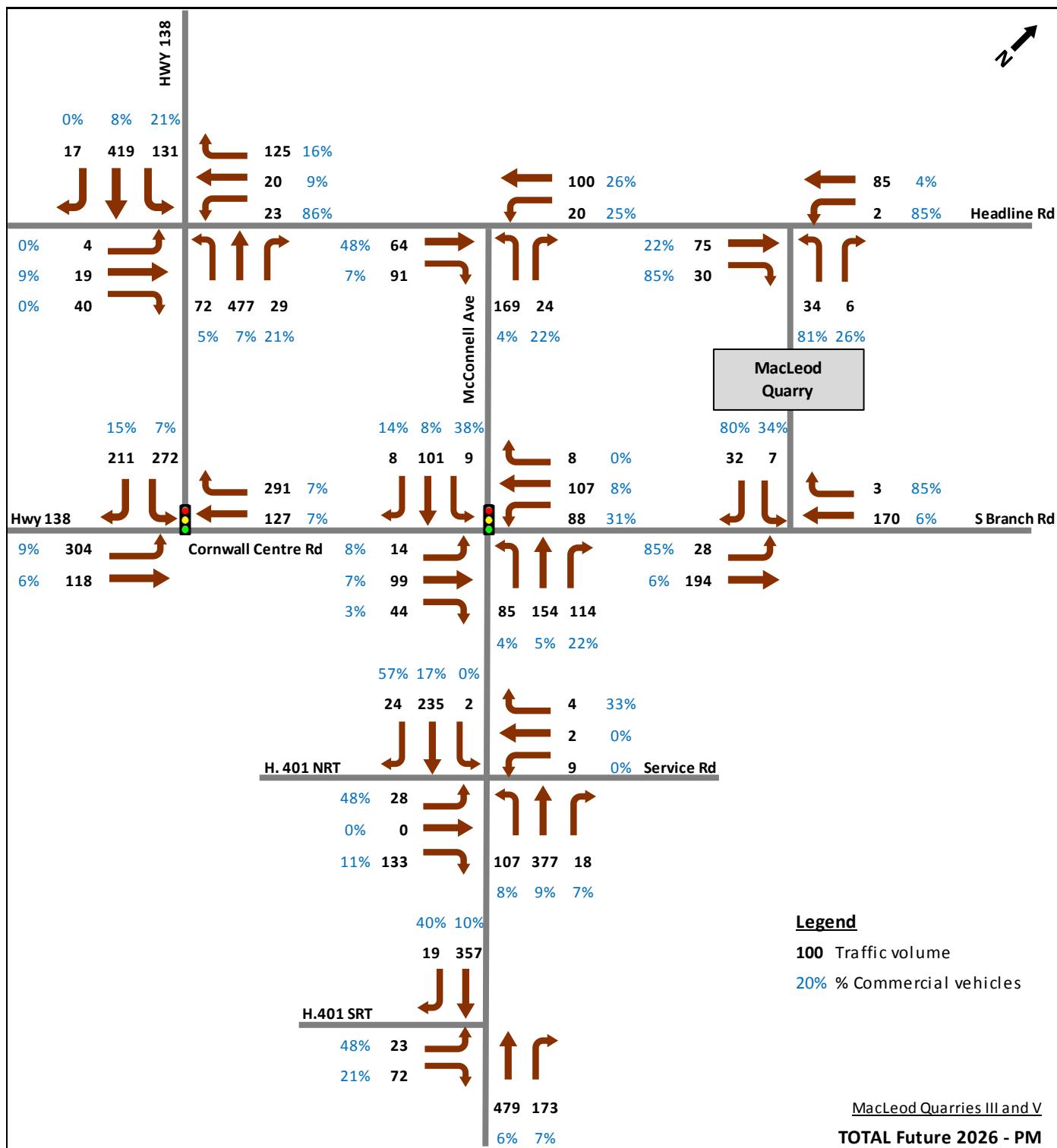


Figure 8B: 10-Year Horizon Total Traffic Volumes (2026) – PM Peak

A summary of the total future 10-year horizon (2026) traffic operations at intersections within the study area are presented in **Table 6.2.1**. Detailed intersection capacity analysis summaries can be found in **Appendix B**.

Table 6.2.1: Total Future Traffic Operation (2026)

Intersection	AM Peak Hour			PM Peak Hour		
	LOS	v/c Ratio	Delay (sec)	LOS	v/c Ratio	Delay (sec)
Hwy 138 & Headline Rd						
Eastbound	C	0.35	22.6	E	0.37	35.3
Westbound	E	0.64	42.2	F	1.02	126.2
Northbound	A	0.02	1.0	A	0.07	1.8
Southbound	A	0.13	3.1	A	0.15	3.7
McConnell Ave & Headline Rd						
Eastbound	-	0.18	0.0	-	0.10	0.0
Westbound	A	0.01	1.6	A	0.02	1.4
Northbound	B	0.17	11.3	B	0.29	12.0
North Site Access & Headline Rd						
Eastbound	-	0.06	0.0	-	0.07	0.0
Westbound	A	0.00	0.5	A	0.00	0.2
Northbound	B	0.09	10.6	B	0.06	10.7
Hwy 138 & Cornwall Centre Rd *						
Eastbound	B	0.60	15.8	C	0.92	34.7
Westbound	A	0.47	7.0	A	0.48	4.1
Southbound	A	0.36	8.9	B	21.8	14.5
McConnell Ave & South Branch Rd *						
Eastbound	A	0.24	5.8	A	0.27	8.6
Westbound	B	0.55	15.1	B	0.47	14.4
Northbound	A	0.42	9.5	B	0.58	11.8
Southbound	B	0.34	10.1	A	0.18	8.0
South Branch Rd & South Site Access						
Eastbound	A	0.04	2.7	A	0.03	1.4
Westbound	-	0.11	0.0	-	0.11	0.0
Southbound	B	0.09	11.0	B	0.07	11.0
McConnell Ave & North Ramp Terminal						
Eastbound	C	0.41	16.2	C	0.35	16.3
Westbound	C	0.04	21.2	C	0.08	24.7
Northbound	A	0.06	2.5	A	0.09	2.5
Southbound	-	0.00	0.0	A	0.00	0.1
McConnell Ave & South Ramp Terminal						
Eastbound	C	0.33	17.6	C	0.27	17.7
Northbound	-	0.00	0.0	-	0.00	0.0
Southbound	-	0.35	0.0	-	0.24	0.0

* - Denotes Signalized Intersection

Under anticipated total future traffic conditions for the 10-year horizon period, all turning movements at the intersections within the study area are expected to operate at acceptable levels of service with the exception of the westbound approach at the intersection of Hwy 138 & Headline Rd, which is expected to operate at a **Level of Service E and F** during the a.m. and p.m. peak hours, respectively.

When compared to the operating conditions at the intersection of Hwy 138 & Headline Rd under anticipated background traffic conditions in 2026, it is evident that the failure is a result of background traffic volumes as illustrated by Levels of Service of D and F at the intersection under background conditions alone. As noted in previous sections, delays at the intersection are a result of increased background peak-hour traffic volumes travelling along Hwy 138 and therefore no modifications to the network are warranted as a result of the proposed development.

Both signalized intersections immediately west of the south site access on South Branch Rd appear to be operating at overall acceptable levels of service. Similarly, both site accesses are expected to operate at high levels of service throughout the a.m. and p.m. peak hours through to the 10-year horizon.

6.3 Left-Turn and Signalization Warrants at North and South Pit/Quarry Accesses

As indicated in previous sections of this report, the proposed site access is expected to operate at very high levels of service during both the a.m. and p.m. peal hours under 5 and 10-year horizon traffic conditions. In order to assess the entire impact of the development, left-turn warrants were completed for Headline Road and the north site access as well as South Branch Road and the south site access under total future 10-year horizon (2026) conditions, as these volumes represent the worst case scenario. The results indicate that a dedicated left-turn lane is not warranted at either intersection. Completed warrants can be found in **Appendix D**. Considering the relatively low traffic volumes and overall performance of the intersections at site accesses, signalization is not warranted.

6.4 Mitigation Measures at Highway 138 and Headline Road

As noted in previous sections of this report, the east and westbound approaches at the intersection of Highway 138 and Headline Road are expected to operate at poor levels of service under future conditions, regardless of site generated traffic. Site generated traffic is expected to exacerbate the problem at the intersection in horizon years and, as such, it is recommended that performance at this intersection continue to be monitored into the future.

McIntosh Perry has been made aware of a 2016 study of Highway 138 completed by Stantec Consulting Ltd. in conjunction with the MTO which, based on assessment of the existing intersection at Headline Road, recommends upgrades to this intersection in order to decrease delays and vehicle queue lengths. The study was completed to a horizon year of 2039, therefore it is anticipated that the proposed options are suitable to mitigate the poor performance at this intersection resulting from total traffic volumes analyzed in this investigation. Relevant findings of this study can be found at <http://highway138study.ca>.

7.0 CONCLUSIONS AND RECOMMENDATIONS

In completing this traffic impact study for the proposed pit/quarry operations at 17631 South Branch Road in the geographic Township of Cornwall, analysis of the surrounding road network was completed for the following scenarios:

- 2016 Existing Conditions,
- 2021 5-Year Horizon Conditions (Background and Total Traffic),
- 2026 10-Year Horizon Conditions (Background and Total Traffic).

The results of this analysis indicates that the network is anticipated to operate at acceptable levels of service, however capacity and delay deficiencies are expected to occur at the east and westbound approach at the intersection of Headline Rd & Hwy 138 during the peak hours for both the 2021 and 2026 horizon years.

Deficiencies were observed under background as well as total traffic conditions, suggesting that poor levels of service will occur in the horizon years regardless of site generated traffic. Intersection performance is expected to improve with the proposed upgrades presented in the 2016 Highway 138 Study completed by Stantec Consulting Ltd. in conjunction with the MTO. As such, McIntosh Perry recommends that traffic volumes and performance at the intersection of Headline Rd. & Hwy 138 be monitored in the future and that consideration continue be given to upgrades.

The existing site accesses are both anticipated to operate at high levels of service for all conditions through to the 10-year horizon year 2026. Similarly, both signalized intersections in proximity to the subject site are anticipated to operate at overall acceptable levels of service under anticipated total future traffic conditions. Left-turn and signalization warrants were considered for the site entrances and it has been determined that neither are warranted. As such, no roadway modifications are recommended as a result of the proposed quarry expansion.



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Reviewed by: Thomas Gryz, P.Eng.

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Submitted by: Dave Steed

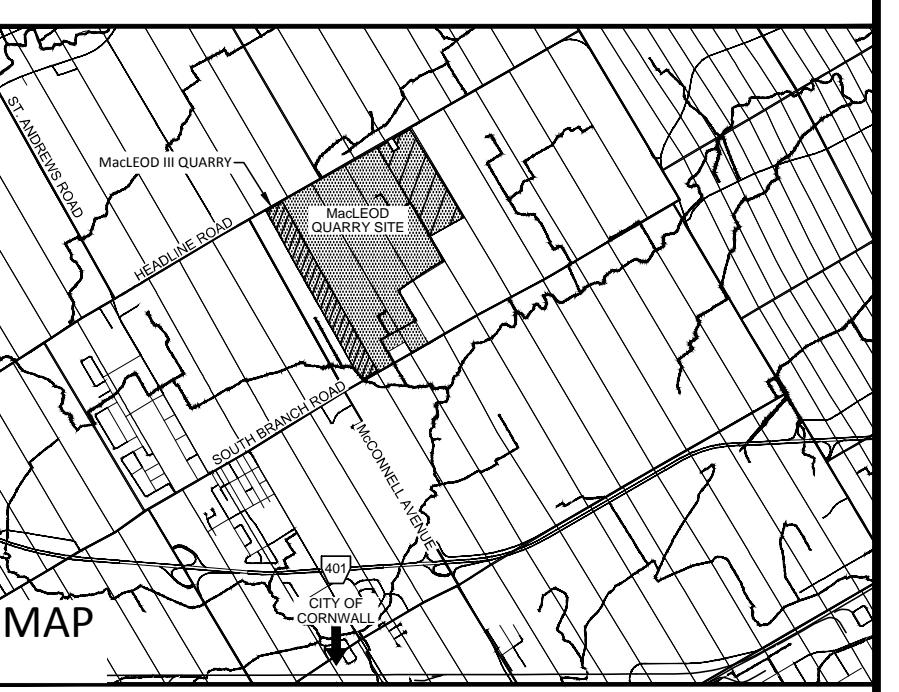
Team Lead, Traffic Operations

613-542-3788 ext. 3105

d.steed@mcintoshsperry.com

APPENDIX A
PROPOSED SITE PLAN

ARA No. _____



LOCATION OF SITE
PART OF LOT 6
CONCESSION 4
GEOGRAPHIC TOWNSHIP OF CORNWALL
COUNTY OF SOUTH STORMONT

APPLICANT & PROPERTY OWNER
CORNWALL GRAVEL COMPANY
P.O. BOX 67 - 390 ELEVENTH STREET WEST
CORNWALL, ONTARIO, K6H 5R9

DATE PETER GRANT, VICE PRESIDENT
I HAVE THE AUTHORITY
TO BIND THE CORPORATION

PLAN CERTIFICATION
I HEREBY CERTIFY THAT THIS SITE PLAN WAS PRODUCED
UNDER MY SUPERVISION.

DATE MARK PRIDDLE, P.GEO.
SCALE 1 : 3000
0 50 100 150 200 250 300 Metres
DISTANCES SHOWN ARE IN METRES AND CAN BE CONVERTED TO FEET
BY DIVIDING BY 0.3048. ALL ELEVATIONS ON THIS PLAN ARE GEODETIC.

AREAS	
DESCRIPTION	AREA(ha)
PROPERTY	37.8
LICENCE AREA	36.4
EXTRACTION AREA	30.1

SITE BENCHMARKS			
No.	DESCRIPTION	NORTHLING	EASTING
A	CONTROL 7 - SCALE HOUSE WELL	4992474.452	519456.395
			74.613

No. Amendment Date

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

McINTOSH PERRY
115 Walgreen Road R.R. #3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742

Client: CORNWALL GRAVEL COMPANY LIMITED

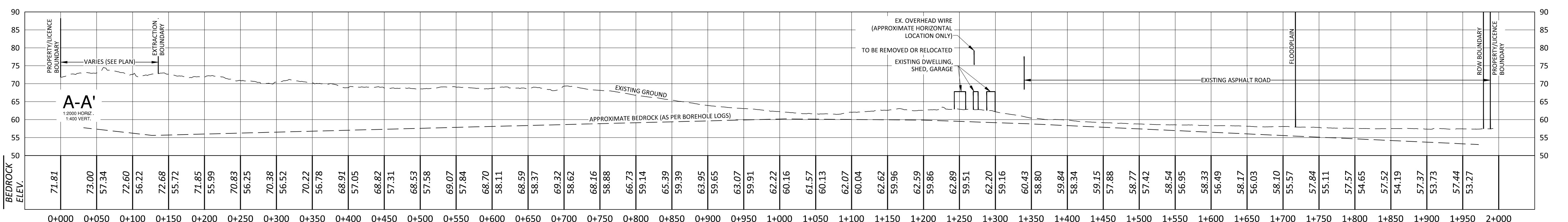
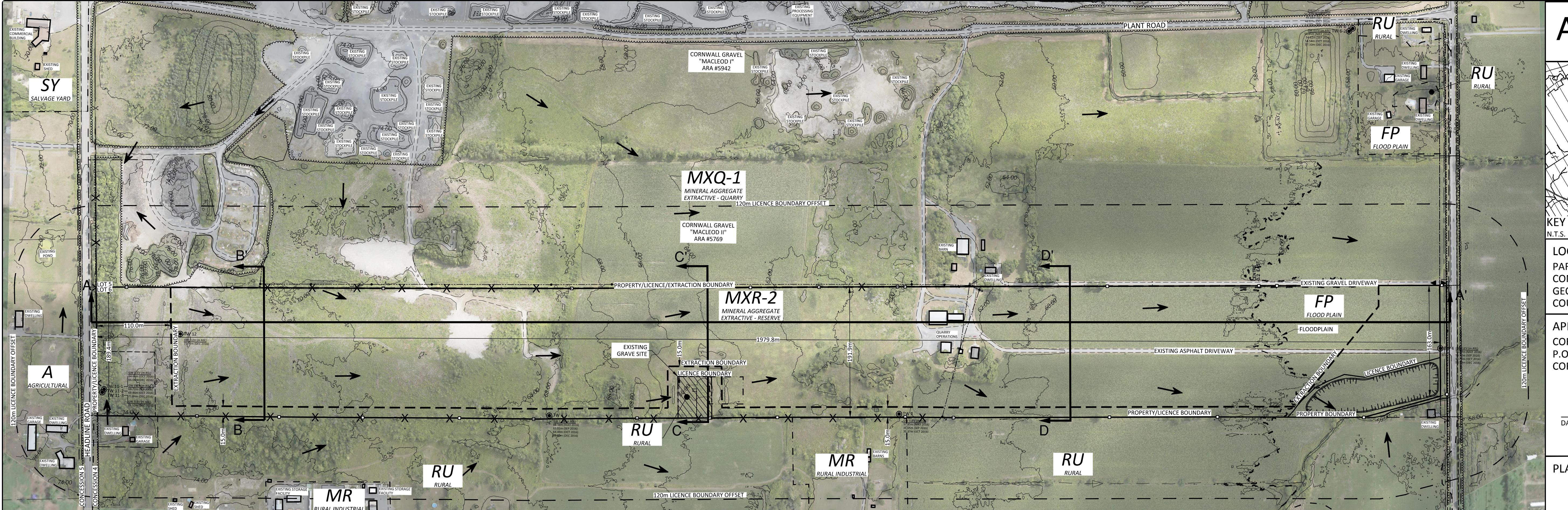
Project: MACLEOD 3
CATEGORY 1 CLASS "A" PIT BELOW WATER
CATEGORY 2 CLASS "A" QUARRY BELOW WATER

Drawing Title: EXISTING FEATURES PLAN & SECTIONS

Drawn By: DL Project Number: CP-16-0280
Checked By: MP

Paper Size: 24" x 36" Scale: 1:3000 (metric)
Drawing Number: Sheet 1 of 5

01



EXISTING FEATURES NOTES
1.1.1 THE DRAWING NUMBER AND TOTAL NUMBER OF DRAWINGS CAN BE FOUND IN THE BOTTOM RIGHT CORNER OF ALL DRAWINGS.

1.1.18 THERE ARE NO EXISTING HAUL ROADS ON SITE. THERE IS AN ACCESS ROAD FROM THE EXISTING HOUSE ON SITE TO THE ADJACENT LICENSED OPERATION.

1.1.19 THE GROUNDWATER TABLE HAS BEEN ESTABLISHED ON-SITE. ACCORDING TO THE HYDROGEOLOGICAL REPORT ON-SITE GROUNDWATER ELEVATIONS RANGED BETWEEN 35.39M TO 71.84M ASL, WITH THE AVERAGE WATER LEVEL AT 61.5M ASL.

1.1.20 ALL EXISTING SURFACE WATER DRAINAGE FACILITIES AND DIRECTIONS ARE SHOWN ON THE PLAN.

1.1.21 ALL EXISTING FENCES ARE SHOWN ON THE PLAN. TYPES OF FENCING INCLUDE POST AND WIRE.

1.1.22 EXISTING TREE COVER IS SHOWN ON THE PLAN.

1.1.23 THERE ARE NO EXISTING STOCKPILES OF TOPSOIL OR OVERBURDEN ON SITE.

1.1.24 THERE ARE NO EXISTING STOCKPILES OF AGGREGATE OR RECYCLABLE MATERIALS ON SITE.

1.1.25 THERE IS NO EXISTING SCRAP STORAGE ON SITE.

1.1.26 THERE IS NO EXISTING FUEL STORAGE ON SITE.

1.1.27 THERE ARE NO SIGNIFICANT NATURAL FEATURES ON AND WITHIN 120M OF THE SITE.

1.1.28 THERE ARE NUMEROUS MAN-MADE FEATURES ON AND WITHIN 120M OF THE SITE. THESE INCLUDE RESIDENTIAL DWELLINGS, SHEDS, BARNS, ROADS, DITCHES, POWER AND COMMUNICATION LINES AND A CEMETERY. THE EXISTING MACLEOD QUARRY IS LOCATED EAST OF THE SITE. ALL SIGNIFICANT MAN-MADE FEATURES ON AND WITHIN 120M OF THE SITE ARE SHOWN ON THE PLAN.

1.1.29 THIS IS A NEWLY PROPOSED DEVELOPMENT, AND THEREFORE THERE ARE NO EXISTING EXCAVATION FACES OR REHABILITATED AREAS ON SITE.

1.1.30 THERE IS NO EXISTING PROCESSING AREA ON SITE.

1.1.31 THERE ARE NO EXISTING BERMS ON SITE.

1.1.32 CROSS-SECTIONS FOR EXISTING CONDITIONS ARE PROVIDED ON THIS PAGE (CROSS-SECTIONS A-A' B-B' C-C' AND D-D')

1.1.11 THE SITE PLAN WAS PREPARED USING THE FOLLOWING RESOURCES:

1. LEGAL SURVEY OF THE SITE CONDUCTED BY MCINTOSH PERRY SURVEYING INC.
2. REFERENCE PLANS 528-5986
3. LIDAR SURVEY COMPLETED BY RME GEOMATICS, AUGUST 2016

