TRAFFIC IMPACT STUDY

McCORMICK PIT

FINAL • OCTOBER 2017

REPORT PREPARED FOR

BLUELAND FARMS LIMITED 560 WELLINGTON STREET, 2ND FLOOR LONDON, ON N6A 3R4

REPORT PREPARED BY



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TMIG PROJECT NUMBER 17128





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 <u>will not increase</u> 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 <u>added background traffic growth</u> 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**.





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

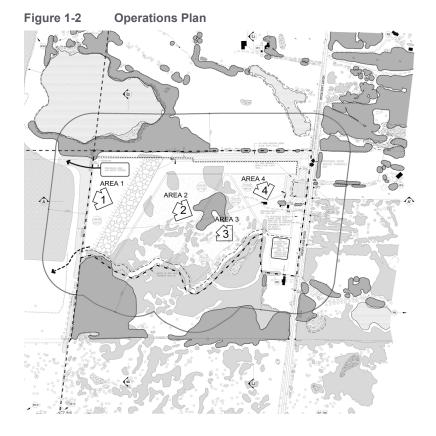
The study area includes the following signalized intersection:

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.



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.

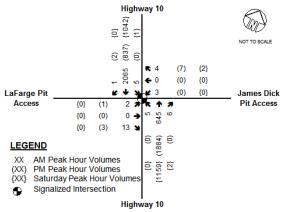
In the vicinity of the study area, Highway 10 has a localized six-lane rural cross section, with two northbound and three southbound general-purpose lanes, and a two-way-centre-left-turn lane. The James Dick pit intersection at Highway 10 is signalized and provides northbound and southbound left and 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**.

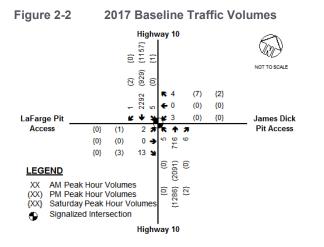






To consider seasonal traffic variation, we have reviewed the MTO 2010 Seasonal Variation Factors for a Commuter Recreation route, which is the current designation of Highway 10 in the vicinity of the site. The seasonal variation for April to the peak annual traffic condition indicated in the MTO data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





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.

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

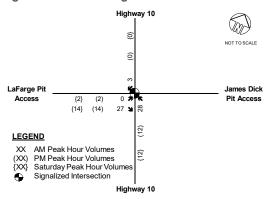
A growth rate of 1.60% was adopted and applied to the 2017 baseline through traffic along Highway 10 to derive the 2019, 2024 and 2029 background Highway 10 corridor traffic volumes.

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**.

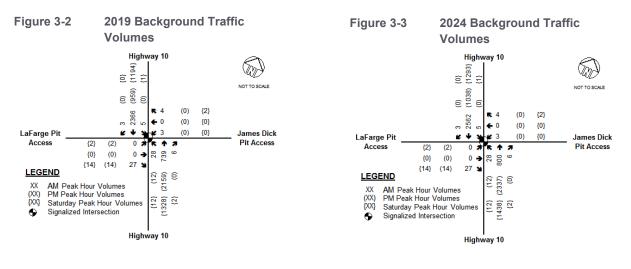






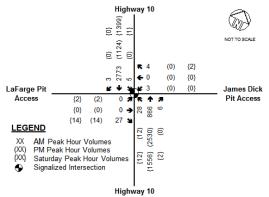
3.5 **Background Traffic Volumes**

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.





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

1,800,000 tonnes/year3,392 operating hours/year

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

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 ($16 \times 1.5 = 24$).

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.



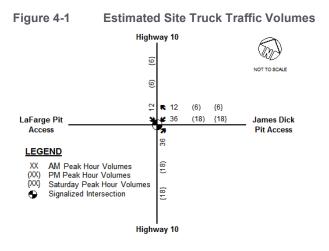
4.2 Site Trip distribution and Assignment

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**.





TOTAL TRAFFIC 5

LEGEND хх

(XX) {XX}

•

AM Peak Hour Volumes

Signalized Intersection

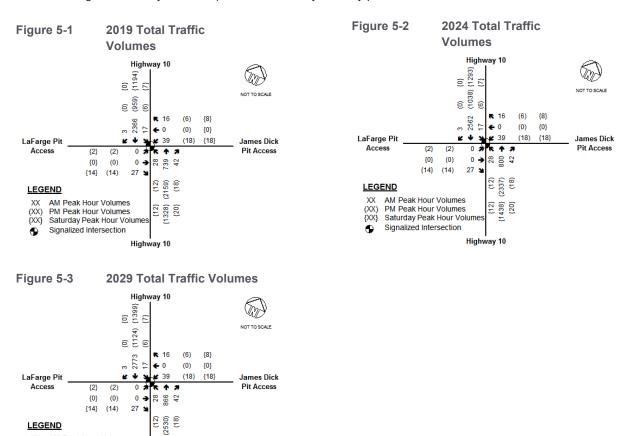
PM Peak Hour Volumes Saturday Peak Hour Volumes

{12} {1556} {20}

Highway 10

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.





