TRAFFIC IMPACT STUDY

McCORMICK PIT

FINAL ▪ OCTOBER 2017

REPORT PREPARED FOR

BLUELAND FARMS LIMITED
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TMIG PROJECT NUMBER 17128

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EXECUTIVE SUMMARY

Blueland Farms Limited (McCormick Pit) is applying for a Category 1 Class A license under the Aggregate Resources Act (ARA) to permit an annual maximum material extraction of 750,000 tonnes. James Dick Construction Limited (James Dick), in agreement with Blueland Farms Limited, will extract the material from the proposed pit on their behalf. Material extracted form the proposed McCormick Pit will be processed and shipped under the existing Caledon Sand and Gravel Inc. (CSG) licensed gravel pit.

James Dick operates the CSG pit located at 17847 Hurontario Street (Highway 10) in Caledon Village, Town of Caledon, Region of Peel. The existing CSG pit is permitted to ship a maximum of 1,800,000 tonnes per year and the entrance/exit is located on Hurontario Street (Highway 10). The McCormick Pit reserves will serve to extend the lifespan of the current operations of the James Dick pit license, but will not increase the annual amount shipped under the existing1,800,000 tonnes per year license.

The proposed McCormick Pit operations would utilize the existing CSG entrance/exit to Hurontario Street (Highway 10), and the existing haul route, and would not increase the maximum amount of aggregate permitted to be shipped annually above the James Dick license. As a result, there will be no net increase in truck traffic at the pit access to Hurontario Street if the new McCormick license is granted (since the maximum haulage will remain at the currently approved 1,800,000 tonnes per year for CSG).

Existing design hour trips were estimated using a methodology which represents the highest level of expected truck traffic during peak hours. This translates into an hourly truck traffic generation of up to 48 outbound loaded truck trips (plus a commensurate number of empty returning truck trips) during peak summertime operations, assuming the maximum permitted 1,800,000 tonnes per year extraction rate is achieved.

The primary haul route is proposed from the site, through the existing CSG internal haul route within the existing licensed pit (located east and west of Kennedy Road) then out to their existing CSG pit entrance at Highway 10. A crossing of the existing Kennedy Road Crossing would be required to facilitate this proposal, but McCormick Pit trucks would not be traveling along any Town of Caledon roads (merely crossing Kennedy Road). In this regard, the proposed McCormick Pit 'haul route' satisfies the Town of Caledon requirements with respect to approved aggregate haulage roadways.

Based on consultations with the applicant, most of the extracted material (75%) is currently shipped south along Highway 10 to the Greater Toronto Area (GTA), while the remaining 25% is currently shipped north to local market destinations. To account for maximum extraction (of the currently approved 1,800,000 tonnes per year), adjustments to the pit-generated truck volumes were made, since the observations of existing truck traffic did not reflect maximum shipping activity. We have introduced these 'additional' trucks onto the prescribed haul route thusly:

- 75% southbound along Highway 10 to the GTA; and
- 25% northbound along Highway 10 to the local market

A two-year initial horizon year has been adopted for the 'Opening Year' conditions analysis to coincide with the projected commencement of extraction activity from the McCormick pit in 2019. A 2024 and 2029 scenario (five and ten years beyond this initial operating year) has also been included to provide a longer-term Pit impact assessment in context with predicted non-Pit generated future traffic growth along the primary haul route (Highway 10).

A growth rate of 1.6% per annum was applied to the baseline traffic flows along Highway 10, which were also seasonally adjusted to reflect the peak summer traffic conditions, to predict future non-pit related traffic volumes along the haul route under all three 2019, 2024 and 2029 scenarios.

Under the future total 2019 traffic conditions (opening year of the McCormick pit), the intersection of Highway 10 and James Dick Access is expected to operate with no 'critical' movements (i.e., all performance metrics showing acceptable levels of service), with no queuing predicted for any of the intersection approaches with

overall delays of 12 seconds or less. There are no improvements required to accommodate the nominal impact from the incremental McCormick Pit truck traffic in any of the peak study hours.

Under the future total 2024 and 2029 traffic conditions the impact of the added background traffic growth is apparent during the p.m. peak hour. The northbound through movement is identified as 'critical' with v/c ratios of 0.88 and 0.95 during the 2024 and 2029 horizon year respectively. The high v/c ratios suggest that the approach is nearing capacity; however, the low levels of delay would not suggest the need for any geometric improvements.

The results of our analysis indicate that the peak summertime truck traffic movements associated with the proposed McCormick Pit (combined with the CSG license, and maximum extraction of 1,800,000 tonnes per year being achieved) can be adequately accommodated by the existing pit access to Highway 10 and along the already-approved haul routes.

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1 INTRODUCTION

1.1 Retainer and Objective

The Municipal Infrastructure Group Ltd. (TMIG) was retained by Harrington McAvan Ltd. on behalf of Blueland Farms Limited to prepare a Traffic Impact Study (TIS) to review and confirm the extent of traffic-related impacts to the adjacent road network generated by the proposed McCormick Gravel Pit under the existing James Dick Construction Limited, herein after referred to as James Dick, pit license. The TIS will determine the following:

- Establish baseline traffic conditions for the study area and update the existing traffic conditions to derive the future background operating conditions for the study intersections at the expected operational start year of 2019, plus a five-year (2024) and ten-year (2029) future planning horizons.
- Analyze future operating conditions for the study intersections at the future 2019, 2024 and 2029 horizon year.
- Apply the estimated traffic generation and distribution of the development to the adjacent road network, and determine the future impacts in the context of vehicular transportation modes.

1.2 Study Background

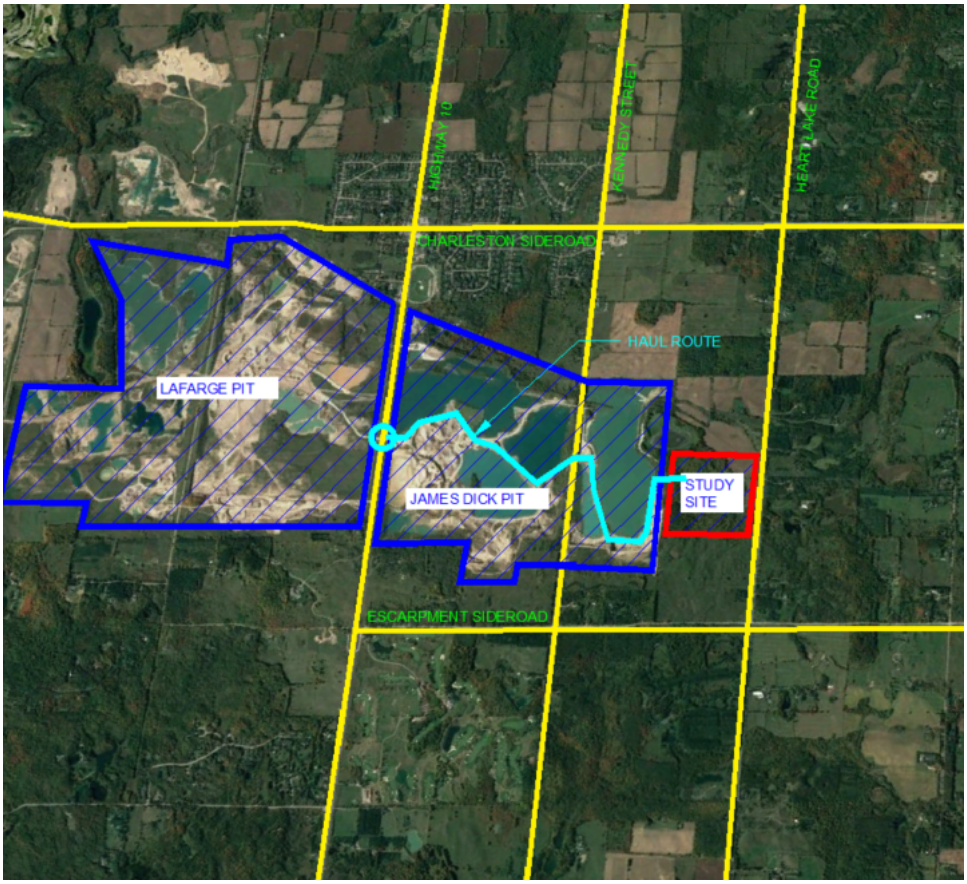
James Dick operates the Caledon Sand and Gravel Inc., herein after referred to as CSG, pit located at 17847 Hurontario Street (Highway 10) in Caledon Village, Town of Caledon, Region of Peel. The existing CSG pit is permitted to ship a maximum of 1,800,000 tones per year and the entrance/exit is located on Hurontario Street (Highway 10).

Blueland Farms Limited (McCormick Pit) is applying for a Category 1 Class A license under the Aggregate Resources Act (ARA) to permit an annual maximum material extraction of 750,000 tonnes. James Dick, in agreement with Blueland Farms Limited, will extract the material from the proposed pit on their behalf. Material extracted form the proposed McCormick Pit will be processed and shipped under the existing CSG licensed gravel pit.

The McCormick Pit reserves will serve to extend the lifespan of the current operations of the James Dick pit license (1,800,000 tonnes per year). The proposed McCormick Pit operations would utilize the existing entrance/exit, the existing haul route, and would not increase the maximum amount of aggregate permitted to be shipped annually above the James Dick license. As a result, there will be no increase (not cumulative) in traffic to the pit access at Hurontario Street.

The McCormick Pit site is located in the Town of Caledon on the west side of Heart Lake Road south of Charleston Sideroad as illustrated on **Figure 1-1.**

Figure 1-1 Site Location



TMIG has reviewed previous Traffic Impact Studies conducted by the firms of Grant A. Bacchus Ltd. (GAB Ltd.) dated January 2005, and Sernas Transtech, dated February 2013, and have utilized the still-relevant information contained therein for the enclosed report and analyses.

The previous license extraction application, upon which the 2013 Transtech report was based, was for 1,500,000 tonnes per year (now reduced to 750,000 tonnes per year). Also of particular note is the change to the proposed haul route. The 2013 study contemplated direct access to Heart Lake Road, then north to Charleston Sideroad, then east to Airport Road or west to Highway 10. There is now the potential of gaining access direct to Highway 10 via the internal haul route through the adjacent existing licensed James Dick pit to their existing CSG pit entrance at Highway 10. A crossing of Kennedy Road would be required to facilitate this proposal, but McCormick Pit trucks would not be traveling along any Town of Caledon roads.

TMIG has also reviewed the Official Plan for the Town of Caledon Land Use Policies – Section 5.11.2.5 "Aggregate Traffic". This document provided guidance in selecting appropriate roadways as haul routes to transport material from the proposed pit to key market areas. The roadway subsequently identified as the preferred haul route was north and south on Highway 10 via the existing James Dick Pit access.

1.3 Site Area

The study area includes the following signalized intersection:

- Highway 10 (Hurontario Street) and James Dick/Lafarge Pit Access

1.4 Operations Plan

A reduced version of the proposed Operations Plan for the Pit is shown in **Figure 1-2**.

Figure 1-2 Operations Plan

1.5 Study Team

The TMIG team involved in the preparation of this study are:

- J.A. (Jim) Bacchus, B.A., MITE, Director of Transportation Services
- Michael Dowdall, C.E.T., Project Manager
- Sophie Xiong, B.Sc. EIT, Engineer in Training

2 BASELINE TRAFFIC

This section summarizes the proposed haul route, summarizes the data collection program, and presents the existing traffic volumes conditions at the study intersection (Highway 10/James Dick Access). These baseline conditions form the foundation for future background traffic projections and the incremental site-impact analysis investigated later herein.

2.1 Haul Route

The primary haul route is proposed from the site, through the internal haul route within the existing licensed James Dick pit (located east and west of Kennedy Road) then out to their existing CSG pit entrance at Highway 10. A crossing of the existing Kennedy Road Crossing would be required to facilitate this proposal, but McCormick Pit trucks would not be traveling along any Town of Caledon roads.

In the vicinity of the study area, Kennedy Road is gravel road with a two-lane rural cross section and a posted speed limit of 60 km/h. The Kennedy Road Crossing intersection is unsignalized and gated.

Potential mitigation strategy is a review of signage along Kennedy Road. The existing Kennedy Road Crossing intersection can be signed with Truck Entrance advanced warning signs (Wc-8) in the northbound and southbound directions with supplementary Truck Entrance tabs (Wc-8t) in accordance with the Ontario Traffic Manual Book 6 (Warning Signs). The warning signs should be located approximately 160 metres upstream from the crossing driveways.