1.1.12 THE LEGEND IS LOCATED ON THE RIGHT SIDE OF ALL DRAWINGS.

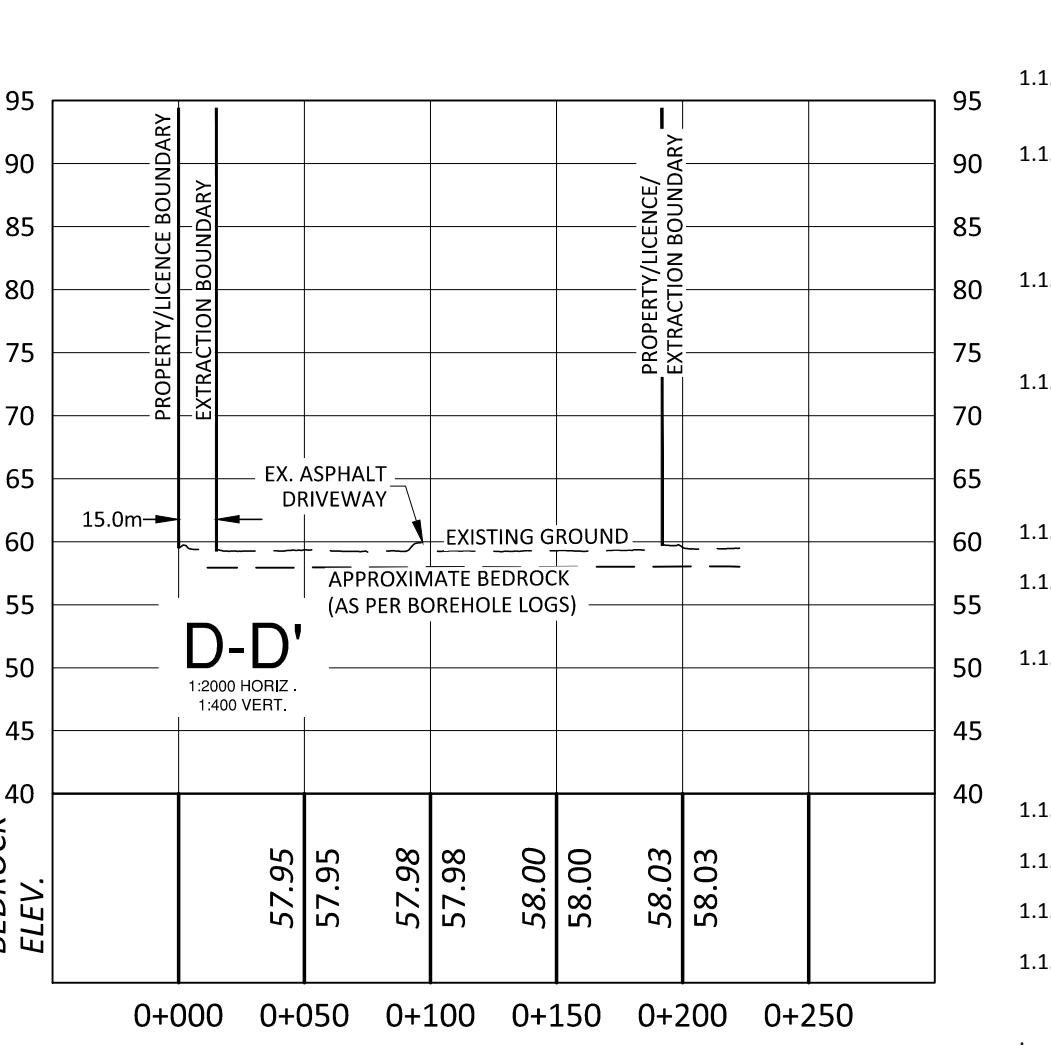
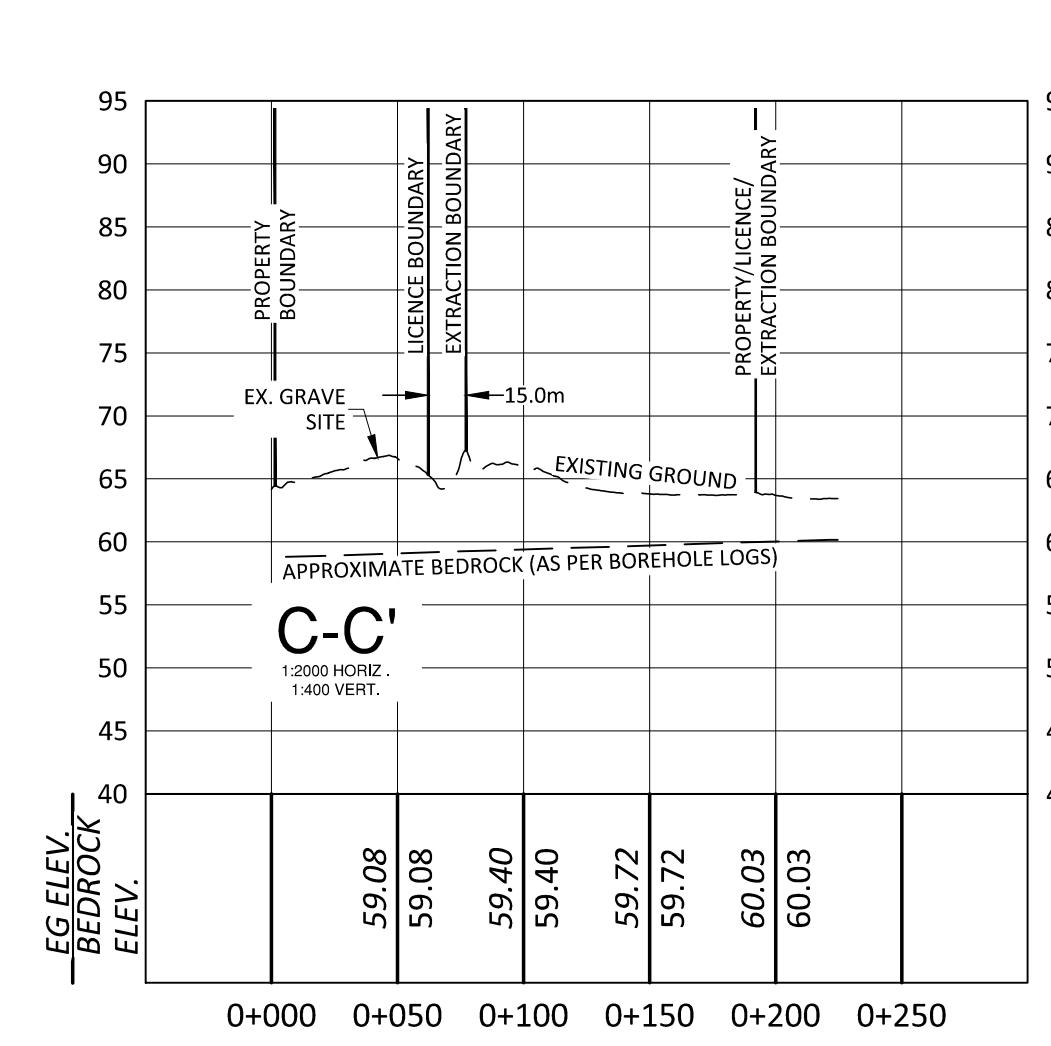
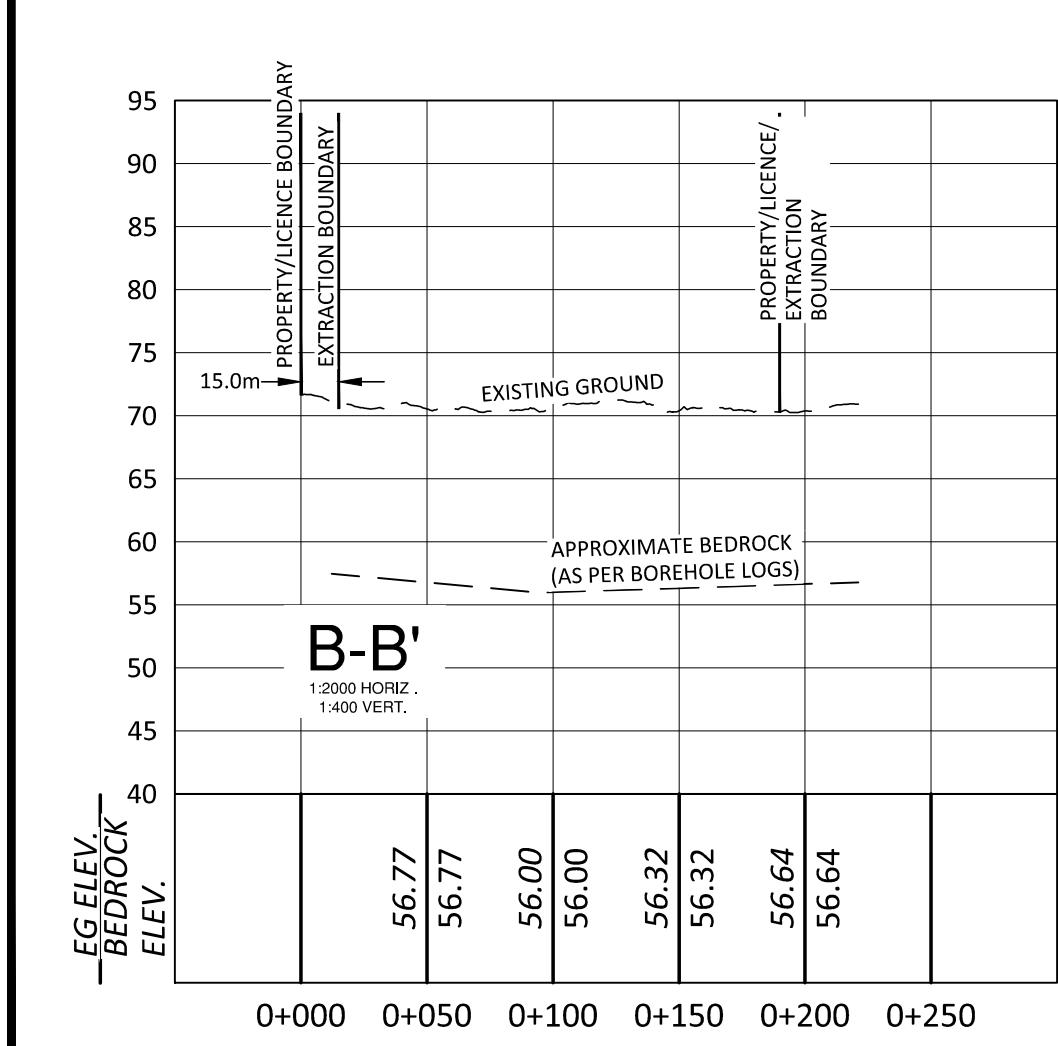
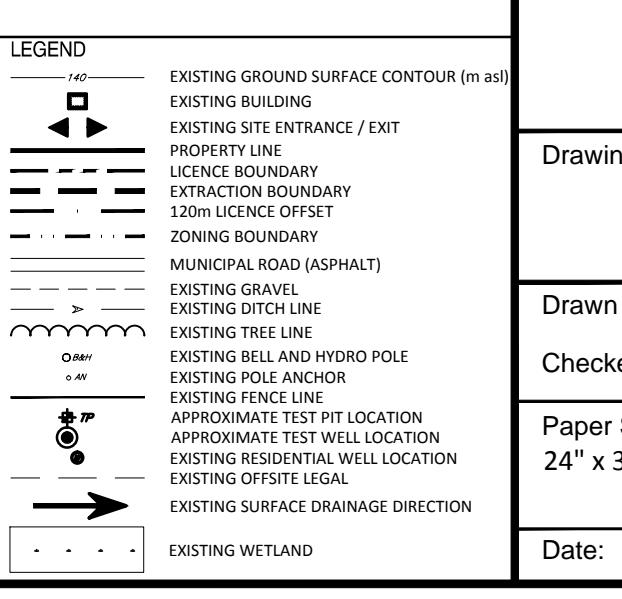
1.1.13 THE AREA TO BE LICENSED IS ±35.4 HECTARES, DIMENSIONED AS SHOWN ON THE PLAN.

1.1.14 EXISTING ZONING OF THE SUBJECT PROPERTY AND ADJACENT PROPERTIES WITHIN 120M IS SHOWN ON THE PLAN, AND IS BASED ON THE TOWNSHIP OF SOUTH STORMONT ZONING BY-LAW NO. 2011-100, AS AMENDED BY 2015-050.

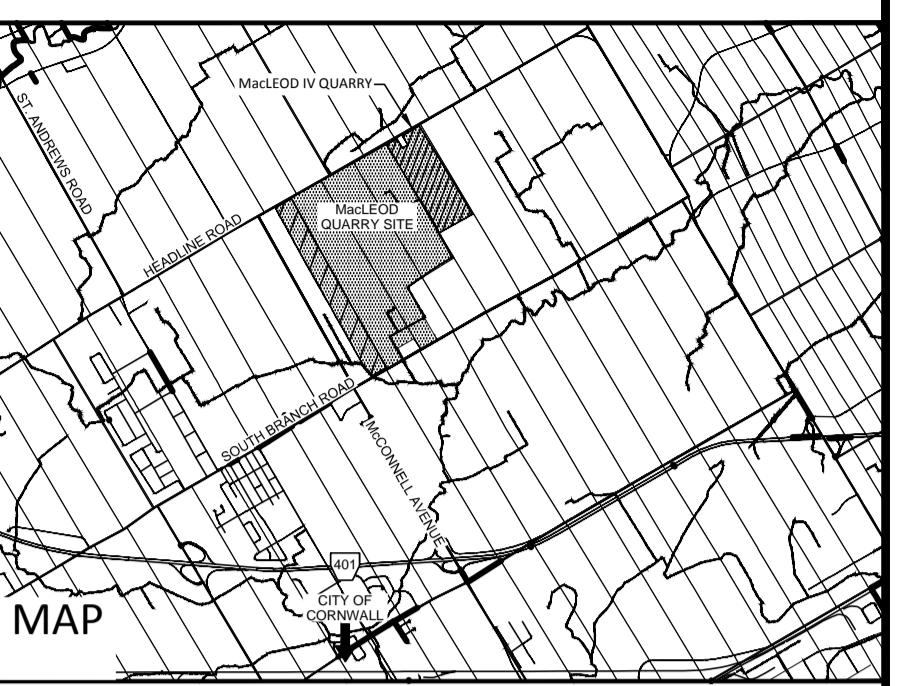
1.1.15 THE TOPOGRAPHY OF THE SITE IS ILLUSTRATED ON THE PLAN AT 1m CONTOUR INTERVALS, EXPRESSED AS METRES ABOVE MEAN SEA LEVEL (ASL).

1.1.16 ALL EXISTING BUILDINGS LOCATED ON OR WITHIN 120M OF THE SITE ARE SHOWN ON THE PLAN. THERE IS A HOUSE AS WELL AS OUTBUILDINGS ON THE SITE.

1.1.17 THE SITE DOES NOT CURRENTLY HAVE DIRECT ACCESS TO MUNICIPAL ROADS FOR COMMERCIAL PURPOSES. THERE IS A DRIVEWAY FROM SOUTH BRANCH ROAD TO PROVIDE ACCESS TO THE EXISTING HOUSE ON SITE.



ARA No. _____



LOCATION OF SITE
PART OF LOT 2
CONCESSION 4
GEOGRAPHIC TOWNSHIP OF CORNWALL
COUNTY OF SOUTH STORMONT

APPLICANT & PROPERTY OWNER
CORNWALL GRAVEL COMPANY
P.O. BOX 67 - 390 ELEVENTH STREET WEST
CORNWALL, ONTARIO, K6H 5R9

DATE _____
PETER GRANT, VICE PRESIDENT
I HAVE THE AUTHORITY
TO BIND THE CORPORATION

PLAN CERTIFICATION
I HEREBY CERTIFY THAT THIS SITE PLAN WAS PRODUCED
UNDER MY SUPERVISION.

DATE _____
MARK PRIDDLE, P.GEO.
SCALE 1 : 2000
0 50 100 150 200 Metres
DISTANCES SHOWN ARE IN METRES AND CAN BE CONVERTED TO FEET
BY DIVIDING BY 0.3048. ALL ELEVATIONS ON THIS PLAN ARE GEODETIC.

AREAS	DESCRIPTION	AREA(ha)
PROPERTY	40.5	
LICENCE AREA	40.5	
EXTRACTION AREA	34.5	

SITE BENCHMARKS	NORTHING	EASTING	ELEVATION
A CONTROL 7 - SCALE HOUSE WELL	4992474.452	519456.395	74.613

No.	Amendment	Date

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

McINTOSH PERRY MP

115 Walgreen Road R.R. #3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742

Client:
CORNWALL GRAVEL COMPANY LIMITED

Project:
MACLEOD 5
CATEGORY 1 CLASS "A" PIT BELOW WATER
CATEGORY 2 CLASS "A" QUARRY BELOW WATER

Drawing Title:		EXISTING FEATURES PLAN	
Drawn By:	DL	Project Number:	CP-16-0280
Checked By:	MP		
Paper Size:	24" x 36"	Scale:	1:2000 (metric)
Date:	NOV.21, 2016	Drawing Number:	01
Sheet 1 of 8			



EXISTING FEATURES NOTES

- 1.1.1 THE DRAWING NUMBER AND TOTAL NUMBER OF DRAWINGS CAN BE FOUND IN THE BOTTOM RIGHT CORNER OF ALL DRAWINGS.
- 1.1.2 A KEY MAP SHOWING THE LOCATION OF THE SITE IS SHOWN IN THE TOP RIGHT CORNER OF ALL DRAWINGS.
- 1.1.3 GENERAL DESCRIPTION OF THE SITE:
PART OF LOT 2
CONCESSION 4
GEOGRAPHIC TOWNSHIP OF CORNWALL
COUNTY OF SOUTH STORMONT
- 1.1.4 THE SCALE OF THE PLAN VIEW IS 1:2000 (METRIC). A GRAPHICAL REPRESENTATION OF THE SCALE IS LOCATED ON THE RIGHT SIDE OF ALL DRAWINGS.
- 1.1.5 THE APPLICANT'S NAME AND ADDRESS IS:
CORNWALL GRAVEL COMPANY LIMITED
390 ELEVENTH STREET WEST
CORNWALL, ONTARIO, K6H 5R9
- 1.1.6 THIS SITE PLAN IS PREPARED UNDER THE AGGREGATE RESOURCES ACT FOR A CLASS 'A' LICENCE, CATEGORY 1 PIT BELOW WATER AND CATEGORY 2 QUARRY BELOW WATER UNDER THE AGGREGATE RESOURCES OF ONTARIO PROVINCIAL STANDARDS, VERSION 1.0.
- 1.1.7 ALL OF THE DRAWINGS HAVE BEEN SIGNED AND SEALED BY MR MARK PRIDDLE, P.GEO. (APPROVED UNDER SUBSECTION 8(4) OF THE AGGREGATE RESOURCES ACT) WHO DESIGNED AND REVIEWED THE PLANS BASED ON THE TECHNICAL STUDIES PREPARED IN SUPPORT OF THIS QUARRY AND BASED ON THE PROVINCIAL STANDARDS OF THE AGGREGATES RESOURCES ACT OF ONTARIO. IN ADDITION, ALL OF THE DRAWINGS HAVE BEEN SIGNED UP BY THE APPLICANT, DAVID GRANT, PRESIDENT OF CORNWALL GRAVEL COMPANY LIMITED.
- 1.1.8 THE NORTH ARROW IS LOCATED IN THE TOP RIGHT CORNER OF ALL DRAWINGS.
- 1.1.9 A SECTION FOR RECORDING SITE PLAN AMENDMENTS, INCLUDING APPROVAL DATES, HAS BEEN PROVIDED AND CAN BE FOUND ON THE RIGHT SIDE OF ALL DRAWINGS.
- 1.1.10 THIS SITE PLAN WAS PREPARED USING THE FOLLOWING RESOURCES:
1. LEGAL SURVEY OF THE SITE CONDUCTED BY MCINTOSH PERRY SURVEYING INC.
2. REFERENCE PLANS 52R-5986
3. LIDAR SURVEY COMPLETED BY RME GEOMATICS, AUGUST 2016.
- 1.1.11 THE LEGEND IS LOCATED ON THE RIGHT SIDE OF ALL DRAWINGS.
- 1.1.12 THE AREA TO BE LICENSED IS ±35.4 HECTARES, DIMENSIONED AS SHOWN ON THE PLAN.
- 1.1.13 DEMARCTION OF THE LOT AND CONCESSION LINES ARE SHOWN ON THE PLAN.
- 1.1.14 EXISTING ZONING OF THE SUBJECT PROPERTY AND ADJACENT PROPERTIES WITHIN 120m IS SHOWN ON THE PLAN, AND IS BASED ON THE TOWNSHIP OF SOUTH STORMONT ZONING BY-LAW NO. 2011-100, AS AMENDED BY 2015-050.
- 1.1.15 THE TOPOGRAPHY OF THE SITE IS ILLUSTRATED ON THE PLAN AT 1m CONTOUR INTERVALS, EXPRESSED AS METRES ABOVE MEAN SEA LEVEL (ASL).
- 1.1.16 ALL EXISTING BUILDINGS LOCATED ON OR WITHIN 120m OF THE SITE ARE SHOWN ON THE PLAN. THERE IS A HOUSE AS WELL AS OUTBUILDINGS ON THE SITE.
- 1.1.17 THE SITE DOES NOT CURRENTLY HAVE DIRECT ACCESS TO MUNICIPAL ROADS FOR COMMERCIAL PURPOSES. THERE IS A DRIVEWAY FROM SOUTH BRANCH ROAD TO PROVIDE ACCESS TO THE EXISTING HOUSE ON SITE.
- 1.1.18 THERE ARE NO EXISTING HAUL ROADS ON SITE. THERE IS AN ACCESS ROAD FROM THE EXISTING HOUSE ON SITE TO THE ADJACENT LICENSED OPERATION.
- 1.1.19 THE GROUNDWATER TABLE HAS BEEN ESTABLISHED ON-SITE. ACCORDING TO THE HYDROGEOLOGICAL REPORT ON-SITE GROUNDWATER ELEVATIONS RANGED BETWEEN 35.39M TO 71.84M ASL, WITH THE AVERAGE WATER LEVEL AT 61.5M ASL.
- 1.1.20 ALL EXISTING SURFACE WATER DRAINAGE FACILITIES AND DIRECTIONS ARE SHOWN ON THE PLAN.
- 1.1.21 ALL EXISTING FENCES ARE SHOWN ON THE PLAN. TYPES OF FENCING INCLUDE POST AND WIRE.
- 1.1.22 EXISTING TREE COVER IS SHOWN ON THE PLAN.
- 1.1.23 THERE ARE NO EXISTING STOCKPILES OF TOPSOIL OR OVERBURDEN ON SITE.
- 1.1.24 THERE ARE NO EXISTING STOCKPILES OF AGGREGATE OR RECYCLABLE MATERIALS ON SITE.
- 1.1.25 THERE IS NO EXISTING SCRAP STORAGE ON SITE.
- 1.1.26 THERE IS NO EXISTING FUEL STORAGE ON SITE.
- 1.1.27 THERE ARE NO SIGNIFICANT NATURAL FEATURES ON AND WITHIN 120m OF THE SITE.
- 1.1.28 THERE ARE NUMEROUS MAN-MADE FEATURES ON AND WITHIN 120m OF THE SITE. THESE INCLUDE RESIDENTIAL DWELLINGS, SHEDS, BARS, ROADS, DITCHES, POWER AND COMMUNICATION LINES AND A CEMETERY. THE EXISTING MACLEOD QUARRY IS LOCATED EAST OF THE SITE. ALL SIGNIFICANT MAN-MADE FEATURES ON AND WITHIN 120m OF THE SITE ARE SHOWN ON THE PLAN.
- 1.1.29 THIS IS A NEWLY PROPOSED DEVELOPMENT, AND THEREFORE THERE ARE NO EXISTING EXCAVATION FACES OR REHABILITATED AREAS ON SITE.
- 1.1.30 THERE IS NO EXISTING PROCESSING AREA ON SITE.
- 1.1.31 THERE ARE NO EXISTING BERMS ON SITE.
- 1.1.32 CROSS-SECTIONS FOR EXISTING CONDITIONS ARE PROVIDED ON THIS PAGE (CROSS-SECTIONS A-A' B-B' AND C-C')

LEGEND

- EXISTING GROUND SURFACE CONTOUR (m asl)
- EXISTING BUILDING
- EXISTING SITE ENTRANCE / EXIT
- PROPERTY LINE
- EXTRACTION BOUNDARY
- 120m LICENCE OFFSET
- EXISTING ZONING BOUNDARY
- MUNICIPAL ROAD (ASPHALT)
- EXISTING GRAVEL
- EXISTING DITCH LINE
- EXISTING TREE LINE
- EXISTING FENCE LINE
- APPROXIMATE TEST WELL LOCATION
- EXISTING OFFSITE LEGAL
- EXISTING SURFACE DRAINAGE DIRECTION
- EXISTING WETLAND

TW
→
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APPENDIX B
SYNCHRO ANALYSIS REPORTS

Lanes, Volumes, Timings
1: H.138 & Headline Road

Existing 2016 - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	21	67	26	9	74	20	202	12	115	440	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		15.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.900				0.908				0.850		0.850
Flt Protected		0.998				0.988			0.995			0.990
Satd. Flow (prot)	0	1435	0	0	1400	0	0	1589	1404	0	1665	1530
Flt Permitted		0.998				0.988			0.995			0.990
Satd. Flow (perm)	0	1435	0	0	1400	0	0	1589	1404	0	1665	1530
Link Speed (k/h)		50			50			50			80	
Link Distance (m)		804.5			1649.3			579.0			482.9	
Travel Time (s)		57.9			118.7			41.7			21.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	10%	14%	4%	50%	15%	0%	14%	9%	7%	7%	0%
Adj. Flow (vph)	3	23	73	28	10	80	22	220	13	125	478	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	99	0	0	118	0	0	242	13	0	603	3
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 67.0%

ICU Level of Service C

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

1: H.138 & Headline Road

Existing 2016 - AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	21	67	26	9	74	20	202	12	115	440	3
Sign Control		Stop				Stop			Free			Free
Grade		0%				0%			0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	23	73	28	10	80	22	220	13	125	478	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									None		None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1077	1004	478	1076	995	220	482			233		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1077	1004	478	1076	995	220	482			233		
tC, single (s)	7.1	6.6	6.3	7.1	7.0	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.4	3.5	4.5	3.4	2.2			2.3		
p0 queue free %	98	89	87	80	95	90	98			90		
cM capacity (veh/h)	156	207	563	142	180	789	1092			1306		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	99	118	241	13	603	3						
Volume Left	3	28	22	0	125	0						
Volume Right	73	80	0	13	0	3						
cSH	380	334	1092	1700	1306	1700						
Volume to Capacity	0.26	0.35	0.02	0.01	0.10	0.00						
Queue Length 95th (m)	8.2	12.5	0.5	0.0	2.5	0.0						
Control Delay (s)	17.8	21.6	0.9	0.0	2.5	0.0						
Lane LOS	C	C	A		A							
Approach Delay (s)	17.8	21.6	0.9		2.5							
Approach LOS	C	C										
Intersection Summary												
Average Delay			5.6									
Intersection Capacity Utilization		67.0%		ICU Level of Service					C			
Analysis Period (min)			15									

Lanes, Volumes, Timings
2: McConnell Ave & Headline Road

Existing 2016 - AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↖	↗
Volume (vph)	80	151	7	34	75	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.912				0.977	
Flt Protected					0.991	0.960
Satd. Flow (prot)	1493	0	0	1700	1583	0
Flt Permitted					0.991	0.960
Satd. Flow (perm)	1493	0	0	1700	1583	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	1649.3			831.6	672.4	
Travel Time (s)	118.7			37.4	30.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	11%	0%	6%	8%	0%
Adj. Flow (vph)	87	164	8	37	82	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	251	0	0	45	99	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 26.3%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: McConnell Ave & Headline Road