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.



Traffic Condition	Movement v/c (LOS) 95 th Percentile Queue, De	lay 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	<u>Overall: v/c 0.68 LOS A, 5s</u> 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

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



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

Morning Pe	ak Diagram	Specified Peri From: 7:00:00 To: 10:00:00	Fr	ne Hour Peak om: 7:00:00 o: 8:00:00					
Site #: 13183	lon Village 300001 10 (Hurontario St) & Lafarg 7-13		Weather conditions: Person(s) who counted:						
** Signalized Inters	ection **	Major Road:	HWY 10 (Hur	ontario St) runs N/S					
North Leg Total:2473North Entering:1899North Peds:0Peds Cross:⋈	Heavys 1 50 3 Trucks 0 15 0 Cars 1 1827 2 Totals 2 1892 5	15 Truck 1830 Ca	ys 79 ks 24 rs <u>471</u> ls 574	East Leg Total: 25 East Entering: 12 East Peds: 0 Peds Cross: [∞]					
Heavys Trucks Cars Tota 17 0 2 19	als \checkmark \clubsuit \checkmark	HWY 10 (Hurontario St)	$\begin{array}{c} & \text{Cars} \\ 2 \\ \hline & 0 \\ \hline & 0 \\ \hline & 0 \\ \hline & 2 \\ \end{array}$	TrucksHeavys Totals02400017819					
Heavys TrucksCarsTota00000000		S	James Dic	k Pit					
13 1 1 15 13 1 1	HWY 10 (Hurontario		Cars	Trucks Heavys Totals 0 11 13					
Peds Cross:Image: Image:	Heavys 70 H	Cars 1 469 0 rucks 0 24 0 eavys 16 77 8 Totals 17 570 8	470 24 101	Peds Cross:Image: MarcologySouth Peds:0South Entering:595South Leg Total:2510					
	Со	nments							