An existing underground conveyor belt, located under Kennedy Road approximately 425 metres south of Kennedy Crossing, transfers material from the pit operations east of Kennedy Road to the west side. Flagmen are utilized to aid with the crossing of heavy equipment across Kennedy Road during peak periods.

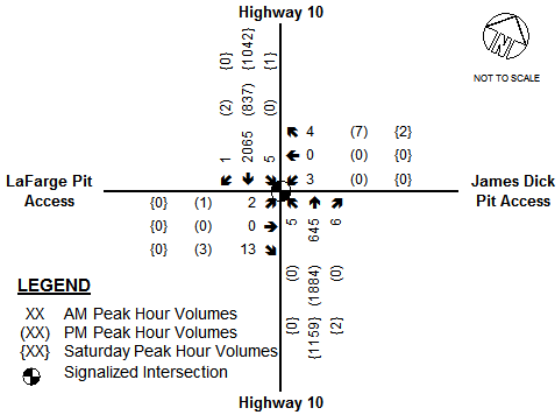
Highway 10 (Hurontario Street) is a north-south provincial highway with a posted speed limit of 80 km/h, and is a designated haul route as per the Town of Caledon Official Plan.

In the vicinity of the study area, Highway 10 has a localized six-lane rural cross section, with two northbound and three southbound general-purpose lanes, and a two-way-centre-left-turn lane. The James Dick pit intersection at Highway 10 is signalized and provides northbound and southbound left and right turn lanes. Highway 10. The James Dick entrance is located directly opposite of an access into Lafarge's Caledon Pit, and as such forms a four-leg signalized intersection with Highway 10.

2.2 Traffic Data

A weekday and Saturday turning movement count was conducted by TMIG in April 2017 at the intersection of Highway 10 and James Dick / Lafarge Pit access. The weekday a.m. and p.m., and Saturday mid-day peak hour existing traffic volumes are shown in **Figure 2-1**. Existing signal timing were obtained from Peel Region. Traffic is provided in **Appendix A**.

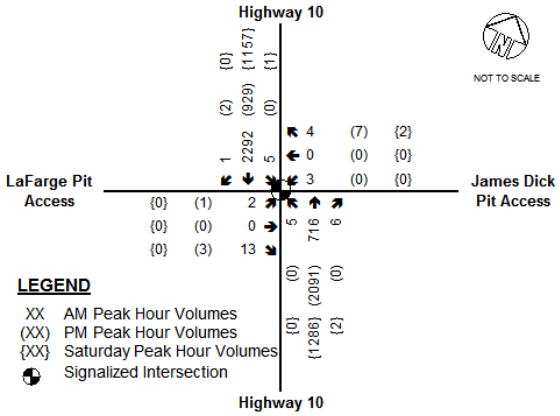
Figure 2-1 2017 Existing Traffic Volumes



To consider seasonal traffic variation, we have reviewed the MTO 2010 Seasonal Variation Factors for a Commuter Recreation route, which is the current designation of Highway 10 in the vicinity of the site. The seasonal variation for April to the peak annual traffic condition indicated in the MTO data is 1.11. Therefore, we have applied a seasonal adjustment factor of 1.11 to the April 2017 Highway 10 through movements.

The weekday a.m. and p.m., and Saturday mid-day peak hour baseline traffic volumes (existing Highway 10 through volumes multiplied by 1.11) are shown in **Figure 2-2**.

Figure 2-2 2017 Baseline Traffic Volumes



3 BACKGROUND CONDITIONS

3.1 Study Horizon Years

A planning horizon of 2019 was selected to correspond with the anticipated opening year operation of the subject site. The study also includes five and ten-year horizons beyond full operation of the site, 2024 and 2029 respectively, in response to and MTO requirements for the traffic impact study.

3.2 Study Area Road Network Improvements

There are no study area road network improvements planned in the vicinity of the site within the planning horizons.

3.3 Background Growth

Growth rates along the Highway 10 corridor were reviewed and calculated by comparing historical and existing turning movement counts (see **Appendix A**) at the Highway 10 study intersection for the dates of November 2013, extracted from the Traffic Impact Study Prepared by Paradigm Transportation Solutions Limited (2014), and April 2017 (TMIG). The seven-hour total counts were adjusted with an MTO ADT seasonal adjustment factor to normalize the counts for the time of year.

$$2013\ Total\ Traffic * ADT\ seasonal\ adjustment\ factor = 12834 * 1.01 = 12{,}962\ vehicles$$

$$2017\ Total\ Traffic * ADT\ seasonal\ adjustment\ factor\ = 12345 * 1.11 = \ 13{,}703\ vehicles$$

The average growth per year was calculated as the compounded growth rate over the 3.5 years.

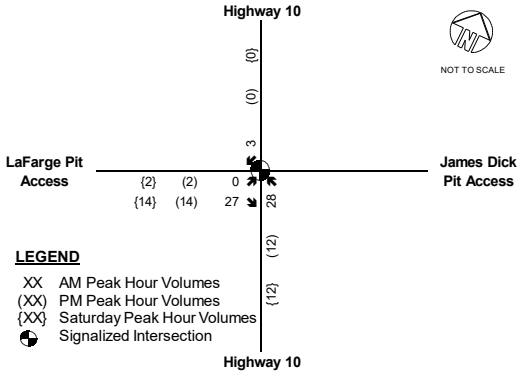
$$rate = \left(\frac{2017\ adjusted\ traffic}{2013\ adjusted\ traffic}\right)^{\left(\frac{1}{years}\right)} - 1 = \left(\frac{13{,}703}{12{,}962}\right)^{\left(\frac{1}{3.5}\right)} - 1 = 1.6\%$$

A growth rate of 1.60% was adopted and applied to the 2017 baseline through traffic along Highway 10 to derive the 2019, 2024 and 2029 background Highway 10 corridor traffic volumes.

3.4 Background Pit Traffic

The Lafarge-Aecon Caledon Pit is located on the west side of Highway 10, with an annual extraction licence of 1,500,000 tonnes. The Lafarge Pit total site traffic volumes (Paradigm 2014 - see **Appendix B**) was referenced for trip generation and distribution to the Lafarge/James Dick Access to Highway 10 based on its maximum extraction output. The Lafarge Pit traffic volumes are shown in **Figure 3-1**.

Figure 3-1 Lafarge Pit Traffic Volumes



3.5 Background Traffic Volumes

The 2017 baseline traffic plus the corridor growth, and Lafarge pit traffic, were combined to produce the 2019, 2024 and 2029 background weekday a.m. and p.m., and Saturday mid-day peak hour traffic volumes presented **Figures 3-3**, **3-4** and **3-5**.

Figure 3-2 2019 Background Traffic Volumes

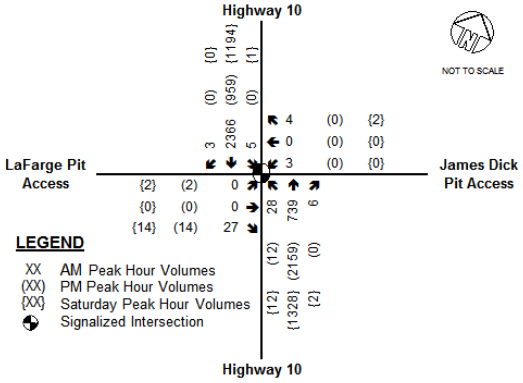


Figure 3-3 2024 Background Traffic Volumes

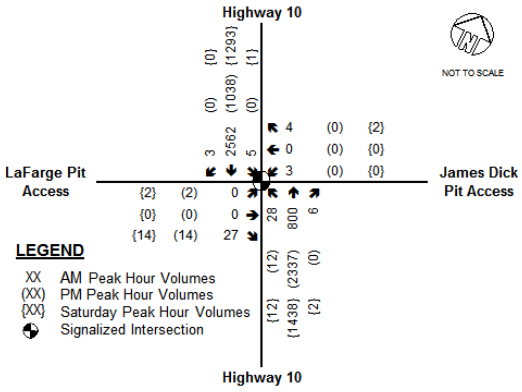
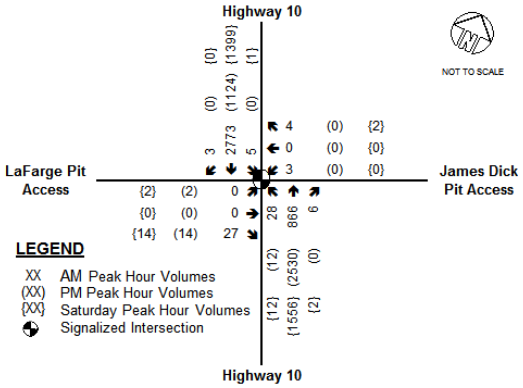


Figure 3-4 2029 Background Traffic Volumes



4 SITE GENERATED TRAFFIC

4.1 Site Trip Generation

The McCormick Pit reserves will serve to extend the lifespan of the current operations of the James Dick pit license (1,800,000 tonnes per year). The proposed McCormick Pit operations would utilize the existing entrance/exit, the existing haul route, and would not increase the maximum amount of aggregate permitted to be shipped annually above the James Dick license. As a result, there will be no increase (not cumulative) in traffic to the pit access at Hurontario Street.

Therefore, to generate the estimated truck traffic associated with the application, the following assumptions and base data have been adopted based on the existing James Dick annual maximum material extraction of 1,800,000 tonnes and the proposed McCormick Pit Operation Plan dated November 2016.

- Annual Extraction Limit (License application) = 1,800,000 tonnes annually
- Proposed pit operations:
  - Total of 300 operating days a year (248 weekdays and 52 Saturdays)
  - Weekday operating hours of 7:00 a.m. to 7:00 p.m. (12 Hours)
  - Saturday operating hours of 7:00 a.m. to 3:00 p.m. (8 Hours)
  - Total operational hours per year: 3392
- Average gravel truck capacity = 35 tonnes

$$\frac{1{,}800{,}000\ tonnes/year}{3{,}392\ operating\ hours/year} = 530\ tonnes/hour$$

$$\frac{530\ tonnes/hour}{35\ tonnes/truck} = 16\ trucks/hour\ (rounded\ up)$$

Notwithstanding the above 'average' haulage calculations, it is likely that occasional periods of higher volume trucking will occur during high-construction activity (typically between June and September). Therefore, the 'average' level of shipping / trucking activity is likely to understate the peak operations during the busy summer time construction season. Based on other similar pit projects undertaken by the team, peak hours usually experience volumes about 50% greater than the typical calculated hourly average (16 x 1.5 = 24).

Therefore, in order to reflect 'seasonal peaking' activity typically occurring in the summer this peaking adjustment results in an increase from the calculated 'average' 16 trucks per hour to approximately 24 outbound loaded truck trips per hour (plus a commensurate volume of returning empty trucks).

Further, during the a.m. peak hour, truck traffic 'surges' occur shortly after the pit opens because the trucks will often arrive prior to the permitted haulage hours and are permitted to pre-load, pre-weigh and pre-permit. Therefore, to reflect this once-a-day 'surge', the study has assumed a doubling of the peak hourly activity (i.e., 48 outbound loaded truck trips per hour, plus a commensurate volume of arriving empty trucks) for a.m. peak hour, and a calculated peak of 24 outbound loaded truck trips per hour (plus a commensurate volume of returning empty trucks) for p.m. and Saturday mid-day peak hour.

With adoption of the various peaking factors described above and employed in the regular aggregate shipping activity estimates, we have portrayed a conservative (high) trucking activity level of site-related traffic flows, and therefore examined conservatively high impacts on the abutting street system.

4.2 Site Trip distribution and Assignment

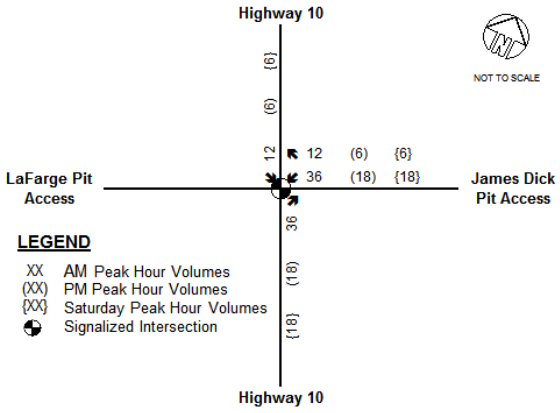
Based on consultations with the applicant, most of the extracted material (75%) will be directed south to the Greater Toronto Area (GTA), while the remaining 25% will be directed north to local market destinations.