Existing 2016 - AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑ ↗			↗ ↙	↖ ↗	
Volume (veh/h)	80	151	7	34	75	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	87	164	8	37	82	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		251		221	169	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		251		221	169	
tC, single (s)		4.1		6.5	6.2	
tC, 2 stage (s)						
tF (s)		2.2		3.6	3.3	
p0 queue free %		99		89	98	
cM capacity (veh/h)		1326		749	880	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	251	45	99			
Volume Left	0	8	82			
Volume Right	164	0	17			
cSH	1700	1326	770			
Volume to Capacity	0.15	0.01	0.13			
Queue Length 95th (m)	0.0	0.1	3.5			
Control Delay (s)	0.0	1.4	10.4			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.4	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization		26.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: North Access & Headline Road

Existing 2016 - AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↗	↘
Volume (vph)	62	2	1	43	19	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.996				0.974	
Flt Protected				0.999	0.961	
Satd. Flow (prot)	1641	0	0	1527	920	0
Flt Permitted				0.999	0.961	
Satd. Flow (perm)	1641	0	0	1527	920	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	831.6			1210.7	521.0	
Travel Time (s)	37.4			54.5	37.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	50%	100%	16%	79%	100%
Adj. Flow (vph)	67	2	1	47	21	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	0	0	48	26	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.6%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

3: North Access & Headline Road

Existing 2016 - AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑→	↓→	↑←	↓←	↑↖	↓↖
Volume (veh/h)	62	2	1	43	19	5
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	67	2	1	47	21	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		70		117	68	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		70		117	68	
tC, single (s)		5.1		7.2	7.2	
tC, 2 stage (s)						
tF (s)		3.1		4.2	4.2	
p0 queue free %		100		97	99	
cM capacity (veh/h)		1084		723	778	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	70	48	26			
Volume Left	0	1	21			
Volume Right	2	0	5			
cSH	1700	1084	734			
Volume to Capacity	0.04	0.00	0.04			
Queue Length 95th (m)	0.0	0.0	0.9			
Control Delay (s)	0.0	0.2	10.1			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.2	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay		1.9				
Intersection Capacity Utilization		13.6%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Existing 2016 - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Volume (vph)	124	94	81	135	263	261
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	55.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.916			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1527	1651	1494	0	1583	1378
Flt Permitted	0.608				0.950	
Satd. Flow (perm)	977	1651	1494	0	1583	1378
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			147			284
Link Speed (k/h)	50	50		50		
Link Distance (m)	459.4	499.7		493.4		
Travel Time (s)	33.1	36.0		35.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	12%	9%	6%	13%	8%	11%
Adj. Flow (vph)	135	102	88	147	286	284
Shared Lane Traffic (%)						
Lane Group Flow (vph)	135	102	235	0	286	284
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	3.6	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.8	4.8		4.8		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)	9.4	9.4				
Detector 2 Size(m)	0.6	0.6				
Detector 2 Type	Cl+Ex	Cl+Ex				
Detector 2 Channel						
Detector 2 Extend (s)	0.0	0.0				
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases	4	8		6		
Permitted Phases	4			6		

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Existing 2016 - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%
Maximum Green (s)	16.0	16.0	16.0		16.0	16.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	10.0	10.0	10.0		19.9	19.9
Actuated g/C Ratio	0.28	0.28	0.28		0.57	0.57
v/c Ratio	0.49	0.22	0.45		0.32	0.31
Control Delay	16.1	9.8	6.9		8.1	2.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	16.1	9.8	6.9		8.1	2.5
LOS	B	A	A		A	A
Approach Delay		13.4	6.9		5.3	
Approach LOS		B	A		A	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 35.2

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 7.5

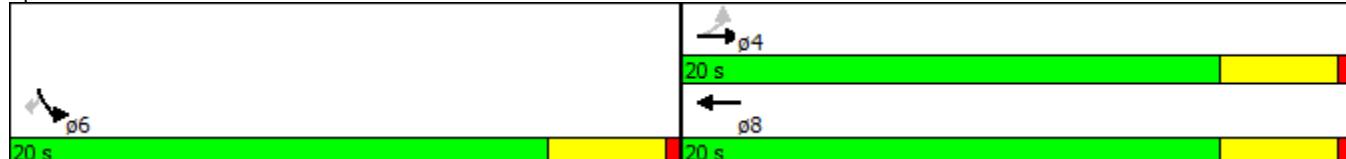
Intersection LOS: A

Intersection Capacity Utilization 45.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: H.138 & Cornwall Centre Road



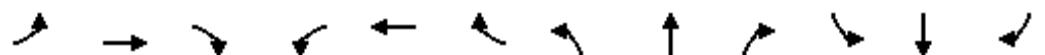
Lanes, Volumes, Timings
5: McConnell Ave & S Branch Rd

Existing 2016 - AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	56	63	96	79	3	53	78	23	17	147	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.998			0.980			0.995
Flt Protected						0.974			0.983			0.995
Satd. Flow (prot)	0	1523	0	0	1525	0	0	1583	0	0	1622	0
Flt Permitted						0.793			0.863			0.969
Satd. Flow (perm)	0	1506	0	0	1242	0	0	1390	0	0	1579	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		68				2			25			6
Link Speed (k/h)		60				70			70			80
Link Distance (m)		1191.6				832.5			549.5			534.1
Travel Time (s)		71.5				42.8			28.3			24.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	17%	11%	8%	17%	9%	100%	8%	4%	32%	24%	8%	17%
Adj. Flow (vph)	7	61	68	104	86	3	58	85	25	18	160	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	136	0	0	193	0	0	168	0	0	185	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		16.0			16.0			16.0			16.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
v/c Ratio		0.21			0.39			0.29			0.29	
Control Delay		5.6			11.4			8.8			9.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.6			11.4			8.8			9.5	

Lanes, Volumes, Timings
5: McConnell Ave & S Branch Rd

Existing 2016 - AM



Lane Group	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS				A		B			A		A
Approach Delay				5.6		11.4			8.8		9.5
Approach LOS				A		B			A		A

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 9.1

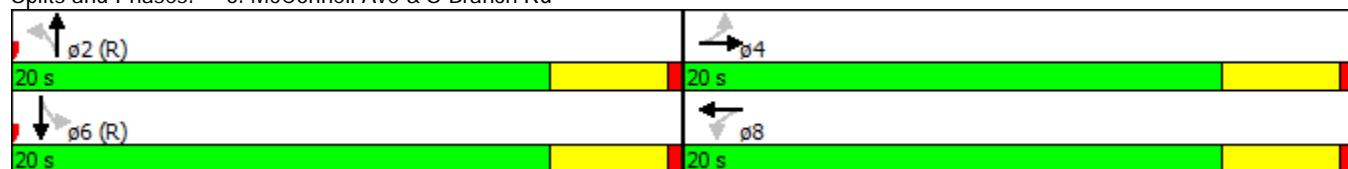
Intersection LOS: A

Intersection Capacity Utilization 45.0%

ICU Level of Service A

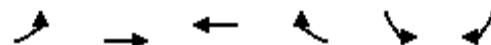
Analysis Period (min) 15

Splits and Phases: 5: McConnell Ave & S Branch Rd



Lanes, Volumes, Timings
6: S Branch Rd & South Access

Existing 2016 - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	7	86	149	5	5	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.996		0.891	
Flt Protected		0.996			0.990	
Satd. Flow (prot)	0	1558	1669	0	867	0
Flt Permitted		0.996			0.990	
Satd. Flow (perm)	0	1558	1669	0	867	0
Link Speed (k/h)		70	70		50	
Link Distance (m)		832.5	1073.8		317.1	
Travel Time (s)		42.8	55.2		22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	86%	9%	7%	20%	100%	79%
Adj. Flow (vph)	8	93	162	5	5	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	101	167	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	0.0	0.0		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.8	4.8		4.8		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 20.9%

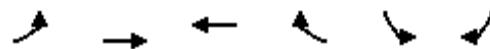
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

6: S Branch Rd & South Access

Existing 2016 - AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	7	86	149	5	5	19
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	93	162	5	5	21
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	167			273	165	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	167			273	165	
tC, single (s)	5.0			7.4	7.0	
tC, 2 stage (s)						
tF (s)	3.0			4.4	4.0	
p0 queue free %	99			99	97	
cM capacity (veh/h)	1029			545	714	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	101	167	26			
Volume Left	8	0	5			
Volume Right	0	5	21			
cSH	1029	1700	670			
Volume to Capacity	0.01	0.10	0.04			
Queue Length 95th (m)	0.2	0.0	1.0			
Control Delay (s)	0.7	0.0	10.6			
Lane LOS	A		B			
Approach Delay (s)	0.7	0.0	10.6			
Approach LOS			B			
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization		20.9%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

7: McConnell Ave & North Ramp Terminal/Service Road

Existing 2016 - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	0	164	5	0	3	52	147	2	0	309	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.949			0.999			0.998
Flt Protected						0.970			0.987			
Satd. Flow (prot)	0	1445	0	0	1657	0	0	1542	0	0	1623	0
Flt Permitted						0.970			0.987			
Satd. Flow (perm)	0	1445	0	0	1657	0	0	1542	0	0	1623	0
Link Speed (k/h)					80	50		70			70	
Link Distance (m)				453.9		448.5		371.4			354.5	
Travel Time (s)				20.4		32.3		19.1			18.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	13%	0%	8%	0%	0%	0%	16%	15%	0%	0%	10%	67%
Adj. Flow (vph)	10	0	178	5	0	3	57	160	2	0	336	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	188	0	0	8	0	0	219	0	0	340	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.9%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
7: McConnell Ave & North Ramp Terminal/Service Road

Existing 2016 - AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	0	164	5	0	3	52	147	2	0	309	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	0	178	5	0	3	57	160	2	0	336	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	615	613	338	790	614	161	340				162	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	615	613	338	790	614	161	340				162	
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.3				4.1	
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3				2.2	
p0 queue free %	97	100	74	98	100	100	95				100	
cM capacity (veh/h)	372	390	691	221	389	889	1145				1429	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	188	9	218	340								
Volume Left	10	5	57	0								
Volume Right	178	3	2	4								
cSH	661	308	1145	1429								
Volume to Capacity	0.28	0.03	0.05	0.00								
Queue Length 95th (m)	9.4	0.7	1.2	0.0								
Control Delay (s)	12.6	17.0	2.5	0.0								
Lane LOS	B	C	A									
Approach Delay (s)	12.6	17.0	2.5	0.0								
Approach LOS	B	C										
Intersection Summary												
Average Delay			4.0									
Intersection Capacity Utilization		49.9%		ICU Level of Service				A				
Analysis Period (min)			15									

Lanes, Volumes, Timings

8: McConnell Ave & South Ramp Terminal

Existing 2016 - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	0	103	0	0	0	0	195	85	0	466	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t									0.959			0.997
Flt Protected												
Satd. Flow (prot)	0	1536	0	0	0	0	0	1692	0	0	1759	0
Flt Permitted												
Satd. Flow (perm)	0	1536	0	0	0	0	0	1692	0	0	1759	0
Link Speed (k/h)				50		50			70			70
Link Distance (m)				398.3		152.1			430.6			371.4
Travel Time (s)						11.0			22.1			19.1
Peak Hour Factor	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)	7	0	112	0	0	0	0	212	92	0	507	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	119	0	0	0	0	0	304	0	0	520	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			0.0				0.0			0.0
Link Offset(m)		0.0			0.0				0.0			0.0
Crosswalk Width(m)		4.8			4.8				4.8			4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 40.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

8: McConnell Ave & South Ramp Terminal

Existing 2016 - AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	0	103	0	0	0	0	195	85	0	466	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	0	112	0	0	0	0	212	92	0	507	13
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	771	725	513	883	778	258	520			212		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	771	725	513	883	778	258	520			212		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	80	100	100	100	100			100		
cM capacity (veh/h)	317	352	561	213	328	780	1047			1358		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	118	304	520									
Volume Left	7	0	0									
Volume Right	112	92	13									
cSH	538	1047	1700									
Volume to Capacity	0.22	0.00	0.31									
Queue Length 95th (m)	6.7	0.0	0.0									
Control Delay (s)	13.6	0.0	0.0									
Lane LOS	B											
Approach Delay (s)	13.6	0.0	0.0									
Approach LOS	B											
Intersection Summary												
Average Delay			1.7									
Intersection Capacity Utilization		40.4%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
1: H.138 & Headline Road

Existing 2016 - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	15	36	15	16	99	65	432	21	104	379	15
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		15.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.911			0.897				0.850			0.850
Flt Protected		0.997			0.994			0.993			0.989	
Satd. Flow (prot)	0	1635	0	0	1403	0	0	1675	1457	0	1635	1530
Flt Permitted		0.997			0.994			0.993			0.989	
Satd. Flow (perm)	0	1635	0	0	1403	0	0	1675	1457	0	1635	1530
Link Speed (k/h)		50			50			50			80	
Link Distance (m)		804.5			1649.3			579.0			482.9	
Travel Time (s)		57.9			118.7			41.7			21.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	86%	0%	6%	5%	7%	5%	12%	8%	0%
Adj. Flow (vph)	4	16	39	16	17	108	71	470	23	113	412	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	59	0	0	141	0	0	541	23	0	525	16
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 77.2%

ICU Level of Service D

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

1: H.138 & Headline Road

Existing 2016 - PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	15	36	15	16	99	65	432	21	104	379	15
Sign Control		Stop				Stop			Free			Free
Grade		0%				0%			0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	16	39	16	17	108	71	470	23	113	412	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1365	1272	412	1296	1265	470	428			492		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1365	1272	412	1296	1265	470	428			492		
tC, single (s)	7.1	6.5	6.2	8.0	6.5	6.3	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.3	4.0	3.4	2.2			2.3		
p0 queue free %	95	88	94	77	88	82	94			89		
cM capacity (veh/h)	81	141	644	70	142	586	1115			1021		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	60	141	540	23	525	16						
Volume Left	4	16	71	0	113	0						
Volume Right	39	108	0	23	0	16						
cSH	260	263	1115	1700	1021	1700						
Volume to Capacity	0.23	0.54	0.06	0.01	0.11	0.01						
Queue Length 95th (m)	6.9	23.4	1.6	0.0	3.0	0.0						
Control Delay (s)	22.9	33.6	1.7	0.0	3.0	0.0						
Lane LOS	C	D	A		A							
Approach Delay (s)	22.9	33.6	1.7		2.9							
Approach LOS	C	D										
Intersection Summary												
Average Delay			6.6									
Intersection Capacity Utilization		77.2%		ICU Level of Service					D			
Analysis Period (min)		15										

Lanes, Volumes, Timings
2: McConnell Ave & Headline Road

Existing 2016 - PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↖	↗
Volume (vph)	36	82	13	69	153	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.906				0.987	
Flt Protected				0.992	0.957	
Satd. Flow (prot)	1450	0	0	1686	1641	0
Flt Permitted				0.992	0.957	
Satd. Flow (perm)	1450	0	0	1686	1641	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	1649.3			831.6	672.4	
Travel Time (s)	118.7			37.4	30.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	7%	0%	7%	4%	0%
Adj. Flow (vph)	39	89	14	75	166	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	0	89	183	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 27.9%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: McConnell Ave & Headline Road

Existing 2016 - PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑ ↗			↗ ↙	↖ ↗	
Volume (veh/h)	36	82	13	69	153	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	89	14	75	166	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		128		187	84	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		128		187	84	
tC, single (s)		4.1		6.4	6.2	
tC, 2 stage (s)						
tF (s)		2.2		3.5	3.3	
p0 queue free %		99		79	98	
cM capacity (veh/h)		1470		790	981	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	128	89	184			
Volume Left	0	14	166			
Volume Right	89	0	17			
cSH	1700	1470	805			
Volume to Capacity	0.08	0.01	0.23			
Queue Length 95th (m)	0.0	0.2	7.0			
Control Delay (s)	0.0	1.2	10.8			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.2	10.8			
Approach LOS			B			
Intersection Summary						
Average Delay			5.2			
Intersection Capacity Utilization		27.9%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: North Access & Headline Road

Existing 2016 - PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↑	↖
Volume (vph)	68	0	0	77	4	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.932	
Flt Protected					0.976	
Satd. Flow (prot)	1475	0	0	1731	1310	0
Flt Permitted					0.976	
Satd. Flow (perm)	1475	0	0	1731	1310	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	831.6			1210.7	521.0	
Travel Time (s)	37.4			54.5	37.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	22%	0%	0%	4%	50%	0%
Adj. Flow (vph)	74	0	0	84	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	74	0	0	84	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 14.3%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

3: North Access & Headline Road

Existing 2016 - PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑→	↓	↖	↙	↖	↗
Volume (veh/h)	68	0	0	77	4	4
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	74	0	0	84	4	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		74		158	74	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		74		158	74	
tC, single (s)		4.1		6.9	6.2	
tC, 2 stage (s)						
tF (s)		2.2		4.0	3.3	
p0 queue free %		100		99	100	
cM capacity (veh/h)		1538		734	993	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	74	84	9			
Volume Left	0	0	4			
Volume Right	0	0	4			
cSH	1700	1538	844			
Volume to Capacity	0.04	0.00	0.01			
Queue Length 95th (m)	0.0	0.0	0.2			
Control Delay (s)	0.0	0.0	9.3			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.3			
Approach LOS			A			
Intersection Summary						
Average Delay		0.5				
Intersection Capacity Utilization		14.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Existing 2016 - PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	270	104	112	263	246	186
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	55.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.905			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1598	1731	1531	0	1598	1354
Flt Permitted	0.443				0.950	
Satd. Flow (perm)	745	1731	1531	0	1598	1354
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			286			202
Link Speed (k/h)		50	50		50	
Link Distance (m)		459.4	499.7		493.4	
Travel Time (s)		33.1	36.0		35.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	5%	7%	7%	13%
Adj. Flow (vph)	293	113	122	286	267	202
Shared Lane Traffic (%)						
Lane Group Flow (vph)	293	113	408	0	267	202
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases	4				6	

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Existing 2016 - PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	35.0	35.0	35.0		20.0	20.0
Total Split (%)	63.6%	63.6%	63.6%		36.4%	36.4%
Maximum Green (s)	31.0	31.0	31.0		16.0	16.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	21.0	21.0	21.0		16.5	16.5
Actuated g/C Ratio	0.46	0.46	0.46		0.36	0.36
v/c Ratio	0.86	0.14	0.48		0.46	0.33
Control Delay	36.1	6.7	4.3		17.2	4.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	36.1	6.7	4.3		17.2	4.7
LOS	D	A	A		B	A
Approach Delay		27.9	4.3		11.8	
Approach LOS		C	A		B	

Intersection Summary

Area Type: Other

Cycle Length: 55

Actuated Cycle Length: 45.7

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 14.5

Intersection LOS: B

Intersection Capacity Utilization 63.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: H.138 & Cornwall Centre Road



Lanes, Volumes, Timings
5: McConnell Ave & S Branch Rd

Existing 2016 - PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	87	40	57	94	7	77	134	81	8	36	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.994			0.963			0.981
Flt Protected						0.982			0.987			0.992
Satd. Flow (prot)	0	1645	0	0	1645	0	0	1655	0	0	1590	0
Flt Permitted						0.865			0.912			0.944
Satd. Flow (perm)	0	1609	0	0	1449	0	0	1529	0	0	1513	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		43				7			57			8
Link Speed (k/h)		60				70			70			80
Link Distance (m)		1191.6				832.5			549.5			534.1
Travel Time (s)		71.5				42.8			28.3			24.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	5%	3%	9%	6%	0%	4%	2%	5%	38%	3%	14%
Adj. Flow (vph)	14	95	43	62	102	8	84	146	88	9	39	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	152	0	0	172	0	0	318	0	0	56	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		16.0			16.0			16.0			16.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
v/c Ratio		0.23			0.30			0.49			0.09	
Control Delay		7.1			9.6			10.5			7.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.1			9.6			10.5			7.2	

Lanes, Volumes, Timings
5: McConnell Ave & S Branch Rd

Existing 2016 - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS			A		A			B			A	
Approach Delay			7.1			9.6			10.5			7.2
Approach LOS			A			A			B			A

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 9.3

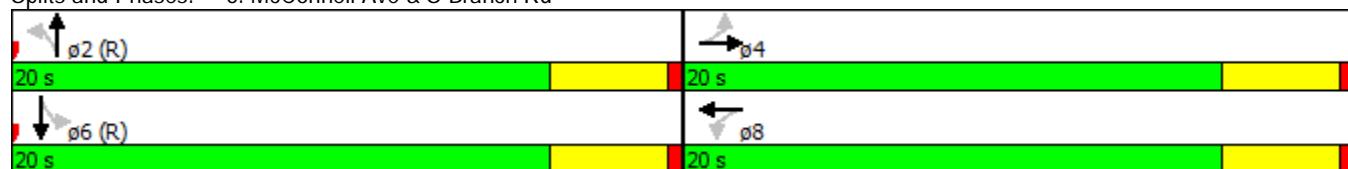
Intersection LOS: A

Intersection Capacity Utilization 51.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: McConnell Ave & S Branch Rd



Lanes, Volumes, Timings
6: S Branch Rd & South Access

Existing 2016 - PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	176	0	154	0	4	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.932	
Flt Protected		0.950			0.976	
Satd. Flow (prot)	0	1613	1698	0	1310	0
Flt Permitted		0.950			0.976	
Satd. Flow (perm)	0	1613	1698	0	1310	0
Link Speed (k/h)		70	70		50	
Link Distance (m)		832.5	1073.8		317.1	
Travel Time (s)		42.8	55.2		22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	6%	0%	0%	50%
Adj. Flow (vph)	191	0	167	0	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	191	167	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	0.0	0.0			3.6	
Link Offset(m)	0.0	0.0			0.0	
Crosswalk Width(m)	4.8	4.8			4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 32.2%

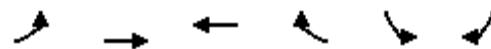
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

6: S Branch Rd & South Access

Existing 2016 - PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	176	0	154	0	4	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	191	0	167	0	4	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	167			550	167	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	167			550	167	
tC, single (s)	4.2			6.4	6.7	
tC, 2 stage (s)						
tF (s)	2.3			3.5	3.8	
p0 queue free %	86			99	99	
cM capacity (veh/h)	1386			431	766	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	191	167	9			
Volume Left	191	0	4			
Volume Right	0	0	4			
cSH	1386	1700	551			
Volume to Capacity	0.14	0.10	0.02			
Queue Length 95th (m)	3.8	0.0	0.4			
Control Delay (s)	8.0	0.0	11.6			
Lane LOS	A		B			
Approach Delay (s)	8.0	0.0	11.6			
Approach LOS			B			
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utilization		32.2%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

7: McConnell Ave & North Ramp Terminal/Service Road

Existing 2016 - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	0	120	8	2	4	97	328	16	2	199	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.964			0.995			0.995
Flt Protected						0.971			0.989			
Satd. Flow (prot)	0	1427	0	0	1549	0	0	1664	0	0	1607	0
Flt Permitted						0.971			0.989			
Satd. Flow (perm)	0	1427	0	0	1549	0	0	1664	0	0	1607	0
Link Speed (k/h)					80	50		70			70	
Link Distance (m)				453.9		448.5		371.4			354.5	
Travel Time (s)						32.3		19.1			18.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	11%	0%	0%	33%	8%	6%	7%	0%	12%	0%
Adj. Flow (vph)	12	0	130	9	2	4	105	357	17	2	216	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	142	0	0	15	0	0	479	0	0	226	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 55.0%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
7: McConnell Ave & North Ramp Terminal/Service Road

Existing 2016 - PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	0	120	8	2	4	97	328	16	2	199	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	0	130	9	2	4	105	357	17	2	216	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	806	809	220	931	804	365	224				374	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	806	809	220	931	804	365	224				374	
tC, single (s)	7.1	6.5	6.3	7.1	6.5	6.5	4.2				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.5	4.0	3.6	2.3				2.2	
p0 queue free %	96	100	84	96	99	99	92				100	
cM capacity (veh/h)	280	291	798	195	292	616	1310				1196	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	142	15	479	226								
Volume Left	12	9	105	2								
Volume Right	130	4	17	8								
cSH	690	258	1310	1196								
Volume to Capacity	0.21	0.06	0.08	0.00								
Queue Length 95th (m)	6.2	1.5	2.1	0.0								
Control Delay (s)	11.6	19.8	2.4	0.1								
Lane LOS	B	C	A	A								
Approach Delay (s)	11.6	19.8	2.4	0.1								
Approach LOS	B	C										
Intersection Summary												
Average Delay			3.6									
Intersection Capacity Utilization		55.0%		ICU Level of Service				A				
Analysis Period (min)			15									

Lanes, Volumes, Timings

8: McConnell Ave & South Ramp Terminal

Existing 2016 - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	0	65	0	0	0	0	428	157	0	318	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t									0.964			0.996
Flt Protected												
Satd. Flow (prot)	0	1302	0	0	0	0	0	1644	0	0	1649	0
Flt Permitted												
Satd. Flow (perm)	0	1302	0	0	0	0	0	1644	0	0	1649	0
Link Speed (k/h)				50		50			70			70
Link Distance (m)			398.3			152.1			430.6			371.4
Travel Time (s)						11.0			22.1			19.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	0%	21%	0%	0%	0%	0%	5%	7%	0%	9%	0%
Adj. Flow (vph)	14	0	71	0	0	0	0	465	171	0	346	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	85	0	0	0	0	0	636	0	0	356	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 45.5%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

8: McConnell Ave & South Ramp Terminal

Existing 2016 - PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	0	65	0	0	0	0	428	157	0	318	9
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	0	71	0	0	0	0	465	171	0	346	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	901	816	351	972	906	551	355			465		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	901	816	351	972	906	551	355			465		
tC, single (s)	7.3	6.5	6.4	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.5	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	89	100	100	100	100			100		
cM capacity (veh/h)	236	314	652	209	278	538	1214			1107		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	85	636	355									
Volume Left	14	0	0									
Volume Right	71	171	10									
cSH	504	1214	1700									
Volume to Capacity	0.17	0.00	0.21									
Queue Length 95th (m)	4.8	0.0	0.0									
Control Delay (s)	13.6	0.0	0.0									
Lane LOS	B											
Approach Delay (s)	13.6	0.0	0.0									
Approach LOS	B											
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization		45.5%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
1: H.138 & Headline Road

Future Background 2021 - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	22	70	27	9	78	21	212	13	121	462	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		15.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.900				0.907				0.850		0.850
Flt Protected		0.999				0.988			0.995			0.990
Satd. Flow (prot)	0	1523	0	0	1400	0	0	1589	1404	0	1665	1530
Flt Permitted		0.999				0.988			0.995			0.990
Satd. Flow (perm)	0	1523	0	0	1400	0	0	1589	1404	0	1665	1530
Link Speed (k/h)		50			50			50			80	
Link Distance (m)		804.5			1649.3			579.0			482.9	
Travel Time (s)		57.9			118.7			41.7			21.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	4%	50%	15%	0%	14%	9%	7%	7%	0%
Bus Blockages (#/hr)	0	10	14	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	3	24	76	29	10	85	23	230	14	132	502	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	103	0	0	124	0	0	253	14	0	634	3
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.13	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 69.5% ICU Level of Service C

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

1: H.138 & Headline Road

Future Background 2021 - AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	22	70	27	9	78	21	212	13	121	462	3
Sign Control		Stop				Stop			Free			Free
Grade		0%				0%			0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	24	76	29	10	85	23	230	14	132	502	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1131	1055	502	1129	1045	230	505			245		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1131	1055	502	1129	1045	230	505			245		
tC, single (s)	7.1	6.5	6.2	7.1	7.0	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.5	3.4	2.2			2.3		
p0 queue free %	98	88	87	77	94	89	98			90		
cM capacity (veh/h)	140	198	569	128	166	778	1070			1293		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	103	124	253	14	634	3						
Volume Left	3	29	23	0	132	0						
Volume Right	76	85	0	14	0	3						
cSH	372	312	1070	1700	1293	1700						
Volume to Capacity	0.28	0.40	0.02	0.01	0.10	0.00						
Queue Length 95th (m)	8.9	14.6	0.5	0.0	2.7	0.0						
Control Delay (s)	18.4	23.9	1.0	0.0	2.6	0.0						
Lane LOS	C	C	A		A							
Approach Delay (s)	18.4	23.9	0.9		2.6							
Approach LOS	C	C										
Intersection Summary												
Average Delay			6.0									
Intersection Capacity Utilization		69.5%			ICU Level of Service				C			
Analysis Period (min)			15									

Lanes, Volumes, Timings
2: McConnell Ave & Headline Road

Future Background 2021 - AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↖	↗
Volume (vph)	84	159	7	36	79	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.912				0.977	
Flt Protected					0.992	0.960
Satd. Flow (prot)	1493	0	0	1701	1584	0
Flt Permitted					0.992	0.960
Satd. Flow (perm)	1493	0	0	1701	1584	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	1649.3			831.6	672.4	
Travel Time (s)	118.7			37.4	30.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	11%	0%	6%	8%	0%
Adj. Flow (vph)	91	173	8	39	86	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	264	0	0	47	104	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 27.3%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: McConnell Ave & Headline Road

Future Background 2021 - AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑→			↑←	↑←	
Volume (veh/h)	84	159	7	36	79	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	91	173	8	39	86	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		264		232	178	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		264		232	178	
tC, single (s)		4.1		6.5	6.2	
tC, 2 stage (s)						
tF (s)		2.2		3.6	3.3	
p0 queue free %		99		88	98	
cM capacity (veh/h)		1312		739	870	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	264	47	104			
Volume Left	0	8	86			
Volume Right	173	0	18			
cSH	1700	1312	759			
Volume to Capacity	0.16	0.01	0.14			
Queue Length 95th (m)	0.0	0.1	3.8			
Control Delay (s)	0.0	1.3	10.5			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.3	10.5			
Approach LOS			B			
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization		27.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: North Access & Headline Road

Future Background 2021 - AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↗	↘
Volume (vph)	65	2	1	45	20	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.996				0.975	
Flt Protected					0.999	0.961
Satd. Flow (prot)	1642	0	0	1528	1026	0
Flt Permitted					0.999	0.961
Satd. Flow (perm)	1642	0	0	1528	1026	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	831.6			1210.7	521.0	
Travel Time (s)	37.4			54.5	37.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	50%	100%	16%	79%	0%
Adj. Flow (vph)	71	2	1	49	22	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	0	0	50	27	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

3: North Access & Headline Road

Future Background 2021 - AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑→			↑←	↑↖	
Volume (veh/h)	65	2	1	45	20	5
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	71	2	1	49	22	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		73		123	72	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		73		123	72	
tC, single (s)		5.1		7.2	6.2	
tC, 2 stage (s)						
tF (s)		3.1		4.2	3.3	
p0 queue free %		100		97	99	
cM capacity (veh/h)		1081		717	996	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	73	50	27			
Volume Left	0	1	22			
Volume Right	2	0	5			
cSH	1700	1081	760			
Volume to Capacity	0.04	0.00	0.04			
Queue Length 95th (m)	0.0	0.0	0.9			
Control Delay (s)	0.0	0.2	9.9			
Lane LOS		A	A			
Approach Delay (s)	0.0	0.2	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay		1.9				
Intersection Capacity Utilization		13.7%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Future Background 2021 - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Volume (vph)	130	99	85	142	276	274
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	55.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.915			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1527	1651	1492	0	1583	1378
Flt Permitted	0.587				0.950	
Satd. Flow (perm)	943	1651	1492	0	1583	1378
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			154			298
Link Speed (k/h)		50	50		50	
Link Distance (m)		459.4	499.7		493.4	
Travel Time (s)		33.1	36.0		35.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	12%	9%	6%	13%	8%	11%
Adj. Flow (vph)	141	108	92	154	300	298
Shared Lane Traffic (%)						
Lane Group Flow (vph)	141	108	246	0	300	298
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases	4				6	

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Future Background 2021 - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%
Maximum Green (s)	16.0	16.0	16.0		16.0	16.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	10.2	10.2	10.2		19.9	19.9
Actuated g/C Ratio	0.29	0.29	0.29		0.56	0.56
v/c Ratio	0.52	0.23	0.46		0.34	0.33
Control Delay	17.1	9.8	6.9		8.4	2.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	17.1	9.8	6.9		8.4	2.6
LOS	B	A	A		A	A
Approach Delay		14.0	6.9		5.5	
Approach LOS		B	A		A	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 35.4

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 7.7

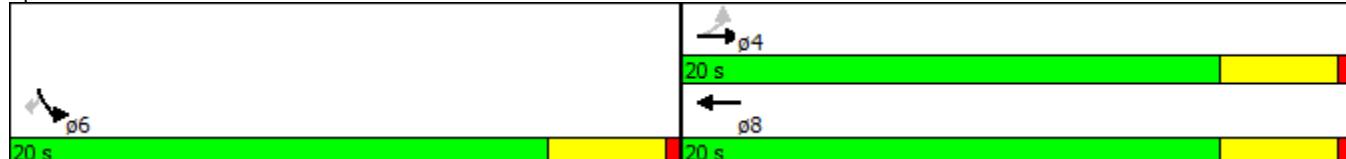
Intersection LOS: A

Intersection Capacity Utilization 47.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: H.138 & Cornwall Centre Road



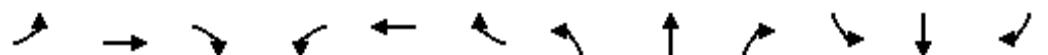
Lanes, Volumes, Timings
5: McConnell Ave & S Branch Rd

Future Background 2021 - AM

	→	→	→	←	←	↑	↑	↓	↓	←	→	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	59	66	101	83	3	56	82	29	18	154	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.998			0.976			0.995
Flt Protected						0.974			0.984			0.995
Satd. Flow (prot)	0	1525	0	0	1526	0	0	1568	0	0	1620	0
Flt Permitted						0.786			0.861			0.966
Satd. Flow (perm)	0	1507	0	0	1231	0	0	1372	0	0	1573	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		72				2			32			6
Link Speed (k/h)		60				70			70			80
Link Distance (m)		1191.6				832.5			549.5			534.1
Travel Time (s)		71.5				42.8			28.3			24.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	17%	11%	8%	17%	9%	100%	8%	4%	32%	24%	8%	17%
Adj. Flow (vph)	7	64	72	110	90	3	61	89	32	20	167	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	143	0	0	203	0	0	182	0	0	194	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		16.0			16.0			16.0			16.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
v/c Ratio		0.22			0.41			0.32			0.31	
Control Delay		5.6			11.7			8.8			9.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.6			11.7			8.8			9.6	

Lanes, Volumes, Timings
5: McConnell Ave & S Branch Rd

Future Background 2021 - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS				A		B			A			A
Approach Delay				5.6		11.7			8.8			9.6
Approach LOS				A		B			A			A

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.41

Intersection Signal Delay: 9.2

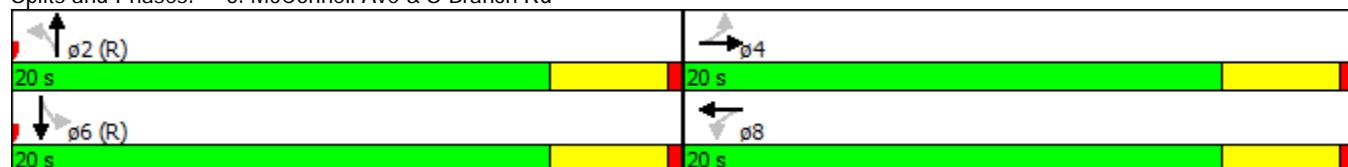
Intersection LOS: A

Intersection Capacity Utilization 51.4%

ICU Level of Service A

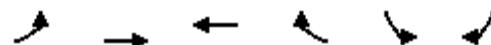
Analysis Period (min) 15

Splits and Phases: 5: McConnell Ave & S Branch Rd



Lanes, Volumes, Timings
6: S Branch Rd & South Access

Future Background 2021 - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	7	90	157	5	5	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.996		0.890	
Flt Protected		0.996			0.991	
Satd. Flow (prot)	0	1562	1670	0	966	0
Flt Permitted		0.996			0.991	
Satd. Flow (perm)	0	1562	1670	0	966	0
Link Speed (k/h)		70	70		50	
Link Distance (m)		832.5	1073.8		317.1	
Travel Time (s)		42.8	55.2		22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	86%	9%	7%	20%	0%	79%
Adj. Flow (vph)	8	98	171	5	5	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	106	176	0	27	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 21.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

6: S Branch Rd & South Access

Future Background 2021 - AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	7	90	157	5	5	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	98	171	5	5	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	176			286	173	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	176			286	173	
tC, single (s)	5.0			6.4	7.0	
tC, 2 stage (s)						
tF (s)	3.0			3.5	4.0	
p0 queue free %	99			99	97	
cM capacity (veh/h)	1020			703	705	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	105	176	27			
Volume Left	8	0	5			
Volume Right	0	5	22			
cSH	1020	1700	705			
Volume to Capacity	0.01	0.10	0.04			
Queue Length 95th (m)	0.2	0.0	1.0			
Control Delay (s)	0.7	0.0	10.3			
Lane LOS	A		B			
Approach Delay (s)	0.7	0.0	10.3			
Approach LOS			B			
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization		21.1%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

7: McConnell Ave & North Ramp Terminal/Service Road

Future Background 2021 - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	0	172	5	0	3	55	154	2	0	325	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.949			0.999			0.998
Flt Protected						0.970			0.987			
Satd. Flow (prot)	0	1446	0	0	1657	0	0	1542	0	0	1624	0
Flt Permitted						0.970			0.987			
Satd. Flow (perm)	0	1446	0	0	1657	0	0	1542	0	0	1624	0
Link Speed (k/h)					80	50		70			70	
Link Distance (m)				453.9		448.5		371.4			354.5	
Travel Time (s)				20.4		32.3		19.1			18.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	13%	0%	8%	0%	0%	0%	16%	15%	0%	0%	10%	67%
Adj. Flow (vph)	10	0	187	5	0	3	60	167	2	0	353	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	197	0	0	8	0	0	229	0	0	357	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.9%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
7: McConnell Ave & North Ramp Terminal/Service Road

Future Background 2021 - AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	0	172	5	0	3	55	154	2	0	325	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	0	187	5	0	3	60	167	2	0	353	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	647	645	355	830	646	168	358				170	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	647	645	355	830	646	168	358				170	
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.3				4.1	
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3				2.2	
p0 queue free %	97	100	72	97	100	100	95				100	
cM capacity (veh/h)	353	373	675	202	372	881	1128				1420	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	197	9	229	358								
Volume Left	10	5	60	0								
Volume Right	187	3	2	4								
cSH	646	284	1128	1420								
Volume to Capacity	0.30	0.03	0.05	0.00								
Queue Length 95th (m)	10.3	0.8	1.3	0.0								
Control Delay (s)	13.0	18.1	2.5	0.0								
Lane LOS	B	C	A									
Approach Delay (s)	13.0	18.1	2.5	0.0								
Approach LOS	B	C										
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization		51.9%		ICU Level of Service				A				
Analysis Period (min)			15									

Lanes, Volumes, Timings

8: McConnell Ave & South Ramp Terminal

Future Background 2021 - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	0	108	0	0	0	0	205	89	0	490	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t									0.959			0.997
Flt Protected												
Satd. Flow (prot)	0	1359	0	0	0	0	0	1509	0	0	1636	0
Flt Permitted												
Satd. Flow (perm)	0	1359	0	0	0	0	0	1509	0	0	1636	0
Link Speed (k/h)				50		50			70			70
Link Distance (m)			398.3			152.1			430.6			371.4
Travel Time (s)						11.0			22.1			19.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	20%	0%	15%	2%	2%	2%	0%	15%	13%	0%	9%	36%
Adj. Flow (vph)	7	0	117	0	0	0	0	223	97	0	533	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	124	0	0	0	0	0	320	0	0	547	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 42.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

8: McConnell Ave & South Ramp Terminal

Future Background 2021 - AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	0	108	0	0	0	0	205	89	0	490	13
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	0	117	0	0	0	0	223	97	0	533	14
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	811	762	540	928	818	271	547			223		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	811	762	540	928	818	271	547			223		
tC, single (s)	7.3	6.5	6.4	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	77	100	100	100	100			100		
cM capacity (veh/h)	278	337	518	192	311	767	1033			1358		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	124	320	547									
Volume Left	7	0	0									
Volume Right	117	97	14									
cSH	495	1033	1700									
Volume to Capacity	0.25	0.00	0.32									
Queue Length 95th (m)	7.8	0.0	0.0									
Control Delay (s)	14.7	0.0	0.0									
Lane LOS	B											
Approach Delay (s)	14.7	0.0	0.0									
Approach LOS	B											
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization		42.1%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
1: H.138 & Headline Road

Future Background 2021 - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	16	38	16	17	104	68	454	22	109	398	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		15.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.911				0.897				0.850		0.850
Flt Protected		0.997				0.994			0.994			0.989
Satd. Flow (prot)	0	1635	0	0	1402	0	0	1676	1457	0	1635	1530
Flt Permitted		0.997				0.994			0.994			0.989
Satd. Flow (perm)	0	1635	0	0	1402	0	0	1676	1457	0	1635	1530
Link Speed (k/h)		50			50			50			80	
Link Distance (m)		804.5			1649.3			579.0			482.9	
Travel Time (s)		57.9			118.7			41.7			21.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	86%	0%	6%	5%	7%	5%	12%	8%	0%
Adj. Flow (vph)	4	17	41	17	18	113	74	493	24	118	433	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	62	0	0	148	0	0	567	24	0	551	17
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 80.9%

ICU Level of Service D

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

1: H.138 & Headline Road

Future Background 2021 - PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	16	38	16	17	104	68	454	22	109	398	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	17	41	17	18	113	74	493	24	118	433	17
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1433	1335	433	1361	1328	493	450			517		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1433	1335	433	1361	1328	493	450			517		
tC, single (s)	7.1	6.5	6.2	8.0	6.5	6.3	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.3	4.0	3.4	2.2			2.3		
p0 queue free %	94	86	93	71	86	80	93			88		
cM capacity (veh/h)	70	127	627	61	129	568	1095			999		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	63	149	567	24	551	17						
Volume Left	4	17	74	0	118	0						
Volume Right	41	113	0	24	0	17						
cSH	238	237	1095	1700	999	1700						
Volume to Capacity	0.26	0.63	0.07	0.01	0.12	0.01						
Queue Length 95th (m)	8.2	30.3	1.7	0.0	3.2	0.0						
Control Delay (s)	25.5	42.9	1.8	0.0	3.1	0.0						
Lane LOS	D	E	A		A							
Approach Delay (s)	25.5	42.9	1.7		3.0							
Approach LOS	D	E										
Intersection Summary												
Average Delay			7.8									
Intersection Capacity Utilization		80.9%			ICU Level of Service				D			
Analysis Period (min)		15										

Lanes, Volumes, Timings
2: McConnell Ave & Headline Road

Future Background 2021 - PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↖	↗
Volume (vph)	38	86	14	73	161	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.906				0.987	
Flt Protected				0.992	0.957	
Satd. Flow (prot)	1450	0	0	1686	1641	0
Flt Permitted				0.992	0.957	
Satd. Flow (perm)	1450	0	0	1686	1641	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	1649.3			831.6	672.4	
Travel Time (s)	118.7			37.4	30.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	7%	0%	7%	4%	0%
Adj. Flow (vph)	41	93	15	79	175	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	134	0	0	94	193	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 33.1%

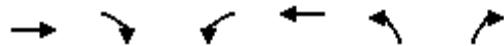
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: McConnell Ave & Headline Road

Future Background 2021 - PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑→			↑←	↑←	
Volume (veh/h)	38	86	14	73	161	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	93	15	79	175	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		135		198	88	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		135		198	88	
tC, single (s)		4.1		6.4	6.2	
tC, 2 stage (s)						
tF (s)		2.2		3.5	3.3	
p0 queue free %		99		78	98	
cM capacity (veh/h)		1462		778	976	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	135	95	193			
Volume Left	0	15	175			
Volume Right	93	0	18			
cSH	1700	1462	794			
Volume to Capacity	0.08	0.01	0.24			
Queue Length 95th (m)	0.0	0.3	7.6			
Control Delay (s)	0.0	1.3	11.0			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.3	11.0			
Approach LOS			B			
Intersection Summary						
Average Delay			5.3			
Intersection Capacity Utilization		33.1%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: North Access & Headline Road

Future Background 2021 - PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Volume (vph)	71	0	14	73	161	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.987	
Flt Protected					0.992	0.957
Satd. Flow (prot)	1475	0	0	1686	1641	0
Flt Permitted					0.992	0.957
Satd. Flow (perm)	1475	0	0	1686	1641	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	831.6			1210.7	521.0	
Travel Time (s)	37.4			54.5	37.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	22%	0%	0%	7%	4%	0%
Adj. Flow (vph)	77	0	15	79	175	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	77	0	0	94	193	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 28.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

3: North Access & Headline Road

Future Background 2021 - PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Volume (veh/h)	71	0	14	73	161	17
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	77	0	15	79	175	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		77		187	77	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		77		187	77	
tC, single (s)		4.1		6.4	6.2	
tC, 2 stage (s)						
tF (s)		2.2		3.5	3.3	
p0 queue free %		99		78	98	
cM capacity (veh/h)		1534		790	989	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	77	95	193			
Volume Left	0	15	175			
Volume Right	0	0	18			
cSH	1700	1534	805			
Volume to Capacity	0.05	0.01	0.24			
Queue Length 95th (m)	0.0	0.2	7.5			
Control Delay (s)	0.0	1.3	10.9			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.3	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay		6.1				
Intersection Capacity Utilization		28.7%	ICU Level of Service		A	
Analysis Period (min)		15				



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	284	109	118	276	259	195
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	55.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.905			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1598	1731	1531	0	1598	1354
Flt Permitted	0.425				0.950	
Satd. Flow (perm)	715	1731	1531	0	1598	1354
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			300			212
Link Speed (k/h)	50	50		50		
Link Distance (m)	459.4	499.7		493.4		
Travel Time (s)	33.1	36.0		35.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	5%	7%	7%	13%
Adj. Flow (vph)	309	118	128	300	282	212
Shared Lane Traffic (%)						
Lane Group Flow (vph)	309	118	428	0	282	212
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	3.6	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.8	4.8		4.8		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)	9.4	9.4				
Detector 2 Size(m)	0.6	0.6				
Detector 2 Type	Cl+Ex	Cl+Ex				
Detector 2 Channel						
Detector 2 Extend (s)	0.0	0.0				
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases	4	8		6		
Permitted Phases	4			6		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	38.0	38.0	38.0		22.0	22.0
Total Split (%)	63.3%	63.3%	63.3%		36.7%	36.7%
Maximum Green (s)	34.0	34.0	34.0		18.0	18.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	24.8	24.8	24.8		18.5	18.5
Actuated g/C Ratio	0.48	0.48	0.48		0.36	0.36
v/c Ratio	0.90	0.14	0.48		0.49	0.34
Control Delay	42.9	7.0	4.3		19.2	4.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	42.9	7.0	4.3		19.2	4.8
LOS	D	A	A		B	A
Approach Delay		33.0	4.3		13.0	
Approach LOS		C	A		B	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 51.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 16.6

Intersection LOS: B

Intersection Capacity Utilization 66.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: H.138 & Cornwall Centre Road



Lanes, Volumes, Timings
5: McConnell Ave & S Branch Rd

Future Background 2021 - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	0	126	8	2	4	102	345	17	2	209	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.877			0.964			0.995			0.995	
Flt Protected		0.996			0.971			0.989				
Satd. Flow (prot)	0	1429	0	0	1549	0	0	1664	0	0	1606	0
Flt Permitted		0.984			0.880			0.879			0.997	
Satd. Flow (perm)	0	1412	0	0	1403	0	0	1479	0	0	1602	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		137			4			6			5	
Link Speed (k/h)		60			70			70			80	
Link Distance (m)		1191.6			832.5			549.5			534.1	
Travel Time (s)		71.5			42.8			28.3			24.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	11%	0%	0%	33%	8%	6%	7%	0%	12%	0%
Adj. Flow (vph)	13	0	137	9	2	4	111	375	18	2	227	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	150	0	0	15	0	0	504	0	0	237	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		25.0	25.0		25.0	25.0	
Total Split (%)	44.4%	44.4%		44.4%	44.4%		55.6%	55.6%		55.6%	55.6%	
Maximum Green (s)	16.0	16.0		16.0	16.0		21.0	21.0		21.0	21.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		16.0			16.0			21.0			21.0	
Actuated g/C Ratio		0.36			0.36			0.47			0.47	
v/c Ratio		0.25			0.03			0.73			0.32	
Control Delay		4.3			8.6			18.0			8.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		4.3			8.6			18.0			8.8	