We have assigned these trucks onto the prescribed haul route thusly:

- 75% southbound along Highway 10 to the GTA; and
- 25% northbound along Highway 10 to the local market

This distribution has been applied to the calculated estimates of the peak hourly truck trips as described in **Section 5.1** and the resultant traffic assignments are illustrated in **Figure 4-1**.

Figure 4-1 Estimated Site Truck Traffic Volumes



5 TOTAL TRAFFIC

The future total traffic conditions for the peak study hours in the 2019, 2024 and 2029 planning horizon was derived by combining the projected future background traffic with the corresponding estimate of the total site generated traffic

Figures 5-1, 5-2 and **5-3** summarize the future total traffic volumes for the 2019, 2024 and 2029 planning horizon during the weekday a.m. and p.m., and Saturday mid-day peak hours.

Figure 5-1 2019 Total Traffic Volumes

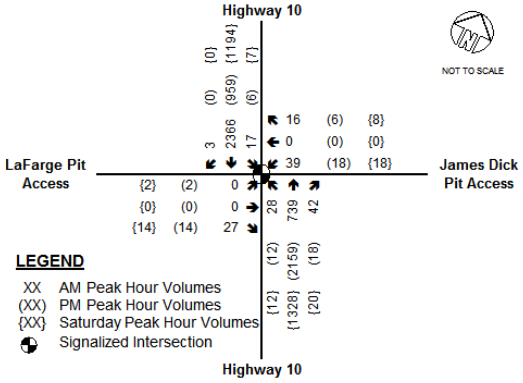


Figure 5-2 2024 Total Traffic Volumes

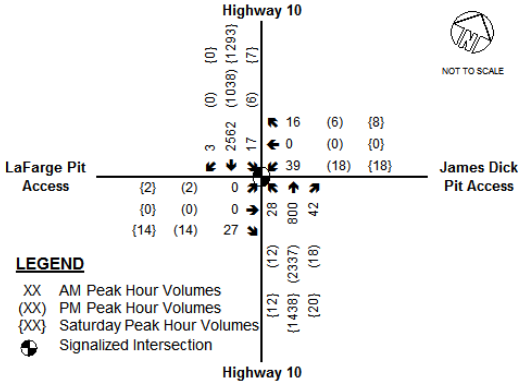
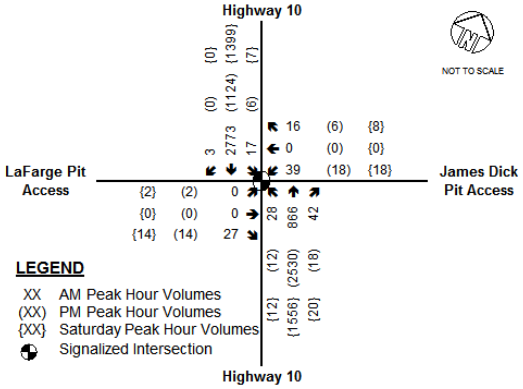


Figure 5-3 2029 Total Traffic Volumes



6 CAPACITY ANALYSIS

The capacity analysis identifies how well an intersection is operating. The analysis contained within this report utilized the Highway Capacity Manual (HCM) 2000 techniques within the Synchro/Simtraffic Version 9 Software package. The reported intersection volume-to-capacity ratios (v/c) are a measure of the saturation volume for each turning movement, while the levels-of-service (LOS) are a measure of the average delay for each turning movement. Queuing characteristics are reported as the predicted 95th percentile queue for each turning movement. The existing heavy vehicle proportions are included in the intersection analyses.

As per MTO "General Guidelines for the Preparation of Traffic Impact Studies", at signalized intersections, movements with v/c ratio of 0.85 or greater are deemed to be "critical" in terms of operations and should be evaluated for possible operational improvements.

The traffic signal timing plans at the Highway 10 intersection were obtained from the Region of Peel, who maintain and operate the signal on behalf of the MTO (having jurisdiction over Highway 10).

For the purpose of the heavy truck impact analyses, we have employed Passenger Car Equivalent (PCE) factors to account for the additional time it takes a heavy vehicle (in this case, different PCE's for each the loaded and empty gravel trucks) to travel through an intersection. Based on our experience, we have adopted a PCE of 3.0 for outbound loaded trucks and a PCE of 2.0 for inbound empty trucks. As a conservative measure, and to provide a consistent comparative analysis between all existing and future traffic scenarios, the PCE adjustment was applied to baseline turning movement volumes to/from the pit accesses. The truck traffic volumes expressed as PCEs are shown in a figure contained in **Appendix C**.

6.1 James Dick / Lafarge Pit Access at Highway 10

Table 6-1 summarizes the results of the intersection capacity analysis, while **Appendix D** contains the detailed intersection capacity/summaries.

Table 6-1 Capacity Analysis of James Dick Access and Highway 10

Traffic Condition	Movement v/c (LOS) 95th Percentile Queue, Delay in Seconds		
	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
Baseline 2017	Overall: v/c 0.56 LOS A, 6s EBTLR: 0.03 (D) 10m, 44s WBTLR: 0.01 (D) 1 veh., 44s NBL: 0.15 (A) 1 veh., 7s NBT: 0.26 (A) 30m, 4s NBR: 0.01 (A) 1 veh., 3s SBL: 0.02 (A) 1 veh., 3s SBTR: 0.62 (A) 95m, 6s	Overall: v/c 0.68 LOS A, 5s EBTLR: 0.00 (D) 0m, 50s WBTLR: 0.01 (D) 0m. 50s NBT: 0.70 (A) 165m, 5s SBTR: 0.23 (A) 30m, 2s	Overall: v/c 0.42 LOS A, 3s WBTLR: 0.00 (D) 0m, 50s NBT: 0.43 (A) 65m, 3s NBR: 0.00 (A) 0m, 2s SBL: 0.01 (A) 1 veh., 2s SBTR: 0.29 (A) 35m, 2s
Future Background 2019	Overall: v/c 0.68 LOS A, 9s EBTLR: 0.21 (D) 20m, 43s WBTLR: 0.01 (D) 1 veh, 42s NBL: 0.76 (E) 20m, 62s NBT: 0.28 (A) 30m, 5s NBR: 0.01 (A) 1 veh., 4s SBL: 0.02 (A) 1 veh., 4s SBTR: 0.66 (A) 100m, 8s	Overall: v/c 0.71 LOS A, 8s EBTLR: 0.03 (D) 10m, 44s WBTLR: 0.01 (D) 0m, 44s NBL: 0.06 (A) 1 veh., 3s NBT: 0.78 (A) 180m, 9s SBTR: 0.26 (A) 30m, 4s	Overall: v/c 0.44 LOS A, 5s EBTLR: 0.03 (D) 10m, 44s WBTLR: 0.00 (D) 0m, 44s NBL: 0.07 (A) 1 veh., 4s NBT: 0.48 (A) 70m, 5s NBR: 0.00 (A) 0m, 3s SBL: 0.01 (A) 1 veh., 3s SBTR: 0.32 (A) 35m, 4s
Future Total 2019	Overall: v/c 0.73 LOS B, 12s EBTLR: 0.17 (D) 20m, 40s WBTLR: 0.64 (D) 55m, 50s NBL: 0.75 (E) 20m, 61s NBT: 0.29 (A) 35m, 6s NBR: 0.05 (A) 1 veh., 5s SBL: 0.07 (A) 1 veh., 5s SBTR: 0.69 (A) 100m, 10s	Overall: v/c 0.74 LOS B, 11s EBTLR: 0.03 (D) 10m, 42s WBTLR: 0.26 (D) 20m, 44s NBL: 0.06 (A) 1 veh., 4s NBT: 0.81 (A) 180m, 11s NBR: 0.02 (A) 1 veh., 4s SBL: 0.17 (A) 1veh., 9s SBTR: 0.27 (A) 30m, 5s	Overall: v/c 0.46 LOS A, 7s EBTLR: 0.03 (D) 10m, 42s WBTLR: 0.21 (D) 20m, 43s NBL: 0.08 (A) 1 veh., 4s NBT: 0.50 (A) 70m, 6s NBR: 0.02 (A) 1 veh., 4s SBL: 0.06 (A) 1 veh., 4s SBTR: 0.33 (A) 35m, 5s
Future Total 2024	Overall: v/c 0.73 LOS B, 12s EBTLR: 0.17 (D) 20m, 40s WBTLR: 0.64 (D) 55m, 50s NBL: 0.75 (E) 20m, 61s NBT: 0.31 (A) 35m, 6s NBR: 0.05 (A) 1 veh., 5s SBL: 0.07 (A) 1 veh., 5s SBTR: 0.74 (B) 115m, 11s	Overall: v/c 0.80 LOS B, 12s EBTLR: 0.03 (D) 10m, 42s WBTLR: 0.26 (D) 20m, 44s NBL: 0.06 (A) 1 veh., 4s NBT: 0.88 (B) 225m, 14s NBR: 0.02 (A) 1 veh., 4s SBL: 0.17 (A) 1veh., 9s SBTR: 0.29 (A) 30m, 5s	Overall: v/c 0.50 LOS A, 7s EBTLR: 0.03 (D) 10m, 42s WBTLR: 0.21 (D) 20m, 43s NBL: 0.10 (A) 1 veh., 5s NBT: 0.54 (A) 80m, 7s NBR: 0.02 (A) 1 veh., 4s SBL: 0.07 (A) 1 veh., 4s SBTR: 0.39 (A) 45m, 5s
Future Total 2029	Overall: v/c 0.78 LOS B, 13s EBTLR: 0.17 (D) 20m, 40s WBTLR: 0.64 (D) 55m, 50s NBL: 0.75 (E) 20m, 61s NBT: 0.34 (A) 40m, 6s NBR: 0.05 (A) 1 veh., 5s SBL: 0.08 (A) 1 veh., 5s SBTR: 0.81 (B) 140m, 12s	Overall: v/c 0.86 LOS B, 17s EBTLR: 0.03 (D) 10m, 42s WBTLR: 0.26 (D) 20m, 44s NBL: 0.07 (A) 1 veh., 4s NBT: 0.95 (C) 320m, 21s NBR: 0.02 (A) 1 veh., 4s SBL: 0.17 (A) 1veh., 9s SBTR: 0.31 (A) 35m, 5s	Overall: v/c 0.53 LOS A, 8s EBTLR: 0.03 (D) 10m, 42s WBTLR: 0.21 (D) 20m, 43s NBL: 0.10 (A) 1 veh., 5s NBT: 0.58 (A) 90m, 7s NBR: 0.02 (A) 1 veh., 4s SBL: 0.08 (A) 1 veh., 45s SBTR: 0.39 (A) 45m, 5s

Under 2017 baseline traffic conditions, this signalized intersection is operating at LOS 'A' during the weekday a.m. and p.m., and Saturday mid-day peak hours with overall v/c ratios of 0.56, 0.68, and 0.42 respectively. There are no critical movements to report. There is some queuing evident in the northbound through movements during the weekday p.m. peak period due to the high volumes along Highway 10, but it does not translate into significant delay to drivers.

Under 2019 background conditions, this signalized intersection is expected to continue to operate at LOS 'A' during the weekday a.m. and p.m., and Saturday mid-day peak hours with overall delays of 9 seconds or less. The overall v/c ratios increase slightly during the weekday a.m., p.m. and Saturday peak hour to 0.68, 0.71 and 0.44 respectively indicating that there is substantial reserve capacity on an overall level with no critical movements. Northbound p.m. peak hour through movement queues and delay remain about the same as under the baseline condition. These results are contingent on minor signal timing optimization.

Under the future total 2019 traffic conditions, the intersection of Highway 10 and James Dick/Lafarge Access is expected to continue to operate with no 'critical' movements (i.e., all performance metrics showing acceptable levels of service), with little queuing predicted for any of the intersection approaches and with overall delays of 12 seconds or less. The overall v/c ratio increase slightly during the weekday a.m., p.m. and Saturday peak hour to 0.73, 0.74 and 0.46 respectively. The impact of the proposed pit operations is only marginally apparent during the study peak hours. There are no physical improvements required other than minor signal timing optimization.