Lanes, Volumes, Timings
5: McConnell Ave & S Branch Rd

Future Background 2021 - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS				A		A		B			A	
Approach Delay				4.3		8.6			18.0			8.8
Approach LOS				A		A		B			A	

Intersection Summary

Area Type: Other

Cycle Length: 45

Actuated Cycle Length: 45

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 50

Control Type: Pretimed

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 13.2

Intersection LOS: B

Intersection Capacity Utilization 57.3%

ICU Level of Service B

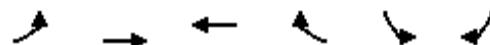
Analysis Period (min) 15

Splits and Phases: 5: McConnell Ave & S Branch Rd



Lanes, Volumes, Timings
6: S Branch Rd & South Access

Future Background 2021 - PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	185	162	0	4	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.932	
Flt Protected					0.976	
Satd. Flow (prot)	0	1698	1698	0	1310	0
Flt Permitted					0.976	
Satd. Flow (perm)	0	1698	1698	0	1310	0
Link Speed (k/h)		70	70		50	
Link Distance (m)		832.5	1073.8		317.1	
Travel Time (s)		42.8	55.2		22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	6%	0%	50%	0%
Adj. Flow (vph)	0	201	176	0	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	201	176	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 20.3%

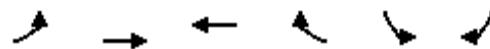
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

6: S Branch Rd & South Access

Future Background 2021 - PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	185	162	0	4	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	201	176	0	4	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	176			377	176	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	176			377	176	
tC, single (s)	4.1			6.9	6.2	
tC, 2 stage (s)						
tF (s)	2.2			4.0	3.3	
p0 queue free %	100			99	100	
cM capacity (veh/h)	1412			540	872	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	201	176	9			
Volume Left	0	0	4			
Volume Right	0	0	4			
cSH	1412	1700	667			
Volume to Capacity	0.00	0.10	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s)	0.0	0.0	10.5			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.5			
Approach LOS			B			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization		20.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

7: McConnell Ave & North Ramp Terminal/Service Road

Future Background 2021 - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	0	126	4	2	8	102	345	17	2	209	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.877			0.919			0.995			0.995	
Flt Protected		0.996			0.987			0.989				
Satd. Flow (prot)	0	1429	0	0	1501	0	0	1664	0	0	1606	0
Flt Permitted		0.996			0.987			0.989				
Satd. Flow (perm)	0	1429	0	0	1501	0	0	1664	0	0	1606	0
Link Speed (k/h)		80			50			70			70	
Link Distance (m)		453.9			448.5			371.4			354.5	
Travel Time (s)		20.4			32.3			19.1			18.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	11%	33%	0%	0%	8%	6%	7%	0%	12%	0%
Adj. Flow (vph)	13	0	137	4	2	9	111	375	18	2	227	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	150	0	0	15	0	0	504	0	0	237	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 57.9%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
7: McConnell Ave & North Ramp Terminal/Service Road

Future Background 2021 - PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	0	126	4	2	8	102	345	17	2	209	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	0	137	4	2	9	111	375	18	2	227	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	851	851	231	978	845	384	235				393	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	851	851	231	978	845	384	235				393	
tC, single (s)	7.1	6.5	6.3	7.4	6.5	6.2	4.2				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.8	4.0	3.3	2.3				2.2	
p0 queue free %	95	100	83	97	99	99	91				100	
cM capacity (veh/h)	258	273	786	156	275	668	1298				1176	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	150	15	504	237								
Volume Left	13	4	111	2								
Volume Right	137	9	18	8								
cSH	668	311	1298	1176								
Volume to Capacity	0.22	0.05	0.09	0.00								
Queue Length 95th (m)	6.9	1.2	2.2	0.0								
Control Delay (s)	11.9	17.2	2.5	0.1								
Lane LOS	B	C	A	A								
Approach Delay (s)	11.9	17.2	2.5	0.1								
Approach LOS	B	C										
Intersection Summary												
Average Delay			3.7									
Intersection Capacity Utilization		57.9%		ICU Level of Service				B				
Analysis Period (min)		15										

Lanes, Volumes, Timings

8: McConnell Ave & South Ramp Terminal

Future Background 2021 - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	0	68	0	0	0	0	450	165	0	334	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t									0.964			0.996
Flt Protected												
Satd. Flow (prot)	0	1303	0	0	0	0	0	1644	0	0	1648	0
Flt Permitted												
Satd. Flow (perm)	0	1303	0	0	0	0	0	1644	0	0	1648	0
Link Speed (k/h)				50		50			70			70
Link Distance (m)			398.3			152.1			430.6			371.4
Travel Time (s)						11.0			22.1			19.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	0%	21%	2%	2%	2%	0%	5%	7%	0%	9%	0%
Adj. Flow (vph)	15	0	74	0	0	0	0	489	179	0	363	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	89	0	0	0	0	0	668	0	0	373	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 47.5%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

8: McConnell Ave & South Ramp Terminal

Future Background 2021 - PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	0	68	0	0	0	0	450	165	0	334	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	0	74	0	0	0	0	489	179	0	363	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	947	857	368	1021	952	579	373				489	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	947	857	368	1021	952	579	373				489	
tC, single (s)	7.3	6.5	6.4	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.5	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	93	100	88	100	100	100	100				100	
cM capacity (veh/h)	219	297	637	190	260	515	1197				1085	
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	89	668	373									
Volume Left	15	0	0									
Volume Right	74	179	10									
cSH	481	1197	1700									
Volume to Capacity	0.19	0.00	0.22									
Queue Length 95th (m)	5.4	0.0	0.0									
Control Delay (s)	14.2	0.0	0.0									
Lane LOS	B											
Approach Delay (s)	14.2	0.0	0.0									
Approach LOS	B											
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization		47.5%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
1: H.138 & Headline Road

Future Background (2026) - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	23	74	29	10	82	22	223	13	127	486	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		15.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.900			0.909				0.850			0.850
Flt Protected		0.999			0.988			0.996			0.990	
Satd. Flow (prot)	0	1436	0	0	1403	0	0	1590	1404	0	1665	1530
Flt Permitted		0.999			0.988			0.996			0.990	
Satd. Flow (perm)	0	1436	0	0	1403	0	0	1590	1404	0	1665	1530
Link Speed (k/h)		50			50			50			80	
Link Distance (m)		804.5			1649.3			579.0			482.9	
Travel Time (s)		57.9			118.7			41.7			21.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	10%	14%	4%	50%	15%	0%	14%	9%	7%	7%	0%
Adj. Flow (vph)	3	25	80	32	11	89	24	242	14	138	528	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	108	0	0	132	0	0	266	14	0	666	3
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 72.3%

ICU Level of Service C

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

1: H.138 & Headline Road

Future Background (2026) - AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	23	74	29	10	82	22	223	13	127	486	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	25	80	32	11	89	24	242	14	138	528	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1189	1109	528	1188	1098	242	532			257		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1189	1109	528	1188	1098	242	532			257		
tC, single (s)	7.1	6.6	6.3	7.1	7.0	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.4	3.5	4.5	3.4	2.2			2.3		
p0 queue free %	97	86	85	72	93	88	98			89		
cM capacity (veh/h)	125	177	527	112	152	766	1046			1280		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	109	132	266	14	666	3						
Volume Left	3	32	24	0	138	0						
Volume Right	80	89	0	14	0	3						
cSH	340	280	1046	1700	1280	1700						
Volume to Capacity	0.32	0.47	0.02	0.01	0.11	0.00						
Queue Length 95th (m)	10.8	18.9	0.6	0.0	2.9	0.0						
Control Delay (s)	20.5	28.8	1.0	0.0	2.7	0.0						
Lane LOS	C	D	A		A							
Approach Delay (s)	20.5	28.8	0.9		2.7							
Approach LOS	C	D										
Intersection Summary												
Average Delay			6.8									
Intersection Capacity Utilization		72.3%		ICU Level of Service					C			
Analysis Period (min)		15										

Lanes, Volumes, Timings
2: McConnell Ave & Headline Road

Future Background (2026) - AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↖	↗
Volume (vph)	88	167	8	38	83	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.912				0.975	
Flt Protected					0.991	0.961
Satd. Flow (prot)	1493	0	0	1700	1583	0
Flt Permitted					0.991	0.961
Satd. Flow (perm)	1493	0	0	1700	1583	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	1649.3			831.6	672.4	
Travel Time (s)	118.7			37.4	30.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	11%	0%	6%	8%	0%
Adj. Flow (vph)	96	182	9	41	90	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	278	0	0	50	110	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 28.4%

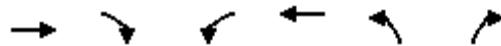
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: McConnell Ave & Headline Road

Future Background (2026) - AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Volume (veh/h)	88	167	8	38	83	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	96	182	9	41	90	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		277		245	186	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		277		245	186	
tC, single (s)		4.1		6.5	6.2	
tC, 2 stage (s)						
tF (s)		2.2		3.6	3.3	
p0 queue free %		99		88	98	
cM capacity (veh/h)		1297		725	861	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	277	50	110			
Volume Left	0	9	90			
Volume Right	182	0	20			
cSH	1700	1297	746			
Volume to Capacity	0.16	0.01	0.15			
Queue Length 95th (m)	0.0	0.2	4.1			
Control Delay (s)	0.0	1.4	10.7			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.4	10.7			
Approach LOS			B			
Intersection Summary						
Average Delay		2.8				
Intersection Capacity Utilization		28.4%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: North Access & Headline Road

Future Background (2026) - AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↖	↗
Volume (vph)	68	2	47	1	21	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.996				0.968	
Flt Protected				0.953	0.963	
Satd. Flow (prot)	1643	0	0	865	1045	0
Flt Permitted				0.953	0.963	
Satd. Flow (perm)	1643	0	0	865	1045	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	831.6			1210.7	521.0	
Travel Time (s)	37.4			54.5	37.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	50%	100%	16%	79%	0%
Adj. Flow (vph)	74	2	51	1	23	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	0	0	52	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 19.5%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

3: North Access & Headline Road

Future Background (2026) - AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Volume (veh/h)	68	2	47	1	21	6
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	74	2	51	1	23	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		76		178	75	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		76		178	75	
tC, single (s)		5.1		7.2	6.2	
tC, 2 stage (s)						
tF (s)		3.1		4.2	3.3	
p0 queue free %		95		96	99	
cM capacity (veh/h)		1077		632	992	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	76	52	29			
Volume Left	0	51	23			
Volume Right	2	0	7			
cSH	1700	1077	687			
Volume to Capacity	0.04	0.05	0.04			
Queue Length 95th (m)	0.0	1.2	1.1			
Control Delay (s)	0.0	8.3	10.5			
Lane LOS		A	B			
Approach Delay (s)	0.0	8.3	10.5			
Approach LOS			B			
Intersection Summary						
Average Delay		4.7				
Intersection Capacity Utilization		19.5%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Future Background (2026) - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	137	104	89	149	291	288
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	55.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.916			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1527	1651	1494	0	1583	1378
Flt Permitted	0.563				0.950	
Satd. Flow (perm)	905	1651	1494	0	1583	1378
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			162			313
Link Speed (k/h)	50	50		50		
Link Distance (m)	459.4	499.7		493.4		
Travel Time (s)	33.1	36.0		35.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	12%	9%	6%	13%	8%	11%
Adj. Flow (vph)	149	113	97	162	316	313
Shared Lane Traffic (%)						
Lane Group Flow (vph)	149	113	259	0	316	313
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	3.6	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.8	4.8		4.8		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)	9.4	9.4				
Detector 2 Size(m)	0.6	0.6				
Detector 2 Type	Cl+Ex	Cl+Ex				
Detector 2 Channel						
Detector 2 Extend (s)	0.0	0.0				
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases	4		8		6	
Permitted Phases	4				6	

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Future Background (2026) - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%
Maximum Green (s)	16.0	16.0	16.0		16.0	16.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	10.4	10.4	10.4		20.0	20.0
Actuated g/C Ratio	0.29	0.29	0.29		0.56	0.56
v/c Ratio	0.56	0.23	0.47		0.36	0.34
Control Delay	18.8	9.8	7.0		8.7	2.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	18.8	9.8	7.0		8.7	2.6
LOS	B	A	A		A	A
Approach Delay		14.9	7.0		5.7	
Approach LOS		B	A		A	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 35.7

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 8.1

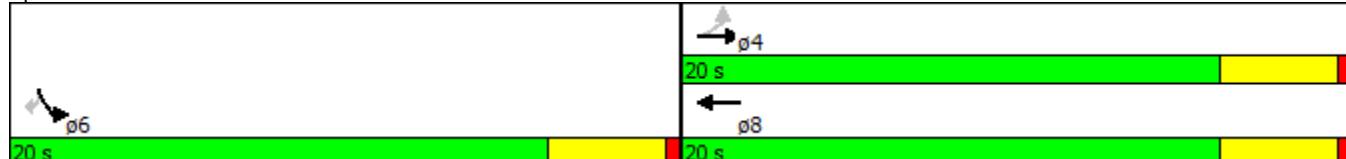
Intersection LOS: A

Intersection Capacity Utilization 49.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: H.138 & Cornwall Centre Road



Lanes, Volumes, Timings
6: McConnell Ave & S Branch Rd

Future Background (2026) - AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	62	70	106	87	3	59	86	31	19	162	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.998			0.976			0.995
Flt Protected						0.974			0.984			0.995
Satd. Flow (prot)	0	1523	0	0	1527	0	0	1567	0	0	1620	0
Flt Permitted						0.780			0.856			0.965
Satd. Flow (perm)	0	1505	0	0	1223	0	0	1363	0	0	1571	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		76				2			32			6
Link Speed (k/h)		60				70			70			80
Link Distance (m)		1191.6				832.5			549.5			534.1
Travel Time (s)		71.5				42.8			28.3			24.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	17%	11%	8%	17%	9%	100%	8%	4%	32%	24%	8%	17%
Adj. Flow (vph)	8	67	76	115	95	3	64	93	34	21	176	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	151	0	0	213	0	0	191	0	0	205	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		16.0			16.0			16.0			16.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
v/c Ratio		0.23			0.43			0.34			0.32	
Control Delay		5.7			12.1			9.0			9.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.7			12.1			9.0			9.8	

Lanes, Volumes, Timings
6: McConnell Ave & S Branch Rd

Future Background (2026) - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A			B			A			A	
Approach Delay			5.7			12.1			9.0			9.8
Approach LOS			A			B		A			A	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 9.5

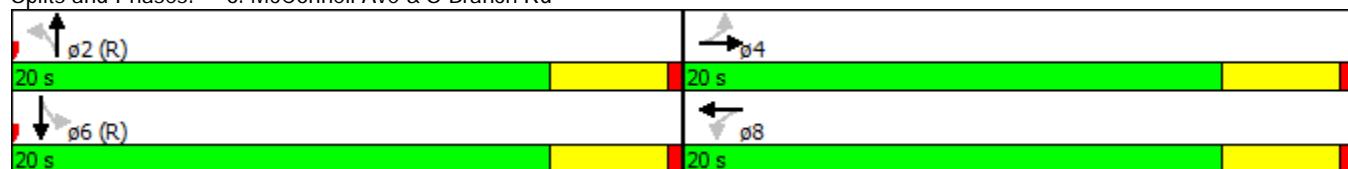
Intersection LOS: A

Intersection Capacity Utilization 53.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: McConnell Ave & S Branch Rd



Lanes, Volumes, Timings
7: S Branch Rd & South Access

Future Background (2026) - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	8	95	165	6	6	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t				0.995		0.896
Flt Protected			0.996			0.988
Satd. Flow (prot)	0	1556	1666	0	992	0
Flt Permitted			0.996			0.988
Satd. Flow (perm)	0	1556	1666	0	992	0
Link Speed (k/h)		70	70		50	
Link Distance (m)		832.5	1073.8		317.1	
Travel Time (s)		42.8	55.2		22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	86%	9%	7%	20%	0%	79%
Adj. Flow (vph)	9	103	179	7	7	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	112	186	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 22.3%

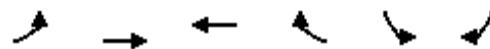
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

7: S Branch Rd & South Access

Future Background (2026) - AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	8	95	165	6	6	21
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	103	179	7	7	23
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	186			303	183	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	186			303	183	
tC, single (s)	5.0			6.4	7.0	
tC, 2 stage (s)						
tF (s)	3.0			3.5	4.0	
p0 queue free %	99			99	97	
cM capacity (veh/h)	1011			687	696	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	112	186	29			
Volume Left	9	0	7			
Volume Right	0	7	23			
cSH	1011	1700	694			
Volume to Capacity	0.01	0.11	0.04			
Queue Length 95th (m)	0.2	0.0	1.1			
Control Delay (s)	0.7	0.0	10.4			
Lane LOS	A		B			
Approach Delay (s)	0.7	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization		22.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

8: McConnell Ave & North Ramp Terminal/Service Road

Future Background (2026) - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	0	181	6	0	3	57	162	2	0	341	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.959			0.999			0.999
Flt Protected						0.966			0.987			
Satd. Flow (prot)	0	1445	0	0	1668	0	0	1542	0	0	1626	0
Flt Permitted						0.966			0.987			
Satd. Flow (perm)	0	1445	0	0	1668	0	0	1542	0	0	1626	0
Link Speed (k/h)					80	50		70			70	
Link Distance (m)				453.9		448.5		371.4			354.5	
Travel Time (s)				20.4		32.3		19.1			18.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	13%	0%	8%	0%	0%	0%	16%	15%	0%	0%	10%	67%
Adj. Flow (vph)	11	0	197	7	0	3	62	176	2	0	371	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	208	0	0	10	0	0	240	0	0	375	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 53.9%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
8: McConnell Ave & North Ramp Terminal/Service Road

Future Background (2026) - AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	181	6	0	3	57	162	2	0	341	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	0	197	7	0	3	62	176	2	0	371	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	677	675	373	871	676	177	375				178	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	677	675	373	871	676	177	375				178	
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.3				4.1	
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3				2.2	
p0 queue free %	97	100	70	96	100	100	94				100	
cM capacity (veh/h)	336	357	660	184	357	871	1111				1410	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	208	10	240	375								
Volume Left	11	7	62	0								
Volume Right	197	3	2	4								
cSH	628	250	1111	1410								
Volume to Capacity	0.33	0.04	0.06	0.00								
Queue Length 95th (m)	11.5	1.0	1.4	0.0								
Control Delay (s)	13.5	20.0	2.6	0.0								
Lane LOS	B	C	A									
Approach Delay (s)	13.5	20.0	2.6	0.0								
Approach LOS	B	C										
Intersection Summary												
Average Delay			4.3									
Intersection Capacity Utilization		53.9%		ICU Level of Service				A				
Analysis Period (min)		15										

Lanes, Volumes, Timings

9: McConnell Ave & South Ramp Terminal

Future Background (2026) - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	0	114	0	0	0	0	215	94	0	515	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t									0.959			0.997
Flt Protected												
Satd. Flow (prot)	0	1359	0	0	0	0	0	1509	0	0	1637	0
Flt Permitted												
Satd. Flow (perm)	0	1359	0	0	0	0	0	1509	0	0	1637	0
Link Speed (k/h)				50		50		70			70	
Link Distance (m)			398.3			152.1		430.6			371.4	
Travel Time (s)					28.7		11.0		22.1		19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	20%	0%	15%	0%	0%	0%	0%	15%	13%	0%	9%	36%
Adj. Flow (vph)	8	0	124	0	0	0	0	234	102	0	560	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	0	0	0	0	0	336	0	0	574	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 44.0%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

9: McConnell Ave & South Ramp Terminal

Future Background (2026) - AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	0	114	0	0	0	0	215	94	0	515	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	0	124	0	0	0	0	234	102	0	560	14
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	852	801	567	976	859	285	574			234		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	852	801	567	976	859	285	574			234		
tC, single (s)	7.3	6.5	6.4	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	75	100	100	100	100			100		
cM capacity (veh/h)	261	320	499	175	296	759	1009			1346		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	132	336	574									
Volume Left	8	0	0									
Volume Right	124	102	14									
cSH	474	1009	1700									
Volume to Capacity	0.28	0.00	0.34									
Queue Length 95th (m)	9.0	0.0	0.0									
Control Delay (s)	15.5	0.0	0.0									
Lane LOS	C											
Approach Delay (s)	15.5	0.0	0.0									
Approach LOS	C											
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization		44.0%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
1: H.138 & Headline Road

Future Background (2026) - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	17	40	17	18	109	72	477	23	115	419	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		15.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.911				0.898				0.850		0.850
Flt Protected		0.997				0.994			0.993			0.989
Satd. Flow (prot)	0	1635	0	0	1404	0	0	1675	1457	0	1635	1530
Flt Permitted		0.997				0.994			0.993			0.989
Satd. Flow (perm)	0	1635	0	0	1404	0	0	1675	1457	0	1635	1530
Link Speed (k/h)		50			50			50			80	
Link Distance (m)		804.5			1649.3			579.0			482.9	
Travel Time (s)		57.9			118.7			41.7			21.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	86%	0%	6%	5%	7%	5%	12%	8%	0%
Adj. Flow (vph)	4	18	43	18	20	118	78	518	25	125	455	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	65	0	0	156	0	0	596	25	0	580	18
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 84.8%

ICU Level of Service E

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

1: H.138 & Headline Road

Future Background (2026) - PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	17	40	17	18	109	72	477	23	115	419	17
Sign Control		Stop				Stop			Free			Free
Grade		0%				0%			0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	18	43	18	20	118	78	518	25	125	455	18
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									None			None
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1509	1405	455	1433	1399	518	474			543		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1509	1405	455	1433	1399	518	474			543		
tC, single (s)	7.1	6.5	6.2	8.0	6.5	6.3	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.3	4.0	3.4	2.2			2.3		
p0 queue free %	93	84	93	64	83	78	93			87		
cM capacity (veh/h)	58	114	609	51	115	549	1073			977		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	66	157	597	25	580	18						
Volume Left	4	18	78	0	125	0						
Volume Right	43	118	0	25	0	18						
cSH	215	210	1073	1700	977	1700						
Volume to Capacity	0.31	0.75	0.07	0.01	0.13	0.01						
Queue Length 95th (m)	10.0	40.2	1.9	0.0	3.5	0.0						
Control Delay (s)	29.0	60.1	1.9	0.0	3.3	0.0						
Lane LOS	D	F	A		A							
Approach Delay (s)	29.0	60.1	1.8		3.2							
Approach LOS	D	F										
Intersection Summary												
Average Delay			9.9									
Intersection Capacity Utilization		84.8%		ICU Level of Service					E			
Analysis Period (min)		15										

Lanes, Volumes, Timings
2: McConnell Ave & Headline Road

Future Background (2026) - PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↖	↗
Volume (vph)	40	91	14	76	169	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.906				0.987	
Flt Protected				0.992	0.957	
Satd. Flow (prot)	1450	0	0	1686	1641	0
Flt Permitted				0.992	0.957	
Satd. Flow (perm)	1450	0	0	1686	1641	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	1649.3			831.6	672.4	
Travel Time (s)	118.7			37.4	30.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	7%	0%	7%	4%	0%
Adj. Flow (vph)	43	99	15	83	184	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	142	0	0	98	204	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 34.2%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: McConnell Ave & Headline Road

Future Background (2026) - PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↑	↗
Volume (veh/h)	40	91	14	76	169	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	99	15	83	184	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		142		206	93	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		142		206	93	
tC, single (s)		4.1		6.4	6.2	
tC, 2 stage (s)						
tF (s)		2.2		3.5	3.3	
p0 queue free %		99		76	98	
cM capacity (veh/h)		1453		770	970	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	142	98	203			
Volume Left	0	15	184			
Volume Right	99	0	20			
cSH	1700	1453	785			
Volume to Capacity	0.08	0.01	0.26			
Queue Length 95th (m)	0.0	0.3	8.3			
Control Delay (s)	0.0	1.2	11.2			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.2	11.2			
Approach LOS			B			
Intersection Summary						
Average Delay			5.4			
Intersection Capacity Utilization		34.2%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: North Access & Headline Road

Future Background (2026) - PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→	↓	↖	←	↖	↑
Volume (vph)	75	0	0	85	4	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.932	
Flt Protected					0.976	
Satd. Flow (prot)	1475	0	0	1731	1310	0
Flt Permitted					0.976	
Satd. Flow (perm)	1475	0	0	1731	1310	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	831.6			1210.7	521.0	
Travel Time (s)	37.4			54.5	37.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	22%	0%	0%	4%	50%	0%
Adj. Flow (vph)	82	0	0	92	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	0	92	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 14.7%