Under the future total 2024 and 2029 traffic conditions the impact of the added background traffic growth is apparent primarily during the p.m. peak hour. The northbound through movement is identified as 'critical' with v/c ratios of 0.88 and 0.95 during the 2024 and 2029 horizon year respectively. The high v/c ratios suggest that the approach is nearing capacity; however, the low levels of delay (on average, just 21 seconds) suggests no geometric improvements will be needed. There are no critical movements or queuing issues to report during the a.m. and Saturday mid-day peak hour.

It is noteworthy that none of the occasional high v/c ratios or queuing reported in the ten-year horizon is caused, or made significantly worse, by estimated McCormick Pit truck traffic, and is expected to only materialize should Highway 10 traffic continue to grow at historical rates over the next ten years. The McCormick Pit truck traffic can be accommodated without any physical changes to the existing / proposed haul route.

APPENDIX A

Traffic Data

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis
www.accu-traffic.ca
Tel: 1-416-910-0171
Fax: 1-888-711-3125

Accu-Traffic Inc

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 7:00:00
To: 8:00:00

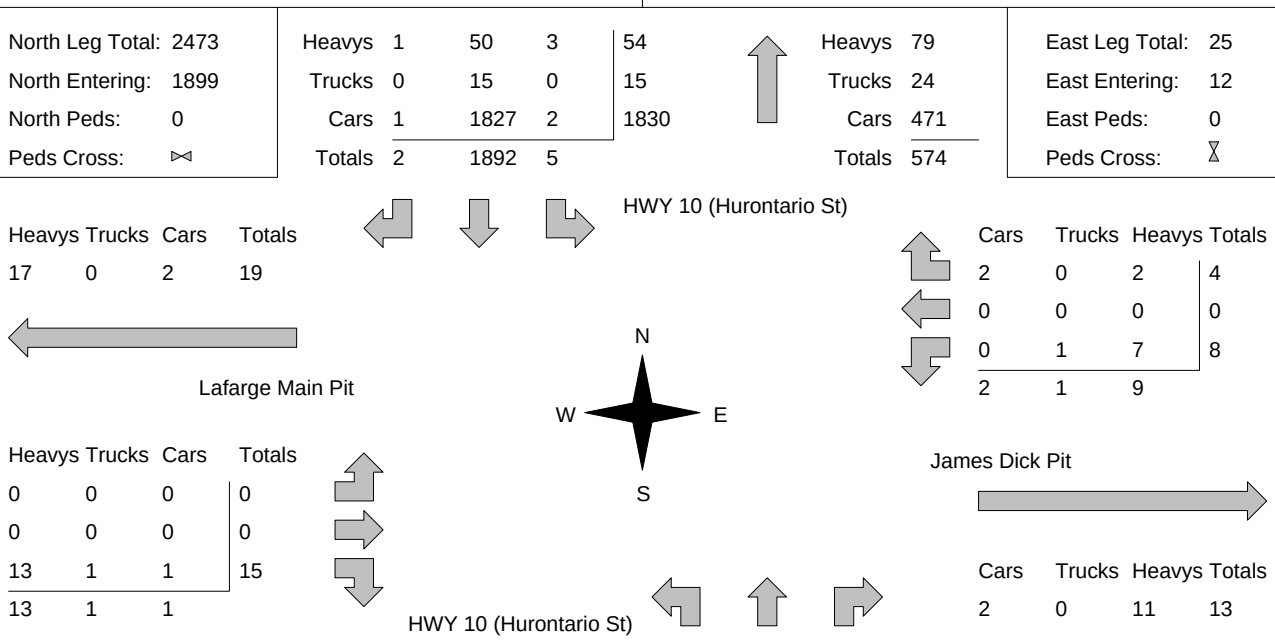
Municipality: Caledon Village
Site #: 1318300001
Intersection: HWY 10 (Hurontario St) & Lafarge M
TFR File #: 3
Count date: 7-Nov-13

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: HWY 10 (Hurontario St) runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis
www.accu-traffic.ca
Tel: 1-416-910-0171
Fax: 1-888-711-3125

Accu-Traffic Inc

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Caledon Village
Site #: 1318300001
Intersection: HWY 10 (Hurontario St) & Lafarge M
TFR File #: 3
Count date: 7-Nov-13

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

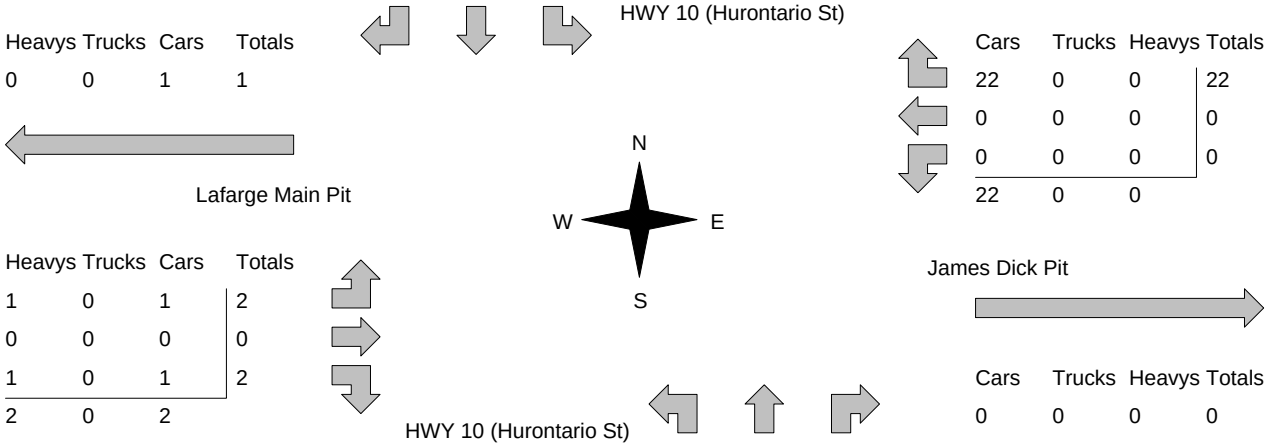
Major Road: HWY 10 (Hurontario St) runs N/S

North Leg Total: 2636
North Entering: 718
North Peds: 0
Peds Cross: ⋈

Heavys	0	43	0	43
Trucks	0	12	0	12
Cars	1	662	0	663
Totals	1	717	0	

Heavys	44
Trucks	17
Cars	1857
Totals	1918

East Leg Total: 22
East Entering: 22
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 4
West Leg Total: 5

Cars	663	1834	0	1834
Trucks	12	17	0	17
Heavys	44	43	0	43
Totals	719	1894	0	

Peds Cross: ⋈
South Peds: 0
South Entering: 1894
South Leg Total: 2613

Comments

Ontario Traffic Inc

Morning Peak Diagram

Specified Period
From: 6:30:00
To: 9:30:00

One Hour Peak
From: 7:00:00
To: 8:00:00

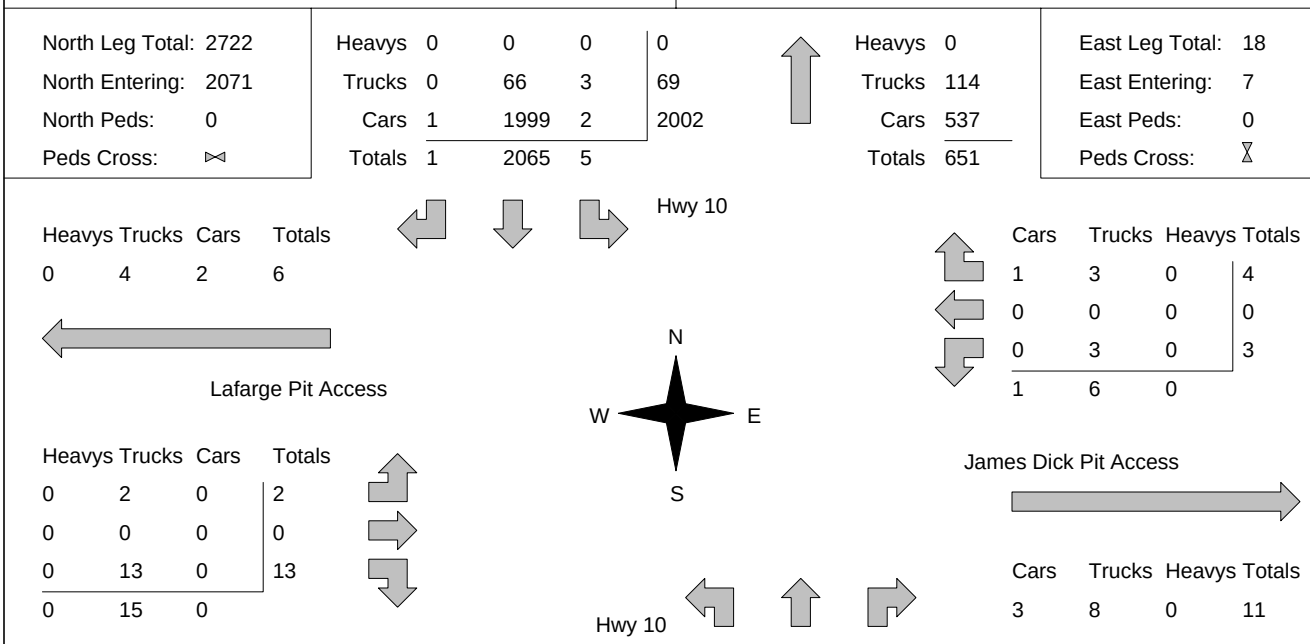
Municipality: Caledon
Site #: 1711200001
Intersection: Hwy 10 & Lafarge-James Dick Pit A
TFR File #: 6
Count date: 27-Apr-17

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Hwy 10 runs N/S



Comments

Ontario Traffic Inc

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Municipality: Caledon
Site #: 1711200001
Intersection: Hwy 10 & Lafarge-James Dick Pit A
TFR File #: 6
Count date: 27-Apr-17

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Hwy 10 runs N/S

North Leg Total: 2731
North Entering: 839
North Peds: 0
Peds Cross: ⋈

Heavys	0	0	0	0
Trucks	0	84	0	84
Cars	2	753	0	755
Totals	2	837	0	

Heavys	0
Trucks	63
Cars	1829
Totals	1892

East Leg Total: 7
East Entering: 7
East Peds: 0
Peds Cross: ⧖

Hwy 10

Heavys	Trucks	Cars	Totals
0	0	2	2

Lafarge Pit Access

Heavys	Trucks	Cars	Totals
0	0	1	1
0	0	0	0
0	0	3	3
0	0	4	

Cars	Trucks	Heavys	Totals
6	1	0	7
0	0	0	0
0	0	0	0
6	1	0	

N
W E
S

James Dick Pit Access

Cars	Trucks	Heavys	Totals
0	0	0	0

Hwy 10

Peds Cross: ⧖
West Peds: 0
West Entering: 4
West Leg Total: 6

Cars	756			
Trucks	84			
Heavys	0			
Totals	840			

Cars	0	1822	0	1822
Trucks	0	62	0	62
Heavys	0	0	0	0
Totals	0	1884	0	

Peds Cross: ⋈
South Peds: 0
South Entering: 1884
South Leg Total: 2724

Comments

Ontario Traffic Inc

Mid-day Peak Diagram

Specified Period
From: 10:00:00
To: 16:00:00

One Hour Peak
From: 14:45:00
To: 15:45:00

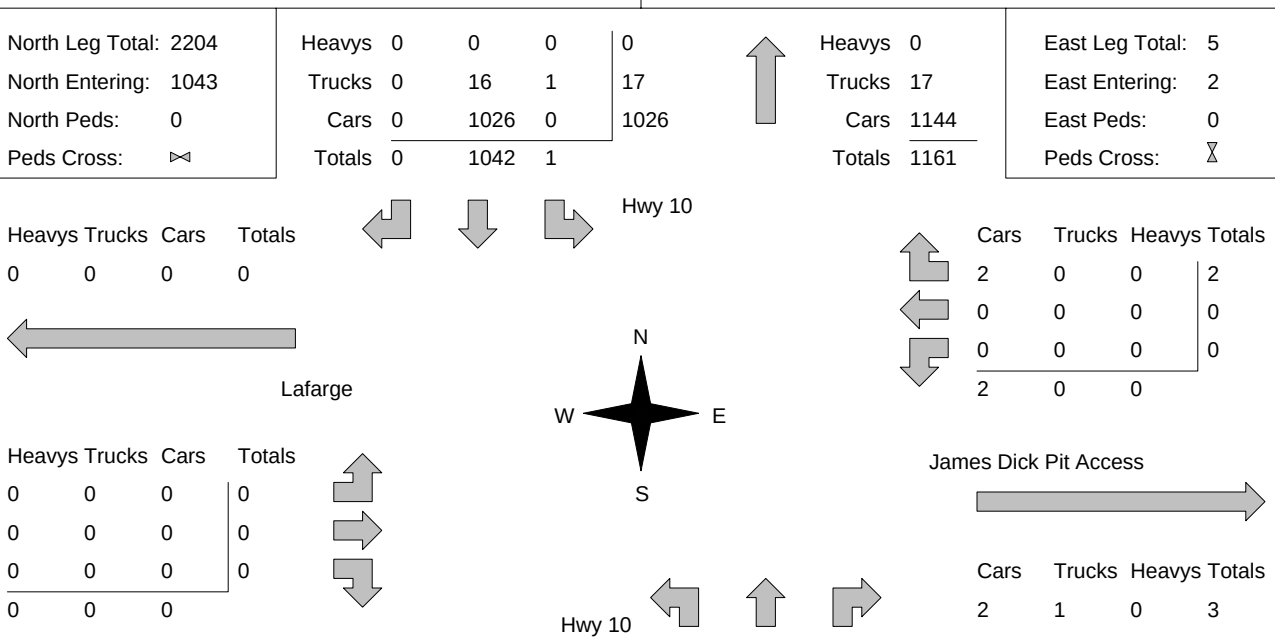
Municipality: Caledon
Site #: 1711200002
Intersection: Hwy 10 & Lafarge-James Dick Pit A
TFR File #: 11
Count date: 22-Apr-17

Weather conditions:

Person(s) who counted:

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

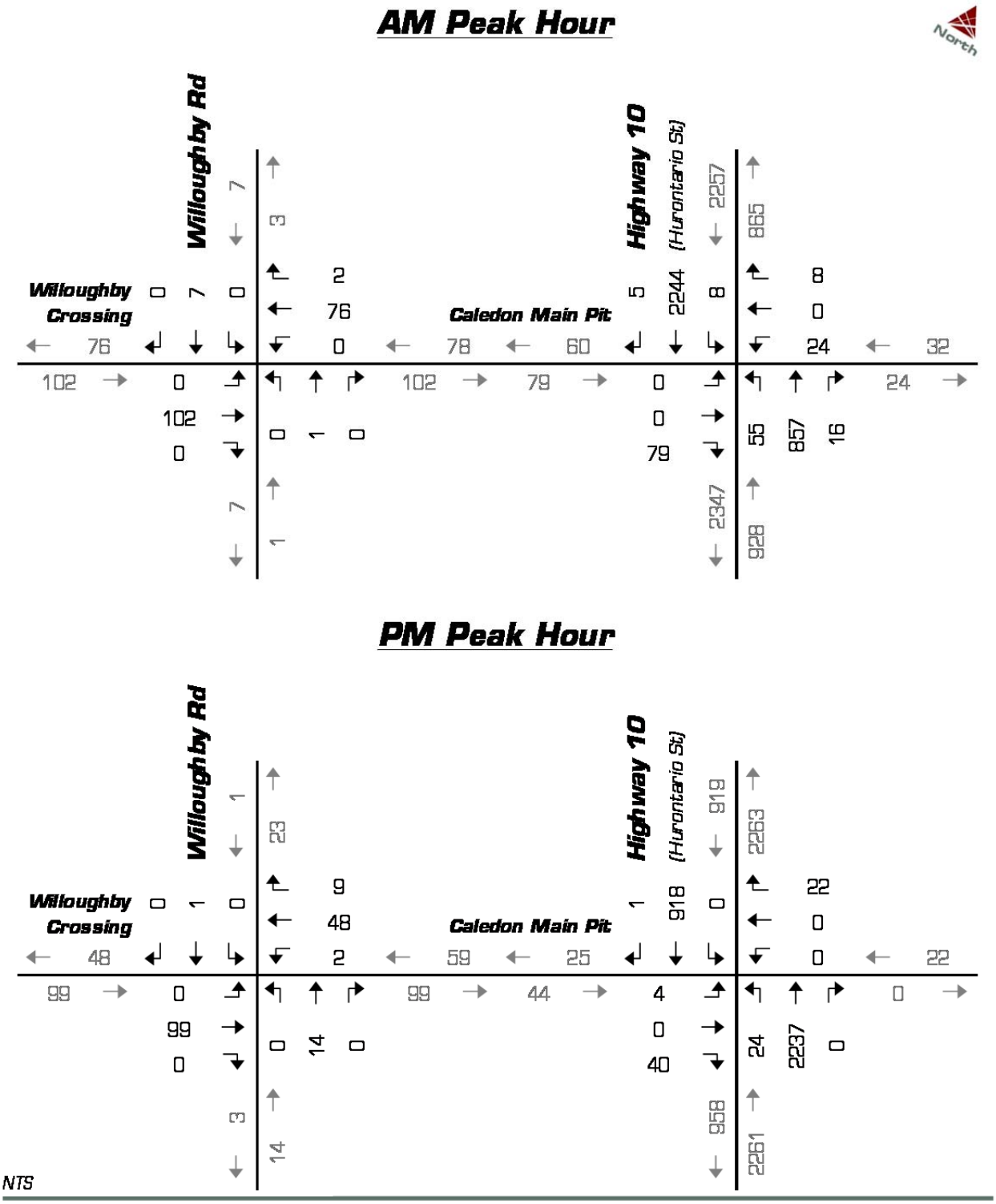
Major Road: Hwy 10 runs N/S



Comments

APPENDIX B

Lafarge Pit Trip Generation



Limebeer Pit
Traffic Impact Study

Paradigm
www.ptsl.com

Figure 4.4

Total Traffic Opening Date
AM & PM Peak Hour - PCU

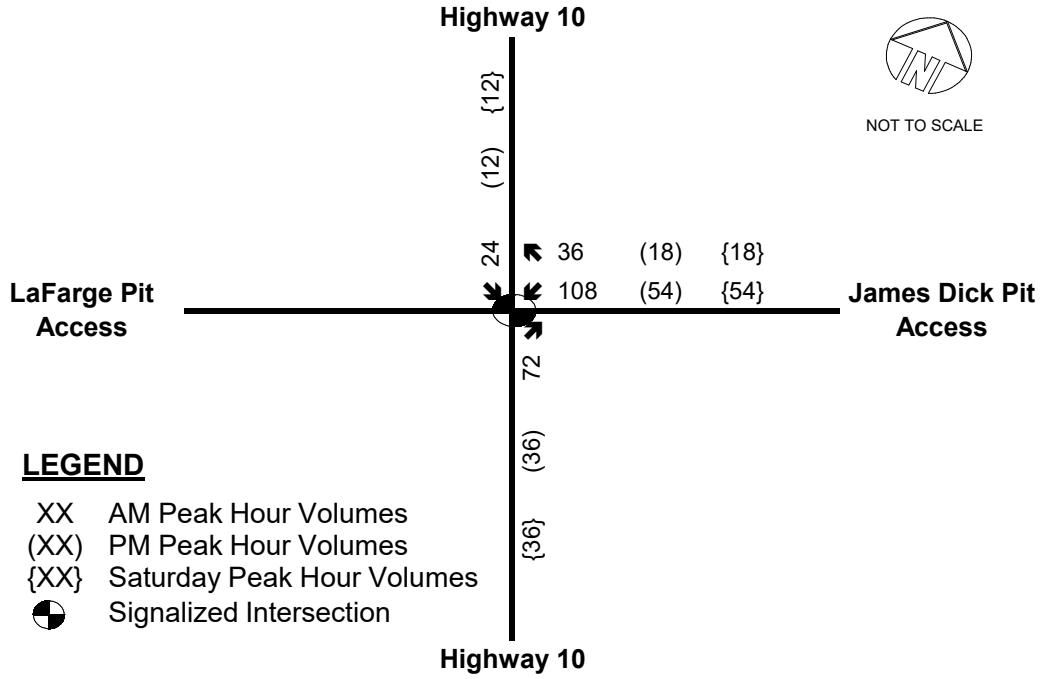
TABLE 4.7: TOTAL TRAFFIC VOLUME – TYPICAL CLASSIFICATION – OPENING DATE HORIZON

Design Hour	Intersection	Vehicle Type	Intersection Turning Movements												Total
			Eastbound			Westbound			Northbound			Southbound			
			L	S	R	L	S	R	L	S	R	L	S	R	
AM Peak Hour	Highway 10 & Caledon Main Pit	Passenger Vehicles	0	0	1	0	0	2	1	521	0	2	2,028	1	2,556
		Heavy Vehicles	0	0	26	8	0	2	27	112	8	3	72	2	260
		Heavy Vehicle Percent	*0%*	*0%*	*96%*	*100%*	*0%*	*50%*	*96%*	*18%*	*100%*	*60%*	*3%*	*67%*	*9%*
		Total Vehicles	0	0	27	8	0	4	28	633	8	5	2,100	3	2,816
	Willoughby Rd & Willoughby Rd Crossing	Passenger Vehicles	0	0	0	0	0	0	0	1	0	0	7	0	8
		Heavy Vehicles	0	34	0	0	38	1	0	0	0	0	0	0	73
		Heavy Vehicle Percent	*0%*	*100%*	*0%*	*0%*	*100%*	*100%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*90%*
		Total Vehicles	0	34	0	0	38	1	0	1	0	0	7	0	81
PM Peak Hour	Highway 10 & Caledon Main Pit	Passenger Vehicles	1	0	1	0	0	22	0	2,036	0	0	735	1	2,796
		Heavy Vehicles	1	0	13	0	0	0	12	67	0	0	61	0	154
		Heavy Vehicle Percent	*50%*	*0%*	*93%*	*0%*	*0%*	*0%*	*100%*	*3%*	*0%*	*0%*	*8%*	*0%*	*5%*
		Total Vehicles	2	0	14	0	0	22	12	2,103	0	0	796	1	2,950
	Willoughby Rd & Willoughby Rd Crossing	Passenger Vehicles	0	0	0	2	0	7	0	14	0	0	1	0	24
		Heavy Vehicles	0	33	0	0	24	1	0	0	0	0	0	0	58
		Heavy Vehicle Percent	*0%*	*100%*	*0%*	*0%*	*100%*	*13%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*71%*
		Total Vehicles	0	33	0	2	24	8	0	14	0	0	1	0	82

APPENDIX C

Estimated Site Trips PCE

Figure C-1 Site Generated Truck Traffic PCE Volumes



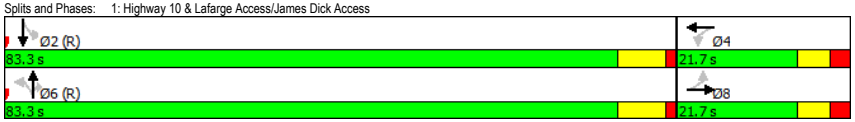
APPENDIX D

Capacity Analysis

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	39	9	0	10	13	716	16	11	2292	1
Future Volume (vph)	6	0	39	9	0	10	13	716	16	11	2292	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	45	0	0	19	0	13	716	16	11	2293	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.17			0.08		0.14	0.24	0.01	0.02	0.58	
Control Delay		13.6			3.1		8.6	3.7	0.4	4.2	6.0	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		13.6			3.1		8.6	3.7	0.4	4.2	6.0	
Queue Length 50th (m)		0.0			0.0		0.7	22.9	0.0	0.6	78.6	
Queue Length 95th (m)		9.9			1.8		3.4	29.8	0.6	2.0	91.9	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0		80.0	80.0		
Base Capacity (vph)		268			249		92	2957	1368	607	3978	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.17			0.08		0.14	0.24	0.01	0.02	0.58	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access