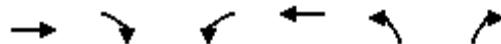
ICU Level of Service A

Analysis Period (min) 15

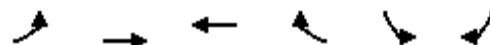
HCM Unsignalized Intersection Capacity Analysis

3: North Access & Headline Road

Future Background (2026) - PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑ ↗			↗ ↙	↖ ↗	
Volume (veh/h)	75	0	0	85	4	4
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	0	0	92	4	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		82		174	82	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		82		174	82	
tC, single (s)		4.1		6.9	6.2	
tC, 2 stage (s)						
tF (s)		2.2		4.0	3.3	
p0 queue free %		100		99	100	
cM capacity (veh/h)		1529		717	984	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	82	92	9			
Volume Left	0	0	4			
Volume Right	0	0	4			
cSH	1700	1529	830			
Volume to Capacity	0.05	0.00	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s)	0.0	0.0	9.4			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.4			
Approach LOS			A			
Intersection Summary						
Average Delay		0.4				
Intersection Capacity Utilization		14.7%		ICU Level of Service		A
Analysis Period (min)		15				



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Volume (vph)	298	115	124	291	272	205
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	55.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.905			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1598	1731	1531	0	1598	1354
Flt Permitted	0.413				0.950	
Satd. Flow (perm)	695	1731	1531	0	1598	1354
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			316			223
Link Speed (k/h)	50	50		50		
Link Distance (m)	459.4	499.7		493.4		
Travel Time (s)	33.1	36.0		35.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	5%	7%	7%	13%
Adj. Flow (vph)	324	125	135	316	296	223
Shared Lane Traffic (%)						
Lane Group Flow (vph)	324	125	451	0	296	223
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	3.6	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.8	4.8		4.8		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)	9.4	9.4				
Detector 2 Size(m)	0.6	0.6				
Detector 2 Type	Cl+Ex	Cl+Ex				
Detector 2 Channel						
Detector 2 Extend (s)	0.0	0.0				
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases	4		8		6	
Permitted Phases	4				6	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	38.0	38.0	38.0		22.0	22.0
Total Split (%)	63.3%	63.3%	63.3%		36.7%	36.7%
Maximum Green (s)	34.0	34.0	34.0		18.0	18.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	27.2	27.2	27.2		18.4	18.4
Actuated g/C Ratio	0.51	0.51	0.51		0.34	0.34
v/c Ratio	0.92	0.14	0.48		0.54	0.37
Control Delay	47.4	6.8	4.3		21.1	4.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	47.4	6.8	4.3		21.1	4.9
LOS	D	A	A		C	A
Approach Delay		36.1	4.3		14.1	
Approach LOS		D	A		B	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 53.8

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 18.0

Intersection LOS: B

Intersection Capacity Utilization 69.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: H.138 & Cornwall Centre Road



Lanes, Volumes, Timings
6: McConnell Ave & S Branch Rd

Future Background (2026) - PM

	→	→	→	←	←	↑	↑	↓	↓	←	→	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	96	44	63	104	8	85	148	89	9	95	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.994			0.963			0.990
Flt Protected						0.982			0.987			0.996
Satd. Flow (prot)	0	1646	0	0	1645	0	0	1655	0	0	1664	0
Flt Permitted						0.857			0.892			0.967
Satd. Flow (perm)	0	1606	0	0	1436	0	0	1496	0	0	1615	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		48				7			58			9
Link Speed (k/h)		60				70			70			80
Link Distance (m)		1191.6				832.5			549.5			534.1
Travel Time (s)		71.5				42.8			28.3			24.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	5%	3%	9%	6%	0%	4%	2%	5%	38%	3%	14%
Adj. Flow (vph)	15	104	48	68	113	9	92	161	97	10	103	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	167	0	0	190	0	0	350	0	0	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		16.0			16.0			16.0			16.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
v/c Ratio		0.25			0.33			0.55			0.19	
Control Delay		7.1			10.0			11.7			8.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.1			10.0			11.7			8.3	

Lanes, Volumes, Timings
6: McConnell Ave & S Branch Rd

Future Background (2026) - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS				A		A		B			A	
Approach Delay				7.1		10.0			11.7			8.3
Approach LOS				A		A		B			A	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 9.9

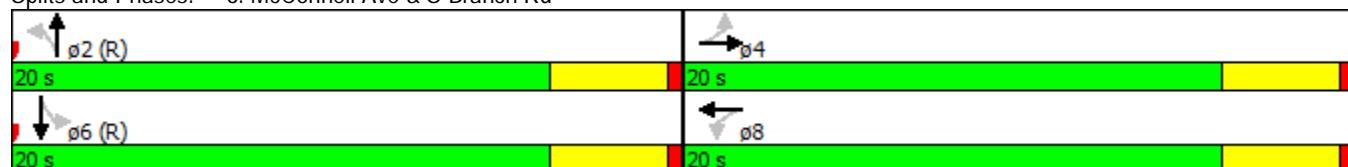
Intersection LOS: A

Intersection Capacity Utilization 54.5%

ICU Level of Service A

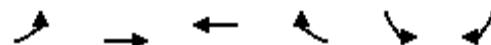
Analysis Period (min) 15

Splits and Phases: 6: McConnell Ave & S Branch Rd



Lanes, Volumes, Timings
7: S Branch Rd & South Access

Future Background (2026) - PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	194	170	0	4	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.932	
Flt Protected					0.976	
Satd. Flow (prot)	0	1698	1698	0	1310	0
Flt Permitted					0.976	
Satd. Flow (perm)	0	1698	1698	0	1310	0
Link Speed (k/h)		70	70		50	
Link Distance (m)		832.5	1073.8		317.1	
Travel Time (s)		42.8	55.2		22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	6%	0%	0%	50%
Adj. Flow (vph)	0	211	185	0	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	211	185	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 20.8%

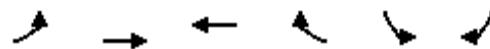
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

7: S Branch Rd & South Access

Future Background (2026) - PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	194	170	0	4	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	211	185	0	4	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	185			396	185	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	185			396	185	
tC, single (s)	4.1			6.4	6.7	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.8	
p0 queue free %	100			99	99	
cM capacity (veh/h)	1402			613	748	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	211	185	9			
Volume Left	0	0	4			
Volume Right	0	0	4			
cSH	1402	1700	674			
Volume to Capacity	0.00	0.11	0.01			
Queue Length 95th (m)	0.0	0.0	0.3			
Control Delay (s)	0.0	0.0	10.4			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization		20.8%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

8: McConnell Ave & North Ramp Terminal/Service Road

Future Background (2026) - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	0	133	9	2	4	107	362	18	2	220	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.966			0.995			0.995
Flt Protected						0.970			0.989			
Satd. Flow (prot)	0	1426	0	0	1558	0	0	1664	0	0	1607	0
Flt Permitted						0.970			0.989			
Satd. Flow (perm)	0	1426	0	0	1558	0	0	1664	0	0	1607	0
Link Speed (k/h)					80	50		70			70	
Link Distance (m)				453.9		448.5		371.4			354.5	
Travel Time (s)				20.4		32.3		19.1			18.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	11%	0%	0%	33%	8%	6%	7%	0%	12%	0%
Adj. Flow (vph)	13	0	145	10	2	4	116	393	20	2	239	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	158	0	0	16	0	0	529	0	0	250	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 59.7%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
8: McConnell Ave & North Ramp Terminal/Service Road

Future Background (2026) - PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	0	133	9	2	4	107	362	18	2	220	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	0	145	10	2	4	116	393	20	2	239	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	889	893	243	1028	888	403	248				413	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	889	893	243	1028	888	403	248				413	
tC, single (s)	7.1	6.5	6.3	7.1	6.5	6.5	4.2				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.5	4.0	3.6	2.3				2.2	
p0 queue free %	95	100	81	94	99	99	91				100	
cM capacity (veh/h)	244	257	774	162	259	585	1284				1157	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	158	16	529	250								
Volume Left	13	10	116	2								
Volume Right	145	4	20	9								
cSH	656	214	1284	1157								
Volume to Capacity	0.24	0.08	0.09	0.00								
Queue Length 95th (m)	7.5	2.0	2.4	0.0								
Control Delay (s)	12.2	23.2	2.5	0.1								
Lane LOS	B	C	A	A								
Approach Delay (s)	12.2	23.2	2.5	0.1								
Approach LOS	B	C										
Intersection Summary												
Average Delay			3.8									
Intersection Capacity Utilization		59.7%		ICU Level of Service				B				
Analysis Period (min)		15										

Lanes, Volumes, Timings

9: McConnell Ave & South Ramp Terminal

Future Background (2026) - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	0	72	0	0	0	0	473	173	0	351	10
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t									0.964			0.996
Flt Protected												
Satd. Flow (prot)	0	1302	0	0	0	0	0	1644	0	0	1649	0
Flt Permitted												
Satd. Flow (perm)	0	1302	0	0	0	0	0	1644	0	0	1649	0
Link Speed (k/h)				50		50			70			70
Link Distance (m)			398.3			152.1			430.6			371.4
Travel Time (s)						11.0			22.1			19.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	0%	21%	0%	0%	0%	0%	5%	7%	0%	9%	0%
Adj. Flow (vph)	15	0	78	0	0	0	0	514	188	0	382	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	0	0	0	0	0	702	0	0	393	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.6%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

9: McConnell Ave & South Ramp Terminal

Future Background (2026) - PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	0	72	0	0	0	0	473	173	0	351	10
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	0	78	0	0	0	0	514	188	0	382	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	995	901	387	1073	1001	608	392			514		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	995	901	387	1073	1001	608	392			514		
tC, single (s)	7.3	6.5	6.4	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.5	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	87	100	100	100	100			100		
cM capacity (veh/h)	203	280	621	174	245	499	1177			1062		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	93	702	392									
Volume Left	15	0	0									
Volume Right	78	188	11									
cSH	465	1177	1700									
Volume to Capacity	0.20	0.00	0.23									
Queue Length 95th (m)	5.9	0.0	0.0									
Control Delay (s)	14.7	0.0	0.0									
Lane LOS	B											
Approach Delay (s)	14.7	0.0	0.0									
Approach LOS	B											
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization		49.6%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
1: H.138 & Headline Road

Total Future (2021) - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	24	70	33	11	94	21	212	19	137	462	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		15.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.908				0.850		0.850
Flt Protected						0.988			0.995			0.989
Satd. Flow (prot)	0	1422	0	0	1267	0	0	1589	1142	0	1632	1530
Flt Permitted						0.988			0.995			0.989
Satd. Flow (perm)	0	1422	0	0	1267	0	0	1589	1142	0	1632	1530
Link Speed (k/h)					50		50		50		80	
Link Distance (m)				804.5		1649.3			579.0		482.9	
Travel Time (s)				57.9		118.7			41.7		21.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	16%	14%	19%	56%	27%	0%	14%	34%	16%	7%	0%
Adj. Flow (vph)	3	26	76	36	12	102	23	230	21	149	502	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	105	0	0	150	0	0	253	21	0	651	3
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)					0.0			0.0			0.0	
Link Offset(m)					0.0		0.0		0.0		0.0	
Crosswalk Width(m)				4.8		4.8		4.8		4.8		
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

1: H.138 & Headline Road

Total Future (2021) - AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	24	70	33	11	94	21	212	19	137	462	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	26	76	36	12	102	23	230	21	149	502	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None		None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1184	1097	502	1165	1079	230	505			251		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1184	1097	502	1165	1079	230	505			251		
tC, single (s)	7.1	6.7	6.3	7.3	7.1	6.5	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.4	3.7	4.5	3.5	2.2			2.3		
p0 queue free %	97	85	86	67	92	86	98			88		
cM capacity (veh/h)	122	173	546	108	151	751	1070			1237		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	105	150	253	21	651	3						
Volume Left	3	36	23	0	149	0						
Volume Right	76	102	0	21	0	3						
cSH	333	274	1070	1700	1237	1700						
Volume to Capacity	0.32	0.55	0.02	0.01	0.12	0.00						
Queue Length 95th (m)	10.6	24.3	0.5	0.0	3.3	0.0						
Control Delay (s)	20.8	33.0	1.0	0.0	3.0	0.0						
Lane LOS	C	D	A		A							
Approach Delay (s)	20.8	33.0	0.9		3.0							
Approach LOS	C	D										
Intersection Summary												
Average Delay			7.9									
Intersection Capacity Utilization		72.0%			ICU Level of Service				C			
Analysis Period (min)			15									

Lanes, Volumes, Timings
2: McConnell Ave & Headline Road

Total Future (2021) - AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↗	↘
Volume (vph)	108	159	13	60	79	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.919				0.970	
Flt Protected					0.991	0.963
Satd. Flow (prot)	1418	0	0	1293	1513	0
Flt Permitted					0.991	0.963
Satd. Flow (perm)	1418	0	0	1293	1513	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	1649.3			831.6	672.4	
Travel Time (s)	118.7			37.4	30.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	11%	38%	38%	8%	22%
Adj. Flow (vph)	117	173	14	65	86	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	290	0	0	79	111	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 29.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: McConnell Ave & Headline Road

Total Future (2021) - AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑ ↗		↗ ↙	↖ ↖	↖ ↗	
Volume (veh/h)	108	159	13	60	79	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	117	173	14	65	86	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		290		297	204	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		290		297	204	
tC, single (s)		4.5		6.5	6.4	
tC, 2 stage (s)						
tF (s)		2.5		3.6	3.5	
p0 queue free %		99		87	97	
cM capacity (veh/h)		1091		673	789	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	290	79	111			
Volume Left	0	14	86			
Volume Right	173	0	25			
cSH	1700	1091	696			
Volume to Capacity	0.17	0.01	0.16			
Queue Length 95th (m)	0.0	0.3	4.5			
Control Delay (s)	0.0	1.6	11.2			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.6	11.2			
Approach LOS			B			
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization		29.1%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: North Access & Headline Road

Total Future (2021) - AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↖	↗
Volume (vph)	65	32	3	45	50	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.955				0.983	
Flt Protected				0.997	0.958	
Satd. Flow (prot)	1295	0	0	1492	967	0
Flt Permitted				0.997	0.958	
Satd. Flow (perm)	1295	0	0	1492	967	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	831.6			1210.7	521.0	
Travel Time (s)	37.4			54.5	37.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	83%	90%	16%	83%	23%
Adj. Flow (vph)	71	35	3	49	54	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	106	0	0	52	62	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 15.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

3: North Access & Headline Road

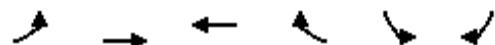
Total Future (2021) - AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑ ↗			↖ ↗	↖ ↗	
Volume (veh/h)	65	32	3	45	50	7
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	71	35	3	49	54	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		105		143	88	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		105		143	88	
tC, single (s)		5.0		7.2	6.4	
tC, 2 stage (s)						
tF (s)		3.0		4.2	3.5	
p0 queue free %		100		92	99	
cM capacity (veh/h)		1079		689	915	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	105	52	62			
Volume Left	0	3	54			
Volume Right	35	0	8			
cSH	1700	1079	710			
Volume to Capacity	0.06	0.00	0.09			
Queue Length 95th (m)	0.0	0.1	2.3			
Control Delay (s)	0.0	0.5	10.6			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.5	10.6			
Approach LOS			B			
Intersection Summary						
Average Delay		3.1				
Intersection Capacity Utilization		15.7%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Total Future (2021) - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	136	102	88	142	276	280
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	55.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.917			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1487	1622	1481	0	1583	1354
Flt Permitted	0.580				0.950	
Satd. Flow (perm)	908	1622	1481	0	1583	1354
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			154			304
Link Speed (k/h)	50	50		50		
Link Distance (m)	459.4	499.7		493.4		
Travel Time (s)	33.1	36.0		35.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	15%	11%	9%	13%	8%	13%
Adj. Flow (vph)	148	111	96	154	300	304
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	111	250	0	300	304
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	3.6	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.8	4.8		4.8		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)	9.4	9.4				
Detector 2 Size(m)	0.6	0.6				
Detector 2 Type	Cl+Ex	Cl+Ex				
Detector 2 Channel						
Detector 2 Extend (s)	0.0	0.0				
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases	4	8		6		
Permitted Phases	4			6		

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Total Future (2021) - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%
Maximum Green (s)	16.0	16.0	16.0		16.0	16.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	10.4	10.4	10.4		20.0	20.0
Actuated g/C Ratio	0.29	0.29	0.29		0.56	0.56
v/c Ratio	0.56	0.23	0.46		0.34	0.34
Control Delay	18.5	9.8	7.0		8.6	2.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	18.5	9.8	7.0		8.6	2.7
LOS	B	A	A		A	A
Approach Delay		14.8	7.0		5.6	
Approach LOS		B	A		A	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 35.7

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 8.0

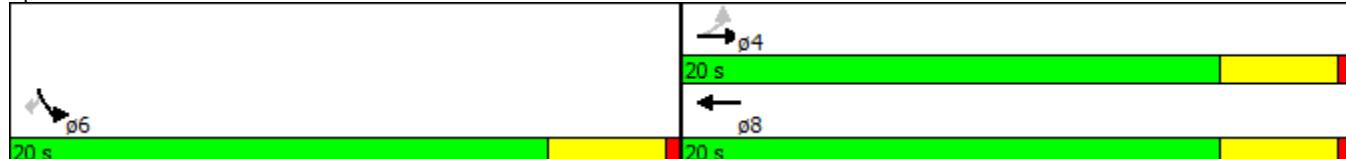
Intersection LOS: A

Intersection Capacity Utilization 48.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: H.138 & Cornwall Centre Road



Lanes, Volumes, Timings
6: McConnell Ave & S Branch Rd

Total Future (2021) - AM

	→	→	→	←	←	↑	↑	↓	↓	←	→	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	62	66	126	86	3	56	88	54	18	160	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.998			0.963			0.995
Flt Protected						0.971			0.986			0.995
Satd. Flow (prot)	0	1507	0	0	1410	0	0	1406	0	0	1584	0
Flt Permitted						0.757			0.878			0.964
Satd. Flow (perm)	0	1489	0	0	1099	0	0	1252	0	0	1535	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		72				2			56			5
Link Speed (k/h)		60				70			70			80
Link Distance (m)		1191.6				832.5			549.5			534.1
Travel Time (s)		71.5				42.8			28.3			24.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	17%	14%	8%	30%	12%	100%	8%	9%	56%	24%	11%	17%
Adj. Flow (vph)	7	67	72	137	93	3	61	96	59	20	174	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	146	0	0	233	0	0	216	0	0	201	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		16.0			16.0			16.0			16.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
v/c Ratio		0.23			0.53			0.40			0.33	
Control Delay		5.8			14.5			9.2			9.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.8			14.5			9.2			9.9	

Lanes, Volumes, Timings
6: McConnell Ave & S Branch Rd

Total Future (2021) - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A			B			A			A	
Approach Delay			5.8			14.5			9.2			9.9
Approach LOS			A			B		A			A	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 10.3

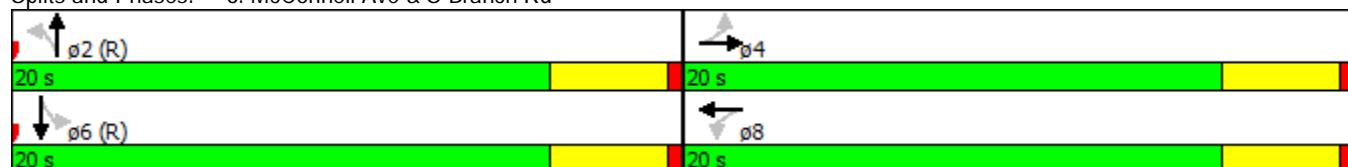
Intersection LOS: B

Intersection Capacity Utilization 55.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 6: McConnell Ave & S Branch Rd



Lanes, Volumes, Timings
7: S Branch Rd & South Access

Total Future (2021) - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	35	90	157	8	8	48
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.993		0.885	
Flt Protected		0.986			0.993	
Satd. Flow (prot)	0	1363	1642	0	902	0
Flt Permitted		0.986			0.993	
Satd. Flow (perm)	0	1363	1642	0	902	0
Link Speed (k/h)		70	70		50	
Link Distance (m)		832.5	1073.8		317.1	
Travel Time (s)		42.8	55.2		22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	85%	9%	7%	44%	31%	83%
Adj. Flow (vph)	38	98	171	9	9	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	136	180	0	61	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 29.9%

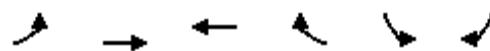
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

7: S Branch Rd & South Access

Total Future (2021) - AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	35	90	157	8	8	48
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	98	171	9	9	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	179			349	175	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179			349	175	
tC, single (s)	4.9			6.7	7.0	
tC, 2 stage (s)						
tF (s)	3.0			3.8	4.0	
p0 queue free %	96			98	93	
cM capacity (veh/h)	1021			572	696	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	136	179	61			
Volume Left	38	0	9			
Volume Right	0	9	52			
cSH	1021	1700	675			
Volume to Capacity	0.04	0.11	0.09			
Queue Length 95th (m)	0.9	0.0	2.4			
Control Delay (s)	2.7	0.0	10.9			
Lane LOS	A		B			
Approach Delay (s)	2.7	0.0	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization		29.9%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

8: McConnell Ave & North Ramp Terminal/Service Road

Total Future (2021) - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	0	172	5	0	3	55	169	2	0	340	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.949			0.999			0.992
Flt Protected						0.970			0.988			
Satd. Flow (prot)	0	1381	0	0	1657	0	0	1485	0	0	1529	0
Flt Permitted						0.970			0.988			
Satd. Flow (perm)	0	1381	0	0	1657	0	0	1485	0	0	1529	0
Link Speed (k/h)					80	50			70			70
Link Distance (m)					453.9	448.5			371.4			354.5
Travel Time (s)					20.4	32.3			19.1			18.2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	58%	0%	8%	0%	0%	0%	16%	21%	0%	0%	13%	81%
Adj. Flow (vph)	27	0	187	5	0	3	60	184	2	0	370	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	214	0	0	8	0	0	246	0	0	392	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 55.4%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
8: McConnell Ave & North Ramp Terminal/Service Road

Total Future (2021) - AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	0	172	5	0	3	55	169	2	0	340	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	0	187	5	0	3	60	184	2	0	370	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	688	686	380	872	696	185	391				186	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	688	686	380	872	696	185	391				186	
tC, single (s)	7.7	6.5	6.3	7.1	6.5	6.2	4.3				4.1	
tC, 2 stage (s)												
tF (s)	4.0	4.0	3.4	3.5	4.0	3.3	2.3				2.2	
p0 queue free %	90	100	71	97	100	100	95				100	
cM capacity (veh/h)	282	352	654	187	348	863	1095				1401	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	214	9	246	391								
Volume Left	27	5	60	0								
Volume Right	187	3	2	22								
cSH	560	265	1095	1401								
Volume to Capacity	0.38	0.03	0.05	0.00								
Queue Length 95th (m)	14.3	0.8	1.4	0.0								
Control Delay (s)	15.4	19.1	2.5	0.0								
Lane LOS	C	C	A									
Approach Delay (s)	15.4	19.1	2.5	0.0								
Approach LOS	C	C										
Intersection Summary												
Average Delay			4.7									
Intersection Capacity Utilization		55.4%		ICU Level of Service				B				
Analysis Period (min)		15										

Lanes, Volumes, Timings

9: McConnell Ave & South Ramp Terminal

Total Future (2021) - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	0	108	0	0	0	0	211	89	0	496	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t									0.960			0.994
Flt Protected												
Satd. Flow (prot)	0	1312	0	0	0	0	0	1492	0	0	1598	0
Flt Permitted												
Satd. Flow (perm)	0	1312	0	0	0	0	0	1492	0	0	1598	0
Link Speed (k/h)				50		50			70			70
Link Distance (m)			398.3			152.1			430.6			371.4
Travel Time (s)						11.0			22.1			19.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	58%	0%	15%	0%	0%	0%	0%	17%	13%	0%	10%	56%
Adj. Flow (vph)	16	0	117	0	0	0	0	229	97	0	539	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	133	0	0	0	0	0	326	0	0	563	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 43.5%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