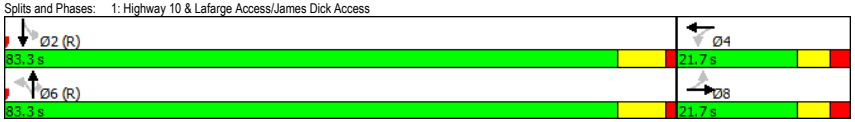
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	39	9	0	10	13	716	16	11	2292	1
Future Volume (vph)	6	0	39	9	0	10	13	716	16	11	2292	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frt		0.88			0.93		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99			0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1685			1743		1825	3544	1633	1825	4768	
Flt Permitted		0.95			0.83		0.06	1.00	1.00	0.38	1.00	
Satd. Flow (perm)		1610			1475		112	3544	1633	729	4768	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	0	39	9	0	10	13	716	16	11	2292	1
RTOR Reduction (vph)	0	41	0	0	17	0	0	0	4	0	0	0
Lane Group Flow (vph)	0	4	0	0	2	0	13	716	12	11	2293	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		9.0			9.0		82.0	82.0	82.0	82.0	82.0	
Effective Green, g (s)		9.0			9.0		82.0	82.0	82.0	82.0	82.0	
Actuated g/C Ratio		0.09			0.09		0.78	0.78	0.78	0.78	0.78	
Clearance Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		138			126		87	2767	1275	569	3723	
v/s Ratio Prot								0.20			c0.48	
v/s Ratio Perm		c0.00			0.00		0.12		0.01	0.02		
v/c Ratio		0.03			0.01		0.15	0.26	0.01	0.02	0.62	
Uniform Delay, d1		44.0			43.9		2.9	3.2	2.5	2.6	4.9	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1			0.0		3.6	0.2	0.0	0.1	0.8	
Delay (s)		44.1			44.0		6.5	3.4	2.6	2.6	5.6	
Level of Service		D			D		A	A	A	A	A	
Approach Delay (s)		44.1			44.0			3.4			5.6	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	0	0	10	0	2091	0	0	929	2
Future Volume (vph)	1	0	3	0	0	10	0	2091	0	0	929	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	4	0	0	10	0	0	2091	0	0	931	0
Turn Type	Perm	NA			NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.02			0.04			0.62			0.21	
Control Delay		0.0			0.2			3.9			1.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		0.0			0.2			3.9			1.4	
Queue Length 50th (m)		0.0			0.0			0.0			0.0	
Queue Length 95th (m)		0.0			0.0			163.1			25.5	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)												
Base Capacity (vph)		263			276			3348			4506	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.02			0.04			0.62			0.21	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access



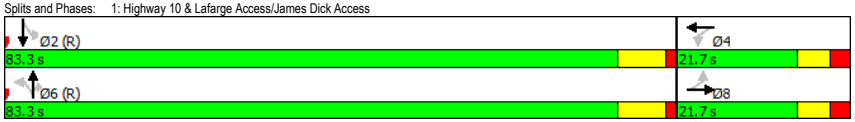
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	3	0	0	10	0	2091	0	0	929	2
Future Volume (vph)	1	0	3	0	0	10	0	2091	0	0	929	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7			7.3			7.3	
Lane Util. Factor		1.00			1.00			0.95			0.91	
Frt		0.90			0.86			1.00			1.00	
Flt Protected		0.99			1.00			1.00			1.00	
Satd. Flow (prot)		1705			1662			3544			4767	
Flt Permitted		0.91			1.00			1.00			1.00	
Satd. Flow (perm)		1573			1662			3544			4767	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	0	3	0	0	10	0	2091	0	0	929	2
RTOR Reduction (vph)	0	4	0	0	10	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	2091	0	0	931	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type	Perm	NA			NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		3.0			3.0			88.0			88.0	
Effective Green, g (s)		3.0			3.0			88.0			88.0	
Actuated g/C Ratio		0.03			0.03			0.84			0.84	
Clearance Time (s)		6.7			6.7			7.3			7.3	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		44			47			2970			3995	
v/s Ratio Prot					c0.00			c0.59			0.20	
v/s Ratio Perm		0.00										
v/c Ratio		0.00			0.01			0.70			0.23	
Uniform Delay, d1		49.5			49.6			3.4			1.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.1			1.4			0.1	
Delay (s)		49.6			49.6			4.8			1.8	
Level of Service		D			D			A			A	
Approach Delay (s)		49.6			49.6			4.8			1.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	2	0	1286	2	4	1157	0
Future Volume (vph)	0	0	0	0	0	2	0	1286	2	4	1157	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	0	0	0	2	0	0	1286	2	4	1157	0
Turn Type					NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio					0.01			0.38	0.00	0.01	0.26	
Control Delay					0.0			2.1	0.0	2.5	1.5	
Queue Delay					0.0			0.0	0.0	0.0	0.0	
Total Delay					0.0			2.1	0.0	2.5	1.5	
Queue Length 50th (m)					0.0			0.0	0.0	0.0	0.0	
Queue Length 95th (m)					0.0			64.2	0.0	1.1	33.1	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)									80.0	80.0		
Base Capacity (vph)					326			3348	1545	378	4505	
Starvation Cap Reductn					0			0	0	0	0	
Spillback Cap Reductn					0			0	0	0	0	
Storage Cap Reductn					0			0	0	0	0	
Reduced v/c Ratio					0.01			0.38	0.00	0.01	0.26	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	2	0	1286	2	4	1157	0
Future Volume (vph)	0	0	0	0	0	2	0	1286	2	4	1157	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.7			7.3	7.3	7.3	7.3	
Lane Util. Factor					1.00			0.95	1.00	1.00	0.91	
Frt					0.86			1.00	0.85	1.00	1.00	
Flt Protected					1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)					1662			3544	1633	1825	4768	
Flt Permitted					1.00			1.00	1.00	0.21	1.00	
Satd. Flow (perm)					1662			3544	1633	400	4768	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	0	2	0	1286	2	4	1157	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	1286	2	4	1157	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type					NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)					3.0			88.0	88.0	88.0	88.0	
Effective Green, g (s)					3.0			88.0	88.0	88.0	88.0	
Actuated g/C Ratio					0.03			0.84	0.84	0.84	0.84	
Clearance Time (s)					6.7			7.3	7.3	7.3	7.3	
Vehicle Extension (s)					3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)					47			2970	1368	335	3996	
v/s Ratio Prot					c0.00			c0.36			0.24	
v/s Ratio Perm									0.00	0.01		
v/c Ratio					0.00			0.43	0.00	0.01	0.29	
Uniform Delay, d1					49.5			2.2	1.4	1.4	1.8	
Progression Factor					1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2					0.0			0.5	0.0	0.1	0.2	
Delay (s)					49.6			2.6	1.4	1.5	2.0	
Level of Service					D			A	A	A	A	
Approach Delay (s)		0.0			49.6			2.6			2.0	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	2.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	79	9	0	10	55	739	16	11	2366	5
Future Volume (vph)	0	0	79	9	0	10	55	739	16	11	2366	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	79	0	0	19	0	55	739	16	11	2371	0
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.29			0.08		0.72	0.27	0.01	0.02	0.64	
Control Delay		23.4			3.1		66.4	4.7	0.4	4.2	7.8	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		23.4			3.1		66.4	4.7	0.4	4.2	7.8	
Queue Length 50th (m)		6.2			0.0		6.1	23.8	0.0	0.6	83.8	
Queue Length 95th (m)		19.7			1.8		#18.5	30.8	0.6	2.0	98.1	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0		80.0	80.0		
Base Capacity (vph)		276			251		76	2761	1280	555	3715	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.29			0.08		0.72	0.27	0.01	0.02	0.64	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access

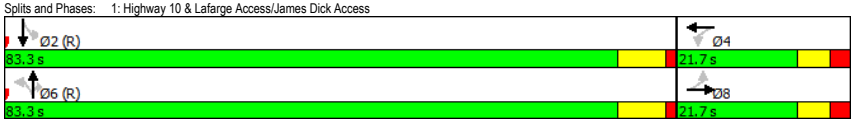
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	79	9	0	10	55	739	16	11	2366	5
Future Volume (vph)	0	0	79	9	0	10	55	739	16	11	2366	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frt		0.86			0.93		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1662			1743		1825	3544	1633	1825	4767	
Flt Permitted		1.00			0.83		0.05	1.00	1.00	0.37	1.00	
Satd. Flow (perm)		1662			1490		97	3544	1633	713	4767	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	79	9	0	10	55	739	16	11	2366	5
RTOR Reduction (vph)	0	40	0	0	17	0	0	0	4	0	0	0
Lane Group Flow (vph)	0	39	0	0	2	0	55	739	12	11	2371	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Effective Green, g (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Actuated g/C Ratio		0.11			0.11		0.75	0.75	0.75	0.75	0.75	
Clearance Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		189			170		72	2666	1228	536	3586	
v/s Ratio Prot		c0.02						0.21			0.50	
v/s Ratio Perm					0.00		c0.57		0.01	0.02		
v/c Ratio		0.21			0.01		0.76	0.28	0.01	0.02	0.66	
Uniform Delay, d1		42.2			41.2		7.6	4.1	3.2	3.3	6.4	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5			0.0		53.7	0.3	0.0	0.1	1.0	
Delay (s)		42.7			41.3		61.3	4.3	3.3	3.3	7.4	
Level of Service		D			D		E	A	A	A	A	
Approach Delay (s)		42.7			41.3			8.2			7.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	0	0	10	24	2159	0	0	959	1
Future Volume (vph)	4	0	40	0	0	10	24	2159	0	0	959	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	44	0	0	10	0	24	2159	0	0	960	0
Turn Type	Perm	NA			NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.16			0.04		0.05	0.73			0.24	
Control Delay		13.2			0.2		4.3	9.3			3.6	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		13.2			0.2		4.3	9.3			3.6	
Queue Length 50th (m)		0.0			0.0		1.2	141.4			21.4	
Queue Length 95th (m)		9.5			0.0		3.5	177.6			26.4	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0					
Base Capacity (vph)		271			276		458	2957			3978	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.16			0.04		0.05	0.73			0.24	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access



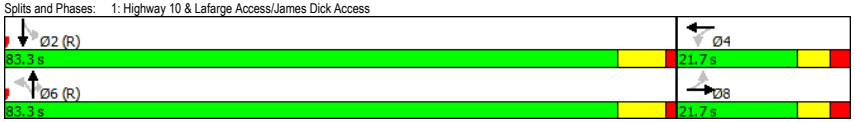
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	0	0	10	24	2159	0	0	959	1
Future Volume (vph)	4	0	40	0	0	10	24	2159	0	0	959	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3			7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95			0.91	
Frt		0.88			0.86		1.00	1.00			1.00	
Flt Protected		1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		1678			1662		1825	3544			4768	
Flt Permitted		0.97			1.00		0.29	1.00			1.00	
Satd. Flow (perm)		1631			1662		549	3544			4768	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	0	40	0	0	10	24	2159	0	0	959	1
RTOR Reduction (vph)	0	40	0	0	9	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	4	0	0	1	0	24	2159	0	0	960	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type	Perm	NA			NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		9.0			9.0		82.0	82.0			82.0	
Effective Green, g (s)		9.0			9.0		82.0	82.0			82.0	
Actuated g/C Ratio		0.09			0.09		0.78	0.78			0.78	
Clearance Time (s)		6.7			6.7		7.3	7.3			7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		139			142		428	2767			3723	
v/s Ratio Prot					0.00			c0.61			0.20	
v/s Ratio Perm		c0.00					0.04					
v/c Ratio		0.03			0.01		0.06	0.78			0.26	
Uniform Delay, d1		44.0			43.9		2.6	6.4			3.2	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.1			0.0		0.2	2.3			0.2	
Delay (s)		44.1			43.9		2.9	8.7			3.3	
Level of Service		D			D		A	A			A	
Approach Delay (s)		44.1			43.9			8.6			3.3	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	0	0	2	24	1328	2	4	1194	1
Future Volume (vph)	4	0	40	0	0	2	24	1328	2	4	1194	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	44	0	0	2	0	24	1328	2	4	1195	0
Turn Type	Perm	NA			NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.16			0.01		0.07	0.45	0.00	0.01	0.30	
Control Delay		13.2			0.0		4.5	5.0	0.0	4.2	3.9	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		13.2			0.0		4.5	5.0	0.0	4.2	3.9	
Queue Length 50th (m)		0.0			0.0		1.3	54.3	0.0	0.2	28.3	
Queue Length 95th (m)		9.5			0.0		3.7	67.4	0.0	1.1	34.3	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0		80.0	80.0		
Base Capacity (vph)		271			319		359	2957	1368	301	3978	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.16			0.01		0.07	0.45	0.00	0.01	0.30	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	0	0	2	24	1328	2	4	1194	1
Future Volume (vph)	4	0	40	0	0	2	24	1328	2	4	1194	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frt		0.88			0.86		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1678			1662		1825	3544	1633	1825	4768	
Flt Permitted		0.97			1.00		0.22	1.00	1.00	0.19	1.00	
Satd. Flow (perm)		1632			1662		429	3544	1633	361	4768	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	0	40	0	0	2	24	1328	2	4	1194	1
RTOR Reduction (vph)	0	40	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	4	0	0	0	0	24	1328	2	4	1195	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type	Perm	NA			NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		9.0			9.0		82.0	82.0	82.0	82.0	82.0	
Effective Green, g (s)		9.0			9.0		82.0	82.0	82.0	82.0	82.0	
Actuated g/C Ratio		0.09			0.09		0.78	0.78	0.78	0.78	0.78	
Clearance Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		139			142		335	2767	1275	281	3723	
v/s Ratio Prot					0.00			c0.37			0.25	
v/s Ratio Perm		c0.00					0.06		0.00	0.01		
v/c Ratio		0.03			0.00		0.07	0.48	0.00	0.01	0.32	
Uniform Delay, d1		44.0			43.9		2.7	4.0	2.5	2.5	3.4	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1			0.0		0.4	0.6	0.0	0.1	0.2	
Delay (s)		44.1			43.9		3.1	4.6	2.5	2.6	3.6	
Level of Service		D			D		A	A	A	A	A	
Approach Delay (s)		44.1			43.9			4.6			3.6	
Approach LOS		D			D			A			A	