9: McConnell Ave & South Ramp Terminal

Total Future (2021) - AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	0	108	0	0	0	0	211	89	0	496	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	0	117	0	0	0	0	229	97	0	539	24
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	829	780	551	946	841	278	563			229		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	829	780	551	946	841	278	563			229		
tC, single (s)	7.7	6.5	6.4	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	4.0	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	77	100	100	100	100			100		
cM capacity (veh/h)	234	329	510	187	303	766	1019			1351		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	134	326	563									
Volume Left	16	0	0									
Volume Right	117	97	24									
cSH	446	1019	1700									
Volume to Capacity	0.30	0.00	0.33									
Queue Length 95th (m)	10.0	0.0	0.0									
Control Delay (s)	16.5	0.0	0.0									
Lane LOS	C											
Approach Delay (s)	16.5	0.0	0.0									
Approach LOS	C											
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization		43.5%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
1: H.138 & Headline Road

Total Future (2021) - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	18	38	22	19	120	68	454	28	125	398	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		15.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.915			0.900				0.850			0.850
Flt Protected		0.997			0.993			0.994			0.988	
Satd. Flow (prot)	0	1593	0	0	1282	0	0	1676	1254	0	1601	1530
Flt Permitted		0.997			0.993			0.994			0.988	
Satd. Flow (perm)	0	1593	0	0	1282	0	0	1676	1254	0	1601	1530
Link Speed (k/h)		50			50			50			80	
Link Distance (m)		804.5			1649.3			579.0			482.9	
Travel Time (s)		57.9			118.7			41.7			21.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	10%	0%	86%	9%	17%	5%	7%	22%	21%	8%	0%
Adj. Flow (vph)	4	20	41	24	21	130	74	493	30	136	433	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	65	0	0	175	0	0	567	30	0	569	17
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 85.4%

ICU Level of Service E

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

1: H.138 & Headline Road

Total Future (2021) - PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	18	38	22	19	120	68	454	28	125	398	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	20	41	24	21	130	74	493	30	136	433	17
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1486	1376	433	1397	1363	493	450			524		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1486	1376	433	1397	1363	493	450			524		
tC, single (s)	7.1	6.6	6.2	8.0	6.6	6.4	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	4.3	4.1	3.5	2.2			2.4		
p0 queue free %	92	82	93	56	82	76	93			86		
cM capacity (veh/h)	58	112	627	54	114	547	1095			953		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	65	175	567	30	568	17						
Volume Left	4	24	74	0	136	0						
Volume Right	41	130	0	30	0	17						
cSH	206	203	1095	1700	953	1700						
Volume to Capacity	0.32	0.86	0.07	0.02	0.14	0.01						
Queue Length 95th (m)	10.3	52.3	1.7	0.0	4.0	0.0						
Control Delay (s)	30.3	80.2	1.8	0.0	3.6	0.0						
Lane LOS	D	F	A		A							
Approach Delay (s)	30.3	80.2	1.7		3.5							
Approach LOS	D	F										
Intersection Summary												
Average Delay			13.4									
Intersection Capacity Utilization		85.4%			ICU Level of Service				E			
Analysis Period (min)			15									

Lanes, Volumes, Timings
2: McConnell Ave & Headline Road

Total Future (2021) - PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↖	↗
Volume (vph)	62	86	20	97	161	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.922				0.983	
Flt Protected				0.991	0.958	
Satd. Flow (prot)	1337	0	0	1416	1595	0
Flt Permitted				0.991	0.958	
Satd. Flow (perm)	1337	0	0	1416	1595	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	1649.3			831.6	672.4	
Travel Time (s)	118.7			37.4	30.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	48%	7%	26%	26%	4%	22%
Adj. Flow (vph)	67	93	22	105	175	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	160	0	0	127	200	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 36.5%

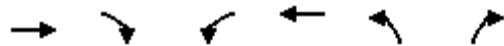
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: McConnell Ave & Headline Road

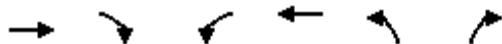
Total Future (2021) - PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑ ↗			↖ ↗	↖ ↗	
Volume (veh/h)	62	86	20	97	161	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	67	93	22	105	175	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		161		263	114	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		161		263	114	
tC, single (s)		4.4		6.4	6.4	
tC, 2 stage (s)						
tF (s)		2.4		3.5	3.5	
p0 queue free %		98		75	97	
cM capacity (veh/h)		1285		709	887	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	161	127	200			
Volume Left	0	22	175			
Volume Right	93	0	25			
cSH	1700	1285	728			
Volume to Capacity	0.09	0.02	0.27			
Queue Length 95th (m)	0.0	0.4	8.9			
Control Delay (s)	0.0	1.5	11.8			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.5	11.8			
Approach LOS			B			
Intersection Summary						
Average Delay		5.2				
Intersection Capacity Utilization		36.5%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: North Access & Headline Road

Total Future (2021) - PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↗	↘
Volume (vph)	71	30	2	81	34	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.959				0.979	
Flt Protected				0.999	0.960	
Satd. Flow (prot)	1225	0	0	1700	981	0
Flt Permitted				0.999	0.960	
Satd. Flow (perm)	1225	0	0	1700	981	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	831.6			1210.7	521.0	
Travel Time (s)	37.4			54.5	37.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	22%	85%	85%	4%	81%	27%
Adj. Flow (vph)	77	33	2	88	37	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	110	0	0	90	44	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 16.2%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

3: North Access & Headline Road

Total Future (2021) - PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑→			↑←	↑↖	
Volume (veh/h)	71	30	2	81	34	6
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	77	33	2	88	37	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		110		186	93	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		110		186	93	
tC, single (s)		4.9		7.2	6.5	
tC, 2 stage (s)						
tF (s)		3.0		4.2	3.5	
p0 queue free %		100		94	99	
cM capacity (veh/h)		1092		652	899	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	110	90	43			
Volume Left	0	2	37			
Volume Right	33	0	7			
cSH	1700	1092	680			
Volume to Capacity	0.06	0.00	0.06			
Queue Length 95th (m)	0.0	0.0	1.6			
Control Delay (s)	0.0	0.2	10.7			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.2	10.7			
Approach LOS			B			
Intersection Summary						
Average Delay		2.0				
Intersection Capacity Utilization		16.2%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Total Future (2021) - PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Volume (vph)	290	112	121	276	259	201
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	55.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.906			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1569	1698	1524	0	1598	1330
Flt Permitted	0.426				0.950	
Satd. Flow (perm)	703	1698	1524	0	1598	1330
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			300			218
Link Speed (k/h)	50	50		50		
Link Distance (m)	459.4	499.7		493.4		
Travel Time (s)	33.1	36.0		35.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	6%	7%	7%	7%	15%
Adj. Flow (vph)	315	122	132	300	282	218
Shared Lane Traffic (%)						
Lane Group Flow (vph)	315	122	432	0	282	218
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	3.6	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.8	4.8		4.8		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)	9.4	9.4				
Detector 2 Size(m)	0.6	0.6				
Detector 2 Type	Cl+Ex	Cl+Ex				
Detector 2 Channel						
Detector 2 Extend (s)	0.0	0.0				
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases	4	8		6		
Permitted Phases	4			6		

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Total Future (2021) - PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	38.0	38.0	38.0		22.0	22.0
Total Split (%)	63.3%	63.3%	63.3%		36.7%	36.7%
Maximum Green (s)	34.0	34.0	34.0		18.0	18.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	25.9	25.9	25.9		18.4	18.4
Actuated g/C Ratio	0.49	0.49	0.49		0.35	0.35
v/c Ratio	0.91	0.15	0.48		0.50	0.36
Control Delay	45.1	6.9	4.3		19.8	4.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	45.1	6.9	4.3		19.8	4.9
LOS	D	A	A		B	A
Approach Delay		34.4	4.3		13.3	
Approach LOS		C	A		B	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 52.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 17.2

Intersection LOS: B

Intersection Capacity Utilization 66.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: H.138 & Cornwall Centre Road



Lanes, Volumes, Timings
6: McConnell Ave & S Branch Rd

Total Future (2021) - PM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	94	42	85	102	7	81	147	110	8	96	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.995			0.956			0.991
Flt Protected						0.979			0.988			0.996
Satd. Flow (prot)	0	1616	0	0	1489	0	0	1537	0	0	1606	0
Flt Permitted						0.817			0.905			0.972
Satd. Flow (perm)	0	1574	0	0	1243	0	0	1408	0	0	1567	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		46				5			70			8
Link Speed (k/h)		60				70			70			80
Link Distance (m)		1191.6				832.5			549.5			534.1
Travel Time (s)		71.5				42.8			28.3			24.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	8%	3%	31%	8%	0%	4%	5%	23%	38%	8%	14%
Adj. Flow (vph)	15	102	46	92	111	8	88	160	120	9	104	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	163	0	0	211	0	0	368	0	0	121	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	21.0	21.0		21.0	21.0		24.0	24.0		24.0	24.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		53.3%	53.3%		53.3%	53.3%	
Maximum Green (s)	17.0	17.0		17.0	17.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		17.0			17.0			20.0			20.0	
Actuated g/C Ratio		0.38			0.38			0.44			0.44	
v/c Ratio		0.26			0.45			0.55			0.17	
Control Delay		8.5			14.0			11.2			7.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.5			14.0			11.2			7.9	

Lanes, Volumes, Timings
6: McConnell Ave & S Branch Rd

Total Future (2021) - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A			B			B			A	
Approach Delay		8.5			14.0			11.2			7.9	
Approach LOS		A			B			B			A	

Intersection Summary

Area Type: Other

Cycle Length: 45

Actuated Cycle Length: 45

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 10.9

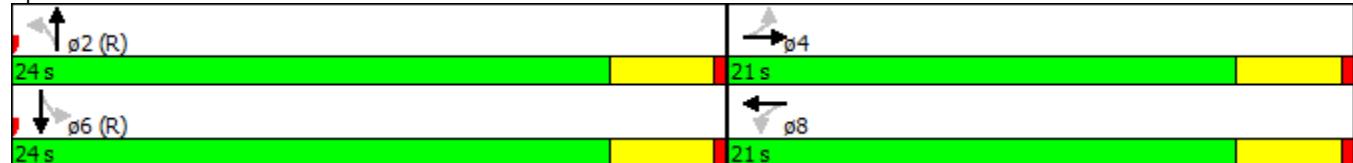
Intersection LOS: B

Intersection Capacity Utilization 56.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 6: McConnell Ave & S Branch Rd



Lanes, Volumes, Timings
7: S Branch Rd & South Access

Total Future (2021) - PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	28	185	162	3	7	32
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t				0.998		0.890
Flt Protected			0.994			0.991
Satd. Flow (prot)	0	1539	1674	0	925	0
Flt Permitted			0.994			0.991
Satd. Flow (perm)	0	1539	1674	0	925	0
Link Speed (k/h)		70	70		50	
Link Distance (m)		832.5	1073.8		317.1	
Travel Time (s)		42.8	55.2		22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	85%	6%	6%	85%	35%	80%
Adj. Flow (vph)	30	201	176	3	8	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	231	179	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 34.4%

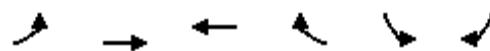
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

7: S Branch Rd & South Access

Total Future (2021) - PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	28	185	162	3	7	32
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	201	176	3	8	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	179			440	178	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179			440	178	
tC, single (s)	4.9			6.7	7.0	
tC, 2 stage (s)						
tF (s)	3.0			3.8	4.0	
p0 queue free %	97			98	95	
cM capacity (veh/h)	1021			502	699	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	232	179	42			
Volume Left	30	0	8			
Volume Right	0	3	35			
cSH	1021	1700	653			
Volume to Capacity	0.03	0.11	0.06			
Queue Length 95th (m)	0.7	0.0	1.7			
Control Delay (s)	1.4	0.0	10.9			
Lane LOS	A		B			
Approach Delay (s)	1.4	0.0	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization		34.4%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

8: McConnell Ave & North Ramp Terminal/Service Road

Total Future (2021) - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	0	126	8	2	4	102	360	17	2	224	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.964			0.995			0.987
Flt Protected						0.971			0.989			
Satd. Flow (prot)	0	1346	0	0	1549	0	0	1629	0	0	1472	0
Flt Permitted						0.971			0.989			
Satd. Flow (perm)	0	1346	0	0	1549	0	0	1629	0	0	1472	0
Link Speed (k/h)					80	50		70			70	
Link Distance (m)				453.9		448.5		371.4			354.5	
Travel Time (s)				20.4		32.3		19.1			18.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	49%	0%	11%	0%	0%	33%	8%	9%	7%	0%	17%	58%
Adj. Flow (vph)	30	0	137	9	2	4	111	391	18	2	243	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	167	0	0	15	0	0	520	0	0	270	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 61.0%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
8: McConnell Ave & North Ramp Terminal/Service Road

Total Future (2021) - PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	0	126	8	2	4	102	360	17	2	224	23
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	0	137	9	2	4	111	391	18	2	243	25
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	888	892	256	1020	895	401	268				410	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	888	892	256	1020	895	401	268				410	
tC, single (s)	7.6	6.5	6.3	7.1	6.5	6.5	4.2				4.1	
tC, 2 stage (s)												
tF (s)	3.9	4.0	3.4	3.5	4.0	3.6	2.3				2.2	
p0 queue free %	85	100	82	95	99	99	91				100	
cM capacity (veh/h)	202	258	761	166	257	587	1261				1160	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	167	15	521	271								
Volume Left	30	9	111	2								
Volume Right	137	4	18	25								
cSH	506	223	1261	1160								
Volume to Capacity	0.33	0.07	0.09	0.00								
Queue Length 95th (m)	11.5	1.7	2.3	0.0								
Control Delay (s)	15.6	22.3	2.5	0.1								
Lane LOS	C	C	A	A								
Approach Delay (s)	15.6	22.3	2.5	0.1								
Approach LOS	C	C										
Intersection Summary												
Average Delay			4.4									
Intersection Capacity Utilization		61.0%			ICU Level of Service			B				
Analysis Period (min)			15									

Lanes, Volumes, Timings

9: McConnell Ave & South Ramp Terminal

Total Future (2021) - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	0	68	0	0	0	0	456	165	0	340	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.899						0.964			0.993	
Flt Protected		0.988										
Satd. Flow (prot)	0	1248	0	0	0	0	0	1633	0	0	1602	0
Flt Permitted		0.988										
Satd. Flow (perm)	0	1248	0	0	0	0	0	1633	0	0	1602	0
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		398.3			152.1			430.6			371.4	
Travel Time (s)		28.7			11.0			22.1			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	49%	0%	21%	0%	0%	0%	0%	6%	7%	0%	10%	41%
Adj. Flow (vph)	25	0	74	0	0	0	0	496	179	0	370	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	99	0	0	0	0	0	675	0	0	390	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 48.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

9: McConnell Ave & South Ramp Terminal

Total Future (2021) - PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	0	68	0	0	0	0	456	165	0	340	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	0	74	0	0	0	0	496	179	0	370	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	965	875	379	1039	974	585	389			496		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	965	875	379	1039	974	585	389			496		
tC, single (s)	7.6	6.5	6.4	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.9	4.0	3.5	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	88	100	100	100	100			100		
cM capacity (veh/h)	194	290	628	186	254	514	1180			1079		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	99	675	389									
Volume Left	25	0	0									
Volume Right	74	179	20									
cSH	401	1180	1700									
Volume to Capacity	0.25	0.00	0.23									
Queue Length 95th (m)	7.7	0.0	0.0									
Control Delay (s)	16.9	0.0	0.0									
Lane LOS	C											
Approach Delay (s)	16.9	0.0	0.0									
Approach LOS	C											
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization		48.4%		ICU Level of Service					A			
Analysis Period (min)		15										

Lanes, Volumes, Timings
1: H.138 & Headline Road

Total Future (2026) - AM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	25	74	35	12	98	22	223	19	143	486	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		15.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.909				0.850		0.850
Flt Protected						0.988			0.996			0.989
Satd. Flow (prot)	0	1421	0	0	1277	0	0	1590	1150	0	1633	1530
Flt Permitted						0.988			0.996			0.989
Satd. Flow (perm)	0	1421	0	0	1277	0	0	1590	1150	0	1633	1530
Link Speed (k/h)					50		50		50		80	
Link Distance (m)					804.5		1649.3		579.0		482.9	
Travel Time (s)					57.9		118.7		41.7		21.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	16%	14%	18%	56%	26%	0%	14%	33%	16%	7%	0%
Adj. Flow (vph)	3	27	80	38	13	107	24	242	21	155	528	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	158	0	0	266	21	0	683	3
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)					0.0			0.0			0.0	
Link Offset(m)					0.0		0.0		0.0		0.0	
Crosswalk Width(m)					4.8		4.8		4.8		4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	74.8%							ICU Level of Service D				
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

1: H.138 & Headline Road

Total Future (2026) - AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	25	74	35	12	98	22	223	19	143	486	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	27	80	38	13	107	24	242	21	155	528	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None		None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1242	1150	528	1223	1133	242	532			263		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1242	1150	528	1223	1133	242	532			263		
tC, single (s)	7.1	6.7	6.3	7.3	7.1	6.5	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.4	3.7	4.5	3.5	2.2			2.3		
p0 queue free %	97	83	85	60	91	86	98			87		
cM capacity (veh/h)	108	159	527	95	138	741	1046			1224		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	111	158	266	21	684	3						
Volume Left	3	38	24	0	155	0						
Volume Right	80	107	0	21	0	3						
cSH	314	247	1046	1700	1224	1700						
Volume to Capacity	0.35	0.64	0.02	0.01	0.13	0.00						
Queue Length 95th (m)	12.4	31.4	0.6	0.0	3.5	0.0						
Control Delay (s)	22.6	42.2	1.0	0.0	3.1	0.0						
Lane LOS	C	E	A		A							
Approach Delay (s)	22.6	42.2	0.9		3.1							
Approach LOS	C	E										
Intersection Summary												
Average Delay			9.3									
Intersection Capacity Utilization		74.8%		ICU Level of Service				D				
Analysis Period (min)		15										

Lanes, Volumes, Timings
2: McConnell Ave & Headline Road

Total Future (2026) - AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↑	↖
Volume (vph)	112	167	14	62	83	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.919				0.970	
Flt Protected				0.991	0.963	
Satd. Flow (prot)	1423	0	0	1302	1513	0
Flt Permitted				0.991	0.963	
Satd. Flow (perm)	1423	0	0	1302	1513	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	1649.3			831.6	672.4	
Travel Time (s)	118.7			37.4	30.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	24%	11%	37%	37%	8%	22%
Adj. Flow (vph)	122	182	15	67	90	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	304	0	0	82	116	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: McConnell Ave & Headline Road

Total Future (2026) - AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑ ↗			↗ ↙	↖ ↗	
Volume (veh/h)	112	167	14	62	83	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	122	182	15	67	90	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		303		310	212	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		303		310	212	
tC, single (s)		4.5		6.5	6.4	
tC, 2 stage (s)						
tF (s)		2.5		3.6	3.5	
p0 queue free %		99		86	97	
cM capacity (veh/h)		1083		660	780	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	303	83	116			
Volume Left	0	15	90			
Volume Right	182	0	26			
cSH	1700	1083	684			
Volume to Capacity	0.18	0.01	0.17			
Queue Length 95th (m)	0.0	0.3	4.9			
Control Delay (s)	0.0	1.6	11.3			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.6	11.3			
Approach LOS			B			
Intersection Summary						
Average Delay		2.9				
Intersection Capacity Utilization		30.1%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: North Access & Headline Road

Total Future (2026) - AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↑	↖
Volume (vph)	68	32	3	47	51	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.957				0.981	
Flt Protected				0.997	0.959	
Satd. Flow (prot)	1304	0	0	1494	970	0
Flt Permitted				0.997	0.959	
Satd. Flow (perm)	1304	0	0	1494	970	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	831.6			1210.7	521.0	
Travel Time (s)	37.4			54.5	37.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	83%	90%	16%	83%	23%
Adj. Flow (vph)	74	35	3	51	55	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	109	0	0	54	64	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 16.0%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

3: North Access & Headline Road

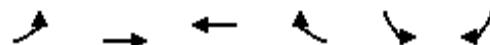
Total Future (2026) - AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑ ↗			↖ ↗	↖ ↗	
Volume (veh/h)	68	32	3	47	51	8
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	74	35	3	51	55	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		109		149	91	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		109		149	91	
tC, single (s)		5.0		7.2	6.4	
tC, 2 stage (s)						
tF (s)		3.0		4.2	3.5	
p0 queue free %		100		92	99	
cM capacity (veh/h)		1076		683	911	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	109	54	64			
Volume Left	0	3	55			
Volume Right	35	0	9			
cSH	1700	1076	707			
Volume to Capacity	0.06	0.00	0.09			
Queue Length 95th (m)	0.0	0.1	2.4			
Control Delay (s)	0.0	0.5	10.6			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.5	10.6			
Approach LOS			B			
Intersection Summary						
Average Delay			3.1			
Intersection Capacity Utilization		16.0%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

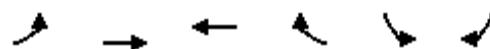
Total Future (2026) - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	143	107	92	149	291	294
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	55.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.917			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1487	1622	1481	0	1583	1354
Flt Permitted	0.558				0.950	
Satd. Flow (perm)	873	1622	1481	0	1583	1354
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			162			320
Link Speed (k/h)	50	50		50		
Link Distance (m)	459.4	499.7		493.4		
Travel Time (s)	33.1	36.0		35.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	15%	11%	9%	13%	8%	13%
Adj. Flow (vph)	155	116	100	162	316	320
Shared Lane Traffic (%)						
Lane Group Flow (vph)	155	116	262	0	316	320
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	3.6	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.8	4.8		4.8		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)	9.4	9.4				
Detector 2 Size(m)	0.6	0.6				
Detector 2 Type	Cl+Ex	Cl+Ex				
Detector 2 Channel						
Detector 2 Extend (s)	0.0	0.0				
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases	4		8		6	
Permitted Phases	4				6	

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Total Future (2026) - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%
Maximum Green (s)	16.0	16.0	16.0		16.0	16.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	10.7	10.7	10.7		20.0	20.0
Actuated g/C Ratio	0.30	0.30	0.30		0.56	0.56
v/c Ratio	0.60	0.24	0.47		0.36	0.36
Control Delay	20.2	9.9	7.0		8.9	2.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	20.2	9.9	7.0		8.9	2.7
LOS	C	A	A		A	A
Approach Delay		15.8	7.0		5.8	
Approach LOS		B	A		A	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 35.9

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 8.4

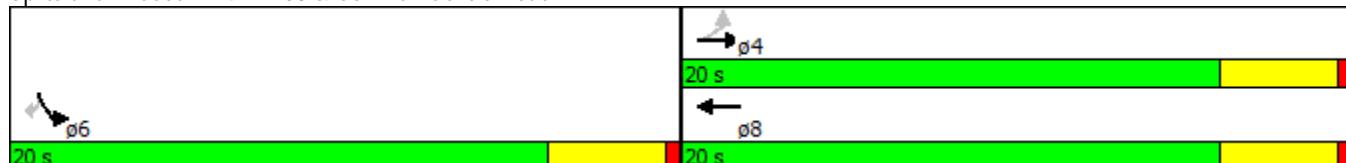
Intersection LOS: A

Intersection Capacity Utilization 50.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: H.138 & Cornwall Centre Road



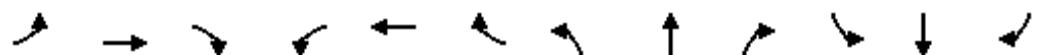
Lanes, Volumes, Timings
6: McConnell Ave & S Branch Rd

Total Future (2026) - AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	65	70	131	90	3	59	92	56	19	168	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.998			0.963			0.995
Flt Protected						0.972			0.986			0.995
Satd. Flow (prot)	0	1507	0	0	1417	0	0	1407	0	0	1584	0
Flt Permitted						0.752			0.873			0.963
Satd. Flow (perm)	0	1488	0	0	1096	0	0	1246	0	0	1533	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		76				2			56			6
Link Speed (k/h)		60				70			70			80
Link Distance (m)		1191.6				832.5			549.5			534.1
Travel Time (s)		71.5				42.8			28.3			24.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	17%	14%	8%	30%	11%	100%	8%	9%	56%	24%	11%	17%
Adj. Flow (vph)	8	71	76	142	98	3	64	100	61	21	183	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	155	0	0	243	0	0	225	0	0	212	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		16.0			16.0			16.0			16.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
v/c Ratio		0.24			0.55			0.42			0.34	
Control Delay		5.8			15.1			9.5			10.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.8			15.1			9.5			10.1	

Lanes, Volumes, Timings
6: McConnell Ave & S Branch Rd

Total Future (2026) - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A			B			A			B	
Approach Delay			5.8			15.1			9.5			10.1
Approach LOS			A			B		A			B	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 10.6