Intersection Summary					
HCM 2000 Control Delay		4.8	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.44			
Actuated Cycle Length (s)		105.0	Sum of lost time (s)		14.0
Intersection Capacity Utilization		71.9%	ICU Level of Service		C
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	79	117	0	46	55	739	88	35	2366	5
Future Volume (vph)	0	0	79	117	0	46	55	739	88	35	2366	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	79	0	0	163	0	55	739	88	35	2371	0
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.29			0.70		0.75	0.29	0.07	0.07	0.69	
Control Delay		23.4			48.0		70.7	5.4	1.1	4.6	9.3	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		23.4			48.0		70.7	5.4	1.1	4.6	9.3	
Queue Length 50th (m)		6.2			23.1		5.8	23.8	0.0	1.8	83.8	
Queue Length 95th (m)		19.7			#51.6		#17.3	30.8	3.7	4.6	98.1	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0		80.0	80.0		
Base Capacity (vph)		276			233		73	2565	1206	511	3452	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.29			0.70		0.75	0.29	0.07	0.07	0.69	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access

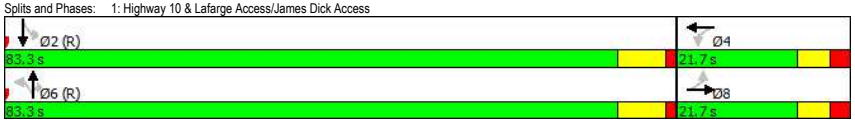
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	79	117	0	46	55	739	88	35	2366	5
Future Volume (vph)	0	0	79	117	0	46	55	739	88	35	2366	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frt		0.86			0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1662			1784		1825	3544	1633	1825	4767	
Flt Permitted		1.00			0.74		0.05	1.00	1.00	0.37	1.00	
Satd. Flow (perm)		1662			1363		101	3544	1633	706	4767	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	79	117	0	46	55	739	88	35	2366	5
RTOR Reduction (vph)	0	39	0	0	39	0	0	0	24	0	0	0
Lane Group Flow (vph)	0	40	0	0	124	0	55	739	64	35	2371	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		15.0			15.0		76.0	76.0	76.0	76.0	76.0	
Effective Green, g (s)		15.0			15.0		76.0	76.0	76.0	76.0	76.0	
Actuated g/C Ratio		0.14			0.14		0.72	0.72	0.72	0.72	0.72	
Clearance Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		237			194		73	2565	1181	511	3450	
v/s Ratio Prot		0.02						0.21			0.50	
v/s Ratio Perm					c0.09		c0.54		0.04	0.05		
v/c Ratio		0.17			0.64		0.75	0.29	0.05	0.07	0.69	
Uniform Delay, d1		39.5			42.5		8.8	5.1	4.2	4.2	8.0	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.3			7.1		51.5	0.3	0.1	0.3	1.1	
Delay (s)		39.9			49.5		60.3	5.3	4.3	4.5	9.1	
Level of Service		D			D		E	A	A	A	A	
Approach Delay (s)		39.9			49.5			8.7			9.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	54	0	28	24	2159	36	12	959	1
Future Volume (vph)	4	0	40	54	0	28	24	2159	36	12	959	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	44	0	0	82	0	24	2159	36	12	960	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.16			0.34		0.06	0.78	0.03	0.16	0.26	
Control Delay		13.2			25.3		4.6	11.7	1.3	10.2	4.5	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		13.2			25.3		4.6	11.7	1.3	10.2	4.5	
Queue Length 50th (m)		0.0			6.7		1.2	141.4	0.0	0.7	21.4	
Queue Length 95th (m)		9.5			20.6		3.5	177.6	2.4	3.4	26.4	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0		80.0	80.0		
Base Capacity (vph)		271			241		427	2761	1280	76	3714	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.16			0.34		0.06	0.78	0.03	0.16	0.26	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access



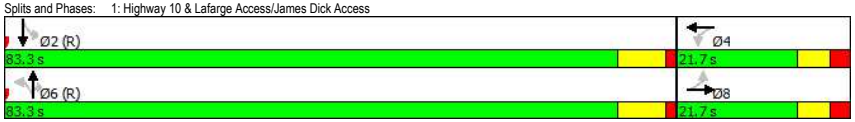
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	54	0	28	24	2159	36	12	959	1
Future Volume (vph)	4	0	40	54	0	28	24	2159	36	12	959	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frt		0.88			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1678			1774		1825	3544	1633	1825	4768	
Flt Permitted		0.97			0.77		0.29	1.00	1.00	0.05	1.00	
Satd. Flow (perm)		1630			1420		549	3544	1633	97	4768	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	0	40	54	0	28	24	2159	36	12	959	1
RTOR Reduction (vph)	0	39	0	0	40	0	0	0	9	0	0	0
Lane Group Flow (vph)	0	5	0	0	42	0	24	2159	27	12	960	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Effective Green, g (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Actuated g/C Ratio		0.11			0.11		0.75	0.75	0.75	0.75	0.75	
Clearance Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		186			162		413	2666	1228	72	3587	
v/s Ratio Prot								c0.61			0.20	
v/s Ratio Perm		0.00			c0.03		0.04		0.02	0.12		
v/c Ratio		0.03			0.26		0.06	0.81	0.02	0.17	0.27	
Uniform Delay, d1		41.3			42.4		3.4	8.2	3.3	3.7	4.0	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1			0.9		0.3	2.8	0.0	4.9	0.2	
Delay (s)		41.4			43.3		3.6	11.0	3.3	8.6	4.2	
Level of Service		D			D		A	B	A	A	A	
Approach Delay (s)		41.4			43.3			10.8			4.3	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	54	0	20	24	1328	38	16	1194	1
Future Volume (vph)	4	0	40	54	0	20	24	1328	38	16	1194	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	44	0	0	74	0	24	1328	38	16	1195	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.16			0.31		0.07	0.48	0.03	0.06	0.32	
Control Delay		13.2			23.3		4.9	6.2	1.4	4.9	4.8	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		13.2			23.3		4.9	6.2	1.4	4.9	4.8	
Queue Length 50th (m)		0.0			5.3		1.3	54.3	0.0	0.8	28.3	
Queue Length 95th (m)		9.5			18.3		3.7	67.4	2.5	2.8	34.3	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0		80.0	80.0		
Base Capacity (vph)		271			238		331	2761	1280	272	3714	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.16			0.31		0.07	0.48	0.03	0.06	0.32	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	54	0	20	24	1328	38	16	1194	1
Future Volume (vph)	4	0	40	54	0	20	24	1328	38	16	1194	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frt		0.88			0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			0.96		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1678			1786		1825	3544	1633	1825	4768	
Flt Permitted		0.97			0.76		0.22	1.00	1.00	0.18	1.00	
Satd. Flow (perm)		1631			1400		424	3544	1633	350	4768	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	0	40	54	0	20	24	1328	38	16	1194	1
RTOR Reduction (vph)	0	39	0	0	40	0	0	0	9	0	0	0
Lane Group Flow (vph)	0	5	0	0	34	0	24	1328	29	16	1195	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Effective Green, g (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Actuated g/C Ratio		0.11			0.11		0.75	0.75	0.75	0.75	0.75	
Clearance Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		186			160		319	2666	1228	263	3587	
v/s Ratio Prot								c0.37			0.25	
v/s Ratio Perm		0.00			c0.02		0.06		0.02	0.05		
v/c Ratio		0.03			0.21		0.08	0.50	0.02	0.06	0.33	
Uniform Delay, d1		41.3			42.2		3.4	5.1	3.3	3.4	4.3	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1			0.7		0.5	0.7	0.0	0.4	0.3	
Delay (s)		41.4			42.9		3.9	5.8	3.3	3.8	4.5	
Level of Service		D			D		A	A	A	A	A	
Approach Delay (s)		41.4			42.9			5.7			4.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	79	117	0	46	55	800	88	35	2562	5
Future Volume (vph)	0	0	79	117	0	46	55	800	88	35	2562	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	79	0	0	163	0	55	800	88	35	2567	0
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.29			0.70		0.75	0.31	0.07	0.07	0.74	
Control Delay		23.4			48.0		70.7	5.5	1.1	4.7	10.4	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		23.4			48.0		70.7	5.5	1.1	4.7	10.4	
Queue Length 50th (m)		6.2			23.1		5.8	26.4	0.0	1.8	98.9	
Queue Length 95th (m)		19.7			#51.6		#17.3	33.9	3.7	4.6	115.7	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0		80.0	80.0		
Base Capacity (vph)		276			233		73	2565	1206	475	3452	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.29			0.70		0.75	0.31	0.07	0.07	0.74	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access

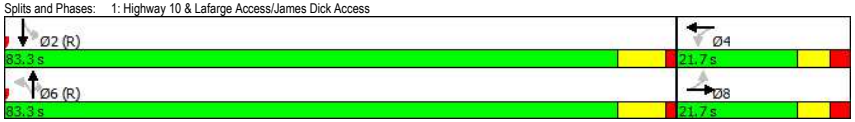
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	79	117	0	46	55	800	88	35	2562	5
Future Volume (vph)	0	0	79	117	0	46	55	800	88	35	2562	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frt		0.86			0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1662			1784		1825	3544	1633	1825	4767	
Flt Permitted		1.00			0.74		0.05	1.00	1.00	0.34	1.00	
Satd. Flow (perm)		1662			1363		101	3544	1633	657	4767	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	79	117	0	46	55	800	88	35	2562	5
RTOR Reduction (vph)	0	39	0	0	39	0	0	0	24	0	0	0
Lane Group Flow (vph)	0	40	0	0	124	0	55	800	64	35	2567	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		15.0			15.0		76.0	76.0	76.0	76.0	76.0	
Effective Green, g (s)		15.0			15.0		76.0	76.0	76.0	76.0	76.0	
Actuated g/C Ratio		0.14			0.14		0.72	0.72	0.72	0.72	0.72	
Clearance Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		237			194		73	2565	1181	475	3450	
v/s Ratio Prot		0.02						0.23			0.54	
v/s Ratio Perm					c0.09		c0.54		0.04	0.05		
v/c Ratio		0.17			0.64		0.75	0.31	0.05	0.07	0.74	
Uniform Delay, d1		39.5			42.5		8.8	5.2	4.2	4.2	8.7	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.3			7.1		51.5	0.3	0.1	0.3	1.5	
Delay (s)		39.9			49.5		60.3	5.5	4.3	4.5	10.2	
Level of Service		D			D		E	A	A	A	B	
Approach Delay (s)		39.9			49.5			8.6			10.1	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	54	0	28	24	2337	36	12	1038	1
Future Volume (vph)	4	0	40	54	0	28	24	2337	36	12	1038	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	44	0	0	82	0	24	2337	36	12	1039	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.16			0.34		0.06	0.85	0.03	0.16	0.28	
Control Delay		13.2			25.3		4.7	14.5	1.3	10.2	4.6	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		13.2			25.3		4.7	14.5	1.3	10.2	4.6	
Queue Length 50th (m)		0.0			6.7		1.2	175.6	0.0	0.7	23.6	
Queue Length 95th (m)		9.5			20.6		3.6	224.1	2.4	3.4	29.0	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0		80.0	80.0		
Base Capacity (vph)		271			241		393	2761	1280	76	3714	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.16			0.34		0.06	0.85	0.03	0.16	0.28	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access



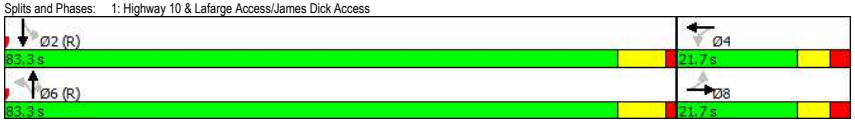
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	54	0	28	24	2337	36	12	1038	1
Future Volume (vph)	4	0	40	54	0	28	24	2337	36	12	1038	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frt		0.88			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1678			1774		1825	3544	1633	1825	4768	
Flt Permitted		0.97			0.77		0.26	1.00	1.00	0.05	1.00	
Satd. Flow (perm)		1630			1420		506	3544	1633	97	4768	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	0	40	54	0	28	24	2337	36	12	1038	1
RTOR Reduction (vph)	0	39	0	0	40	0	0	0	9	0	0	0
Lane Group Flow (vph)	0	5	0	0	42	0	24	2337	27	12	1039	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Effective Green, g (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Actuated g/C Ratio		0.11			0.11		0.75	0.75	0.75	0.75	0.75	
Clearance Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		186			162		380	2666	1228	72	3587	
v/s Ratio Prot								c0.66			0.22	
v/s Ratio Perm		0.00			c0.03		0.05		0.02	0.12		
v/c Ratio		0.03			0.26		0.06	0.88	0.02	0.17	0.29	
Uniform Delay, d1		41.3			42.4		3.4	9.5	3.3	3.7	4.1	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1			0.9		0.3	4.4	0.0	4.9	0.2	
Delay (s)		41.4			43.3		3.7	13.9	3.3	8.6	4.3	
Level of Service		D			D		A	B	A	A	A	
Approach Delay (s)		41.4			43.3			13.6			4.4	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	54	0	20	24	1438	38	16	1399	1
Future Volume (vph)	4	0	40	54	0	20	24	1438	38	16	1399	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	44	0	0	74	0	24	1438	38	16	1400	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.16			0.31		0.09	0.52	0.03	0.07	0.38	
Control Delay		13.2			23.3		5.3	6.6	1.4	5.1	5.2	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		13.2			23.3		5.3	6.6	1.4	5.1	5.2	
Queue Length 50th (m)		0.0			5.3		1.3	61.8	0.0	0.8	35.2	
Queue Length 95th (m)		9.5			18.3		3.9	76.7	2.5	2.9	42.3	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0		80.0	80.0		
Base Capacity (vph)		271			238		258	2761	1280	237	3714	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.16			0.31		0.09	0.52	0.03	0.07	0.38	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	54	0	20	24	1438	38	16	1399	1
Future Volume (vph)	4	0	40	54	0	20	24	1438	38	16	1399	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frt		0.88			0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			0.96		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1678			1786		1825	3544	1633	1825	4768	
Flt Permitted		0.97			0.76		0.17	1.00	1.00	0.16	1.00	
Satd. Flow (perm)		1631			1400		333	3544	1633	303	4768	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	0	40	54	0	20	24	1438	38	16	1399	1
RTOR Reduction (vph)	0	39	0	0	40	0	0	0	9	0	0	0
Lane Group Flow (vph)	0	5	0	0	34	0	24	1438	29	16	1400	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Effective Green, g (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Actuated g/C Ratio		0.11			0.11		0.75	0.75	0.75	0.75	0.75	
Clearance Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		186			160		250	2666	1228	227	3587	
v/s Ratio Prot								c0.41			0.29	
v/s Ratio Perm		0.00			c0.02		0.07		0.02	0.05		
v/c Ratio		0.03			0.21		0.10	0.54	0.02	0.07	0.39	
Uniform Delay, d1		41.3			42.2		3.5	5.4	3.3	3.4	4.6	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1			0.7		0.8	0.8	0.0	0.6	0.3	
Delay (s)		41.4			42.9		4.2	6.2	3.3	4.0	4.9	
Level of Service		D			D		A	A	A	A	A	
Approach Delay (s)		41.4			42.9			6.1			4.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	79	117	0	46	55	866	88	35	2773	5
Future Volume (vph)	0	0	79	117	0	46	55	866	88	35	2773	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	79	0	0	163	0	55	866	88	35	2778	0
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.29			0.70		0.75	0.34	0.07	0.08	0.80	
Control Delay		23.4			48.0		70.7	5.7	1.1	4.8	12.0	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		23.4			48.0		70.7	5.7	1.1	4.8	12.0	
Queue Length 50th (m)		6.2			23.1		5.8	29.3	0.0	1.8	118.4	
Queue Length 95th (m)		19.7			#51.6		#17.3	37.4	3.7	4.7	138.9	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0		80.0	80.0		
Base Capacity (vph)		276			233		73	2565	1206	439	3452	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.29			0.70		0.75	0.34	0.07	0.08	0.80	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	79	117	0	46	55	866	88	35	2773	5
Future Volume (vph)	0	0	79	117	0	46	55	866	88	35	2773	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frt		0.86			0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1662			1784		1825	3544	1633	1825	4767	
Flt Permitted		1.00			0.74		0.05	1.00	1.00	0.32	1.00	
Satd. Flow (perm)		1662			1363		101	3544	1633	608	4767	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	79	117	0	46	55	866	88	35	2773	5
RTOR Reduction (vph)	0	39	0	0	39	0	0	0	24	0	0	0
Lane Group Flow (vph)	0	40	0	0	124	0	55	866	64	35	2778	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		15.0			15.0		76.0	76.0	76.0	76.0	76.0	
Effective Green, g (s)		15.0			15.0		76.0	76.0	76.0	76.0	76.0	
Actuated g/C Ratio		0.14			0.14		0.72	0.72	0.72	0.72	0.72	
Clearance Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		237			194		73	2565	1181	440	3450	
v/s Ratio Prot		0.02						0.24			c0.58	
v/s Ratio Perm					c0.09		0.54		0.04	0.06		
v/c Ratio		0.17			0.64		0.75	0.34	0.05	0.08	0.81	
Uniform Delay, d1		39.5			42.5		8.8	5.3	4.2	4.2	9.6	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.3			7.1		51.5	0.4	0.1	0.4	2.1	
Delay (s)		39.9			49.5		60.3	5.7	4.3	4.6	11.7	
Level of Service		D			D		E	A	A	A	B	
Approach Delay (s)		39.9			49.5			8.5			11.6	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	54	0	28	24	2530	36	12	1124	1
Future Volume (vph)	4	0	40	54	0	28	24	2530	36	12	1124	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	44	0	0	82	0	24	2530	36	12	1125	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.16			0.34		0.07	0.92	0.03	0.16	0.30	
Control Delay		13.2			25.3		4.8	19.3	1.3	10.2	4.7	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		13.2			25.3		4.8	19.3	1.3	10.2	4.7	
Queue Length 50th (m)		0.0			6.7		1.2	226.4	0.0	0.7	26.2	
Queue Length 95th (m)		9.5			20.6		3.6	#321.2	2.4	3.4	32.0	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0		80.0	80.0		
Base Capacity (vph)		271			241		359	2761	1280	76	3714	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.16			0.34		0.07	0.92	0.03	0.16	0.30	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access

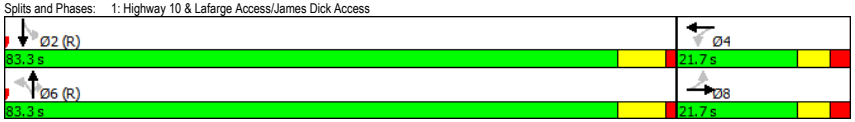
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	54	0	28	24	2530	36	12	1124	1
Future Volume (vph)	4	0	40	54	0	28	24	2530	36	12	1124	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frt		0.88			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1678			1774		1825	3544	1633	1825	4768	
Flt Permitted		0.97			0.77		0.24	1.00	1.00	0.05	1.00	
Satd. Flow (perm)		1630			1420		460	3544	1633	97	4768	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	0	40	54	0	28	24	2530	36	12	1124	1
RTOR Reduction (vph)	0	39	0	0	40	0	0	0	9	0	0	0
Lane Group Flow (vph)	0	5	0	0	42	0	24	2530	27	12	1125	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Effective Green, g (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Actuated g/C Ratio		0.11			0.11		0.75	0.75	0.75	0.75	0.75	
Clearance Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		186			162		346	2666	1228	72	3587	
v/s Ratio Prot								c0.71			0.24	
v/s Ratio Perm		0.00			c0.03		0.05		0.02	0.12		
v/c Ratio		0.03			0.26		0.07	0.95	0.02	0.17	0.31	
Uniform Delay, d1		41.3			42.4		3.4	11.3	3.3	3.7	4.2	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1			0.9		0.4	9.0	0.0	4.9	0.2	
Delay (s)		41.4			43.3		3.8	20.3	3.3	8.6	4.4	
Level of Service		D			D		A	C	A	A	A	
Approach Delay (s)		41.4			43.3			19.9			4.5	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	54	0	20	24	1556	38	16	1399	1
Future Volume (vph)	4	0	40	54	0	20	24	1556	38	16	1399	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (m)	7.6			7.6			40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
Lane Group Flow (vph)	0	44	0	0	74	0	24	1556	38	16	1400	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
Total Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
Total Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
v/c Ratio		0.16			0.31		0.09	0.56	0.03	0.08	0.38	
Control Delay		13.2			23.3		5.3	7.1	1.4	5.4	5.2	
Queue Delay		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		13.2			23.3		5.3	7.1	1.4	5.4	5.2	
Queue Length 50th (m)		0.0			5.3		1.3	71.0	0.0	0.8	35.2	
Queue Length 95th (m)		9.5			18.3		3.9	87.5	2.5	3.0	42.3	
Internal Link Dist (m)		111.6			157.9			177.1			234.8	
Turn Bay Length (m)							60.0		80.0	80.0		
Base Capacity (vph)		271			238		258	2761	1280	200	3714	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		0			0		0	0	0	0	0	
Storage Cap Reductn		0			0		0	0	0	0	0	
Reduced v/c Ratio		0.16			0.31		0.09	0.56	0.03	0.08	0.38	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	40	54	0	20	24	1556	38	16	1399	1
Future Volume (vph)	4	0	40	54	0	20	24	1556	38	16	1399	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frt		0.88			0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			0.96		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1678			1786		1825	3544	1633	1825	4768	
Flt Permitted		0.97			0.76		0.17	1.00	1.00	0.13	1.00	
Satd. Flow (perm)		1631			1400		333	3544	1633	257	4768	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	0	40	54	0	20	24	1556	38	16	1399	1
RTOR Reduction (vph)	0	39	0	0	40	0	0	0	9	0	0	0
Lane Group Flow (vph)	0	5	0	0	34	0	24	1556	29	16	1400	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Effective Green, g (s)		12.0			12.0		79.0	79.0	79.0	79.0	79.0	
Actuated g/C Ratio		0.11			0.11		0.75	0.75	0.75	0.75	0.75	
Clearance Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		186			160		250	2666	1228	193	3587	
v/s Ratio Prot								c0.44			0.29	
v/s Ratio Perm		0.00			c0.02		0.07		0.02	0.06		
v/c Ratio		0.03			0.21		0.10	0.58	0.02	0.08	0.39	
Uniform Delay, d1		41.3			42.2		3.5	5.7	3.3	3.4	4.6	
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1			0.7		0.8	0.9	0.0	0.8	0.3	
Delay (s)		41.4			42.9		4.2	6.7	3.3	4.3	4.9	
Level of Service		D			D		A	A	A	A	A	
Approach Delay (s)		41.4			42.9			6.6			4.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			