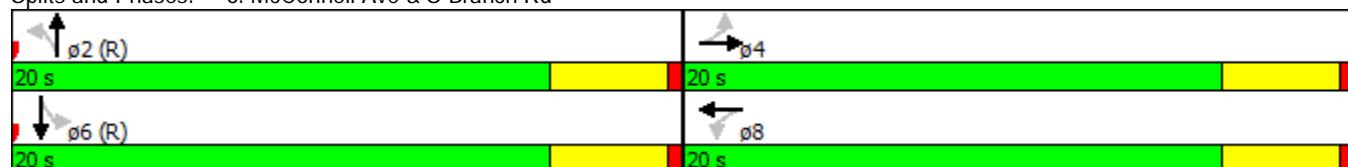
Intersection LOS: B

Intersection Capacity Utilization 57.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 6: McConnell Ave & S Branch Rd



Lanes, Volumes, Timings
7: S Branch Rd & South Access

Total Future (2026) - AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	36	95	165	9	9	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t				0.993		0.886
Flt Protected			0.986			0.992
Satd. Flow (prot)	0	1367	1641	0	911	0
Flt Permitted			0.986			0.992
Satd. Flow (perm)	0	1367	1641	0	911	0
Link Speed (k/h)		70	70		50	
Link Distance (m)		832.5	1073.8		317.1	
Travel Time (s)		42.8	55.2		22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	85%	9%	7%	43%	30%	82%
Adj. Flow (vph)	39	103	179	10	10	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	142	189	0	63	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.8%

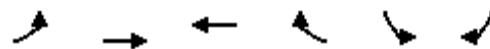
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

7: S Branch Rd & South Access

Total Future (2026) - AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	36	95	165	9	9	49
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	103	179	10	10	53
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	189			366	184	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	189			366	184	
tC, single (s)	4.9			6.7	7.0	
tC, 2 stage (s)						
tF (s)	3.0			3.8	4.0	
p0 queue free %	96			98	92	
cM capacity (veh/h)	1011			559	689	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	142	189	63			
Volume Left	39	0	10			
Volume Right	0	10	53			
cSH	1011	1700	665			
Volume to Capacity	0.04	0.11	0.09			
Queue Length 95th (m)	1.0	0.0	2.5			
Control Delay (s)	2.7	0.0	11.0			
Lane LOS	A		B			
Approach Delay (s)	2.7	0.0	11.0			
Approach LOS			B			
Intersection Summary						
Average Delay		2.7				
Intersection Capacity Utilization	30.8%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings

8: McConnell Ave & North Ramp Terminal/Service Road

Total Future (2026) - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	0	181	6	0	3	57	177	2	0	356	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.959			0.999			0.993
Flt Protected						0.966			0.988			
Satd. Flow (prot)	0	1383	0	0	1668	0	0	1485	0	0	1532	0
Flt Permitted						0.966			0.988			
Satd. Flow (perm)	0	1383	0	0	1668	0	0	1485	0	0	1532	0
Link Speed (k/h)					80	50		70			70	
Link Distance (m)				453.9		448.5		371.4			354.5	
Travel Time (s)				20.4		32.3		19.1			18.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	57%	0%	8%	0%	0%	0%	16%	21%	0%	0%	13%	81%
Adj. Flow (vph)	28	0	197	7	0	3	62	192	2	0	387	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	225	0	0	10	0	0	256	0	0	409	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 57.4%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
8: McConnell Ave & North Ramp Terminal/Service Road

Total Future (2026) - AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	0	181	6	0	3	57	177	2	0	356	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	0	197	7	0	3	62	192	2	0	387	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	718	716	398	912	726	193	409				195	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	718	716	398	912	726	193	409				195	
tC, single (s)	7.7	6.5	6.3	7.1	6.5	6.2	4.3				4.1	
tC, 2 stage (s)												
tF (s)	4.0	4.0	3.4	3.5	4.0	3.3	2.3				2.2	
p0 queue free %	89	100	69	96	100	100	94				100	
cM capacity (veh/h)	269	338	639	170	333	853	1078				1391	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	225	10	257	409								
Volume Left	28	7	62	0								
Volume Right	197	3	2	22								
cSH	545	232	1078	1391								
Volume to Capacity	0.41	0.04	0.06	0.00								
Queue Length 95th (m)	16.1	1.1	1.5	0.0								
Control Delay (s)	16.2	21.2	2.5	0.0								
Lane LOS	C	C	A									
Approach Delay (s)	16.2	21.2	2.5	0.0								
Approach LOS	C	C										
Intersection Summary												
Average Delay			5.0									
Intersection Capacity Utilization		57.4%		ICU Level of Service				B				
Analysis Period (min)			15									

Lanes, Volumes, Timings

9: McConnell Ave & South Ramp Terminal

Total Future (2026) - AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	0	114	0	0	0	0	221	94	0	521	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t									0.960			0.995
Flt Protected			0.994									
Satd. Flow (prot)	0	1313	0	0	0	0	0	1492	0	0	1601	0
Flt Permitted			0.994									
Satd. Flow (perm)	0	1313	0	0	0	0	0	1492	0	0	1601	0
Link Speed (k/h)			50			50			70			70
Link Distance (m)			398.3			152.1			430.6			371.4
Travel Time (s)				28.7		11.0			22.1			19.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	57%	0%	15%	0%	0%	0%	0%	17%	13%	0%	10%	56%
Adj. Flow (vph)	17	0	124	0	0	0	0	240	102	0	566	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	141	0	0	0	0	0	342	0	0	590	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 45.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

9: McConnell Ave & South Ramp Terminal

Total Future (2026) - AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	0	114	0	0	0	0	221	94	0	521	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	0	124	0	0	0	0	240	102	0	566	24
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	870	818	578	993	882	291	590			240		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	870	818	578	993	882	291	590			240		
tC, single (s)	7.7	6.5	6.4	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	4.0	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	100	75	100	100	100	100			100		
cM capacity (veh/h)	220	313	492	169	287	753	995			1338		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	141	342	590									
Volume Left	17	0	0									
Volume Right	124	102	24									
cSH	427	995	1700									
Volume to Capacity	0.33	0.00	0.35									
Queue Length 95th (m)	11.4	0.0	0.0									
Control Delay (s)	17.6	0.0	0.0									
Lane LOS	C											
Approach Delay (s)	17.6	0.0	0.0									
Approach LOS	C											
Intersection Summary												
Average Delay			2.3									
Intersection Capacity Utilization		45.4%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
1: H.138 & Headline Road

Total Future (2026) - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	19	40	23	20	125	72	477	29	131	419	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		30.0	0.0		15.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.915			0.900				0.850			0.850
Flt Protected		0.997			0.993			0.993				0.988
Satd. Flow (prot)	0	1598	0	0	1290	0	0	1675	1264	0	1601	1530
Flt Permitted		0.997			0.993			0.993				0.988
Satd. Flow (perm)	0	1598	0	0	1290	0	0	1675	1264	0	1601	1530
Link Speed (k/h)		50			50			50			80	
Link Distance (m)		804.5			1649.3			579.0			482.9	
Travel Time (s)		57.9			118.7			41.7			21.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	9%	0%	86%	9%	16%	5%	7%	21%	21%	8%	0%
Adj. Flow (vph)	4	21	43	25	22	136	78	518	32	142	455	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	0	0	183	0	0	596	32	0	597	18
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 88.9%

ICU Level of Service E

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

1: H.138 & Headline Road

Total Future (2026) - PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	19	40	23	20	125	72	477	29	131	419	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	21	43	25	22	136	78	518	32	142	455	18
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1562	1447	455	1469	1434	518	474			550		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1562	1447	455	1469	1434	518	474			550		
tC, single (s)	7.1	6.6	6.2	8.0	6.6	6.4	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	4.3	4.1	3.4	2.2			2.4		
p0 queue free %	91	79	93	45	79	74	93			85		
cM capacity (veh/h)	48	100	609	45	102	531	1073			931		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	68	183	597	32	598	18						
Volume Left	4	25	78	0	142	0						
Volume Right	43	136	0	32	0	18						
cSH	186	179	1073	1700	931	1700						
Volume to Capacity	0.37	1.02	0.07	0.02	0.15	0.01						
Queue Length 95th (m)	12.7	68.1	1.9	0.0	4.3	0.0						
Control Delay (s)	35.3	126.2	1.9	0.0	3.8	0.0						
Lane LOS	E	F	A		A							
Approach Delay (s)	35.3	126.2	1.8		3.7							
Approach LOS	E	F										
Intersection Summary												
Average Delay			19.3									
Intersection Capacity Utilization		88.9%			ICU Level of Service				E			
Analysis Period (min)			15									

Lanes, Volumes, Timings
2: McConnell Ave & Headline Road

Total Future (2026) - PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↗	↘
Volume (vph)	64	91	20	100	169	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.921				0.983	
Flt Protected				0.992	0.958	
Satd. Flow (prot)	1337	0	0	1419	1596	0
Flt Permitted				0.992	0.958	
Satd. Flow (perm)	1337	0	0	1419	1596	0
Link Speed (k/h)	50			80	80	
Link Distance (m)	1649.3			831.6	672.4	
Travel Time (s)	118.7			37.4	30.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	48%	7%	25%	26%	4%	22%
Adj. Flow (vph)	70	99	22	109	184	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	169	0	0	131	210	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 37.6%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: McConnell Ave & Headline Road

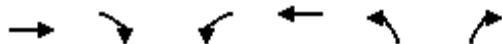
Total Future (2026) - PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑ ↗			↖ ↘	↑ ↗	
Volume (veh/h)	64	91	20	100	169	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	99	22	109	184	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		168		271	119	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		168		271	119	
tC, single (s)		4.3		6.4	6.4	
tC, 2 stage (s)						
tF (s)		2.4		3.5	3.5	
p0 queue free %		98		74	97	
cM capacity (veh/h)		1281		702	881	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	168	130	210			
Volume Left	0	22	184			
Volume Right	99	0	26			
cSH	1700	1281	720			
Volume to Capacity	0.10	0.02	0.29			
Queue Length 95th (m)	0.0	0.4	9.7			
Control Delay (s)	0.0	1.4	12.0			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.4	12.0			
Approach LOS			B			
Intersection Summary						
Average Delay		5.3				
Intersection Capacity Utilization		37.6%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
3: North Access & Headline Road

Total Future (2026) - PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↓	↖	↙	↑	↖
Volume (vph)	75	30	2	85	34	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.961				0.979	
Flt Protected				0.999	0.960	
Satd. Flow (prot)	1235	0	0	1701	982	0
Flt Permitted				0.999	0.960	
Satd. Flow (perm)	1235	0	0	1701	982	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	831.6			1210.7	521.0	
Travel Time (s)	37.4			54.5	37.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	22%	85%	85%	4%	81%	26%
Adj. Flow (vph)	82	33	2	92	37	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	115	0	0	94	44	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 16.4%

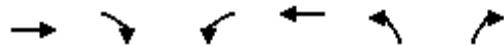
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

3: North Access & Headline Road

Total Future (2026) - PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑→	↓→	↑←	↓←	↑↖	↓↖
Volume (veh/h)	75	30	2	85	34	6
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	33	2	92	37	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume		114		195	98	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		114		195	98	
tC, single (s)		4.9		7.2	6.5	
tC, 2 stage (s)						
tF (s)		3.0		4.2	3.5	
p0 queue free %		100		94	99	
cM capacity (veh/h)		1087		644	896	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	114	95	43			
Volume Left	0	2	37			
Volume Right	33	0	7			
cSH	1700	1087	672			
Volume to Capacity	0.07	0.00	0.06			
Queue Length 95th (m)	0.0	0.0	1.7			
Control Delay (s)	0.0	0.2	10.7			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.2	10.7			
Approach LOS			B			
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization		16.4%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
4: H.138 & Cornwall Centre Road

Total Future (2026) - PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Volume (vph)	304	118	127	291	272	211
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	30.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	55.0				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.906			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1569	1698	1524	0	1598	1330
Flt Permitted	0.421				0.950	
Satd. Flow (perm)	695	1698	1524	0	1598	1330
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			316			229
Link Speed (k/h)	50	50		50		
Link Distance (m)	459.4	499.7		493.4		
Travel Time (s)	33.1	36.0		35.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	6%	7%	7%	7%	15%
Adj. Flow (vph)	330	128	138	316	296	229
Shared Lane Traffic (%)						
Lane Group Flow (vph)	330	128	454	0	296	229
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)	3.6	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.8	4.8		4.8		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)	9.4	9.4				
Detector 2 Size(m)	0.6	0.6				
Detector 2 Type	Cl+Ex	Cl+Ex				
Detector 2 Channel						
Detector 2 Extend (s)	0.0	0.0				
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases	4		8		6	
Permitted Phases	4				6	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	35.0	35.0	35.0		20.0	20.0
Total Split (%)	63.6%	63.6%	63.6%		36.4%	36.4%
Maximum Green (s)	31.0	31.0	31.0		16.0	16.0
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	26.2	26.2	26.2		16.2	16.2
Actuated g/C Ratio	0.52	0.52	0.52		0.32	0.32
v/c Ratio	0.92	0.15	0.48		0.58	0.39
Control Delay	45.7	6.3	4.1		21.8	5.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	45.7	6.3	4.1		21.8	5.1
LOS	D	A	A		C	A
Approach Delay		34.7	4.1		14.5	
Approach LOS		C	A		B	

Intersection Summary

Area Type: Other

Cycle Length: 55

Actuated Cycle Length: 50.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 17.7

Intersection LOS: B

Intersection Capacity Utilization 69.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: H.138 & Cornwall Centre Road



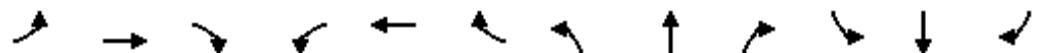
Lanes, Volumes, Timings
6: McConnell Ave & S Branch Rd

Total Future (2026) - PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	99	44	88	107	8	85	154	114	9	101	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.995			0.956			0.991
Flt Protected						0.979			0.988			0.996
Satd. Flow (prot)	0	1628	0	0	1490	0	0	1542	0	0	1604	0
Flt Permitted						0.812			0.901			0.969
Satd. Flow (perm)	0	1585	0	0	1236	0	0	1406	0	0	1561	0
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)		48				5			69			9
Link Speed (k/h)		60				70			70			80
Link Distance (m)		1191.6				832.5			549.5			534.1
Travel Time (s)		71.5				42.8			28.3			24.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	7%	3%	31%	8%	0%	4%	5%	22%	38%	8%	14%
Adj. Flow (vph)	15	108	48	96	116	9	92	167	124	10	110	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	171	0	0	221	0	0	383	0	0	129	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	21.0	21.0		21.0	21.0		24.0	24.0		24.0	24.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		53.3%	53.3%		53.3%	53.3%	
Maximum Green (s)	17.0	17.0		17.0	17.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		17.0			17.0			20.0			20.0	
Actuated g/C Ratio		0.38			0.38			0.44			0.44	
v/c Ratio		0.27			0.47			0.58			0.18	
Control Delay		8.6			14.4			11.8			8.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.6			14.4			11.8			8.0	

Lanes, Volumes, Timings
6: McConnell Ave & S Branch Rd

Total Future (2026) - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A			B			B			A	
Approach Delay			8.6			14.4			11.8			8.0
Approach LOS			A			B			B			A

Intersection Summary

Area Type: Other

Cycle Length: 45

Actuated Cycle Length: 45

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 11.3

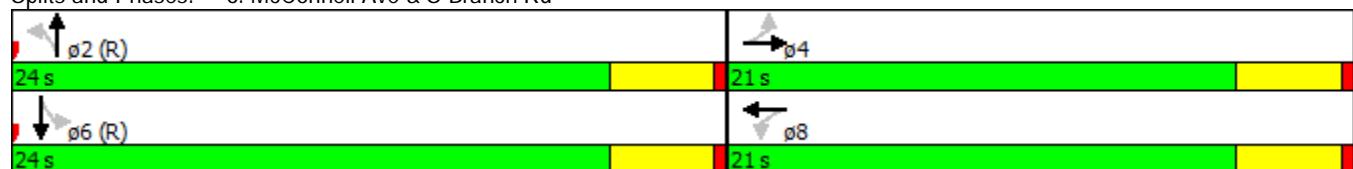
Intersection LOS: B

Intersection Capacity Utilization 58.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 6: McConnell Ave & S Branch Rd



Lanes, Volumes, Timings
7: S Branch Rd & South Access

Total Future (2026) - PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	28	194	170	3	7	32
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t				0.998		0.890
Flt Protected			0.994			0.991
Satd. Flow (prot)	0	1545	1675	0	926	0
Flt Permitted			0.994			0.991
Satd. Flow (perm)	0	1545	1675	0	926	0
Link Speed (k/h)		70	70		50	
Link Distance (m)		832.5	1073.8		317.1	
Travel Time (s)		42.8	55.2		22.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	85%	6%	6%	85%	34%	80%
Adj. Flow (vph)	30	211	185	3	8	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	241	188	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 35.4%

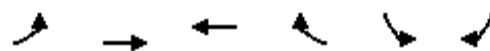
ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

7: S Branch Rd & South Access

Total Future (2026) - PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	28	194	170	3	7	32
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	211	185	3	8	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	188			458	186	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	188			458	186	
tC, single (s)	4.9			6.7	7.0	
tC, 2 stage (s)						
tF (s)	3.0			3.8	4.0	
p0 queue free %	97			98	95	
cM capacity (veh/h)	1012			491	690	
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	241	188	42			
Volume Left	30	0	8			
Volume Right	0	3	35			
cSH	1012	1700	643			
Volume to Capacity	0.03	0.11	0.07			
Queue Length 95th (m)	0.7	0.0	1.7			
Control Delay (s)	1.4	0.0	11.0			
Lane LOS	A		B			
Approach Delay (s)	1.4	0.0	11.0			
Approach LOS			B			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization		35.4%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings

8: McConnell Ave & North Ramp Terminal/Service Road

Total Future (2026) - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	0	133	9	2	4	107	377	18	2	235	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.966			0.995			0.988
Flt Protected						0.970			0.989			
Satd. Flow (prot)	0	1351	0	0	1558	0	0	1629	0	0	1475	0
Flt Permitted						0.970			0.989			
Satd. Flow (perm)	0	1351	0	0	1558	0	0	1629	0	0	1475	0
Link Speed (k/h)					80	50		70			70	
Link Distance (m)				453.9		448.5		371.4			354.5	
Travel Time (s)				20.4		32.3		19.1			18.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	48%	0%	11%	0%	0%	33%	8%	9%	7%	0%	17%	57%
Adj. Flow (vph)	30	0	145	10	2	4	116	410	20	2	255	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	175	0	0	16	0	0	546	0	0	283	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 63.3%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
8: McConnell Ave & North Ramp Terminal/Service Road

Total Future (2026) - PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	0	133	9	2	4	107	377	18	2	235	24
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	0	145	10	2	4	116	410	20	2	255	26
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	930	935	268	1070	938	420	282				429	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	930	935	268	1070	938	420	282				429	
tC, single (s)	7.6	6.5	6.3	7.1	6.5	6.5	4.2				4.1	
tC, 2 stage (s)												
tF (s)	3.9	4.0	3.4	3.5	4.0	3.6	2.3				2.2	
p0 queue free %	84	100	81	93	99	99	91				100	
cM capacity (veh/h)	188	242	749	150	241	572	1247				1141	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	175	16	546	284								
Volume Left	30	10	116	2								
Volume Right	145	4	20	26								
cSH	493	199	1247	1141								
Volume to Capacity	0.35	0.08	0.09	0.00								
Queue Length 95th (m)	12.7	2.1	2.5	0.0								
Control Delay (s)	16.3	24.7	2.5	0.1								
Lane LOS	C	C	A	A								
Approach Delay (s)	16.3	24.7	2.5	0.1								
Approach LOS	C	C										
Intersection Summary												
Average Delay			4.6									
Intersection Capacity Utilization		63.3%		ICU Level of Service				B				
Analysis Period (min)		15										

Lanes, Volumes, Timings

9: McConnell Ave & South Ramp Terminal

Total Future (2026) - PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	0	72	0	0	0	0	479	173	0	357	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.898						0.964			0.993	
Flt Protected		0.988										
Satd. Flow (prot)	0	1252	0	0	0	0	0	1633	0	0	1602	0
Flt Permitted		0.988										
Satd. Flow (perm)	0	1252	0	0	0	0	0	1633	0	0	1602	0
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		398.3			152.1			430.6			371.4	
Travel Time (s)		28.7			11.0			22.1			19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	48%	0%	21%	0%	0%	0%	0%	6%	7%	0%	10%	40%
Adj. Flow (vph)	25	0	78	0	0	0	0	521	188	0	388	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	103	0	0	0	0	0	709	0	0	409	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(m)		6.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 50.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

9: McConnell Ave & South Ramp Terminal

Total Future (2026) - PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	0	72	0	0	0	0	479	173	0	357	19
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	0	78	0	0	0	0	521	188	0	388	21
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1013	919	398	1091	1023	615	409			521		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1013	919	398	1091	1023	615	409			521		
tC, single (s)	7.6	6.5	6.4	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.9	4.0	3.5	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	100	87	100	100	100	100			100		
cM capacity (veh/h)	179	273	612	169	237	495	1161			1056		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	103	709	409									
Volume Left	25	0	0									
Volume Right	78	188	21									
cSH	386	1161	1700									
Volume to Capacity	0.27	0.00	0.24									
Queue Length 95th (m)	8.5	0.0	0.0									
Control Delay (s)	17.7	0.0	0.0									
Lane LOS	C											
Approach Delay (s)	17.7	0.0	0.0									
Approach LOS	C											
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization		50.4%		ICU Level of Service					A			
Analysis Period (min)		15										

APPENDIX C
MTO LEFT-TURN WARRANTS FOR SITE ACESSES

Left Turn Lane Warrant

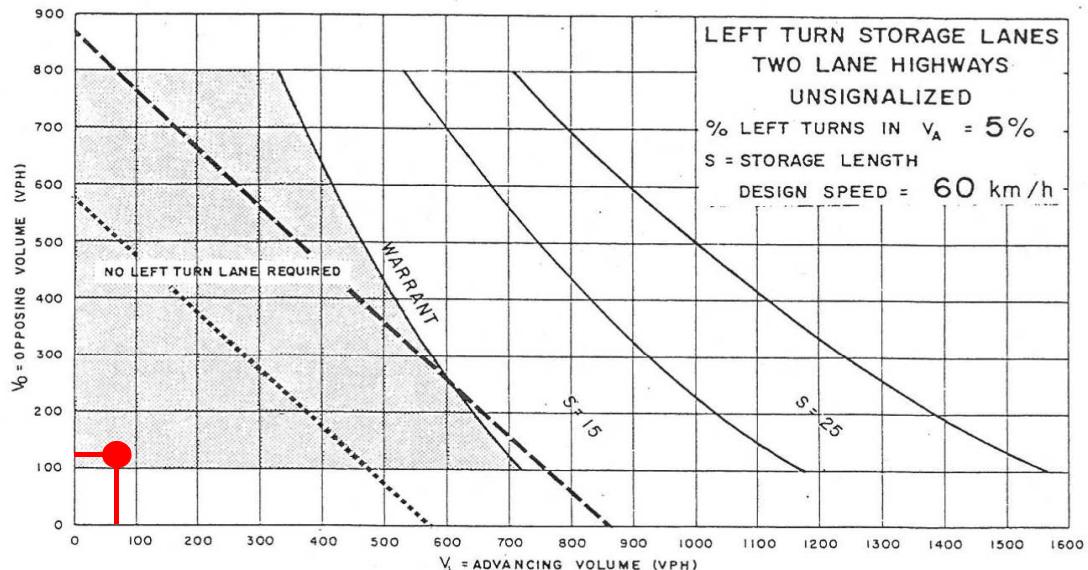
Project Title	Cornwall Gravel TIS
Project #	CP-16-0280
Agency or Company	McIntosh Perry
Intersection	Site Entrance & Headline Rd
LT Movement Approach	WB

North Site Access

$V_L =$	2
$V_A =$	87
$V_o =$	105
LT % =	2.30%

Left Lane Required? *

Storage Length Required = *



Left Turn Lane Warrant

Project Title	Cornwall Gravel TIS
Project #	CP-16-0280
Agency or Company	McIntosh Perry
Intersection	Site Entrance & South Branch Rd
LT Movement Approach	EB

South Site Access

$V_L =$	28
$V_A =$	222
$V_O =$	173
LT % =	12.61%

Left Lane Required? *

Storage Length Required = *