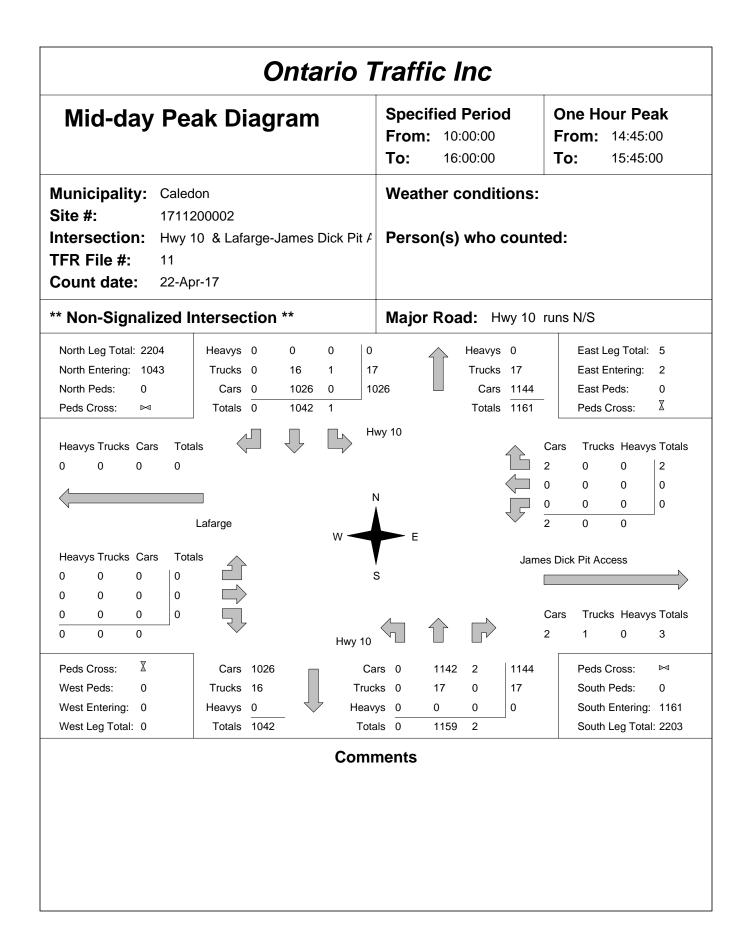


Accu-Traffic Inc

Afternoon F	'eak Di	agran		Specif From: To:	ied Period 15:00:00 18:00:00		d		om:	ur Pe 16:30: 17:30:	00
Site #: 13183	lon Village 300001 10 (Hurontar 7-13	io St) & Laf		Weath Persor				ted:			
* Signalized Inters	ection **			Major	Roa	id: H\	WY 10	(Hur	ontaric	St) ru	ns N/S
North Leg Total:2636North Entering:718North Peds:0Peds Cross:⋈	Heavys 0 Trucks 0 Cars 1 Totals 1	43 0 12 0 662 0 717 0	12 663	;		Heavys Trucks Cars Totals	17 1857	_			22 22 0 X
Heavys Trucks Cars Tota 0 0 1 1				Y 10 (Huro	ntaric	o St)		Cars 22 0 0 22	Truck 0 0 0 0	s Heavy 0 0 0 0	rs Totals 22 0 0
Heavys Trucks Cars Total 1 0 1 2 0 0 0 0 1 0 1 2 0 1 2 2 0 2			s	<hr/>	\sim		Jam	es Dicl Cars		s Heavy 0	rs Totals
Peds Cross: X West Peds: 0 West Entering: 4 West Leg Total: 5	HV Cars 663 Trucks 12 Heavys 44 Totals 719	VY 10 (Huront	tario St) Cars Trucks Heavys Totals	s 0 s 0	1834 17 43 1894	0 0 0 0	1834 17 43		Peds C South South	Cross:	⊠ 0 1894
			Comm	ents							

	Ontario	o Traffic Inc	
Morning Pe	ak Diagram	Specified Period From: 6:30:00 To: 9:30:00	One Hour Peak From: 7:00:00 To: 8:00:00
	200001 0 & Lafarge-James Dick	Weather conditions Pit # Person(s) who could	
** Signalized Interse	ection **	Major Road: Hwy 10	0 runs N/S
North Leg Total: 2722 North Entering: 2071 North Peds: 0 Peds Cross: ⋈	Heavys 0 0 0 Trucks 0 66 3 Cars 1 1999 2 Totals 1 2065 5	0 Heavys 0 69 Trucks 114 2002 Totals 651	East Leg Total: 18 East Entering: 7 East Peds: 0 Peds Cross: X
Heavys Trucks Cars Tota 0 4 2 6 Lafarge Pit		Hwy 10	Cars Trucks Heavys Totals 1 3 0 4 0 0 0 0 0 3 0 3 1 6 0 3
Heavys Trucks Cars Tota 0 2 0 2	ls	Ja S	mes Dick Pit Access
0 0 0 0 0 13 0 13 0 15 0	T T Hv	y 10	Cars Trucks Heavys Totals 3 8 0 11
Peds Cross: X West Peds: 0 West Entering: 15 West Leg Total: 21	Cars 1999 Trucks 82 Heavys 0 Totals 2081	Cars 1 536 1 538 Trucks 4 109 5 118 Heavys 0 0 0 0 Totals 5 645 6	
	C	omments	

	Ontario T	Fraffic Inc						
Afternoon F	Peak Diagram	Specified Period From: 16:00:00 To: 19:00:00	F	One Hour Peak From: 16:00:00 Fo: 17:00:00				
	200001 10 & Lafarge-James Dick Pit A	Weather conditions: Person(s) who counted:						
** Signalized Inters	ection **	Major Road: Hw	vy 10 run	s N/S				
North Leg Total:2731North Entering:839North Peds:0Peds Cross:⋈	Heavys 0 <td>Heavys Trucks 55 Cars Totals</td> <td>63 1829</td> <td>East Leg Total: 7 East Entering: 7 East Peds: 0 Peds Cross: X</td>	Heavys Trucks 55 Cars Totals	63 1829	East Leg Total: 7 East Entering: 7 East Peds: 0 Peds Cross: X				
Heavys Trucks Cars Tota 0 0 2 2 Lafarge Pit		wy 10	$ \begin{array}{c} $	Trucks Heavys Totals 1 0 7 0 0 0 0 0 0 1 0 1				
Heavys Trucks Cars Tota 0 0 1 1 0 0 0 0		5	James D	ick Pit Access				
$\begin{array}{cccc} 0 & 0 & 0 \\ 0 & 0 & 3 \\ 0 & 0 & 4 \end{array}$	Hwy 10		Car 0	s Trucks Heavys Totals 0 0 0				
Peds Cross: X West Peds: 0 West Entering: 4 West Leg Total: 6	Trucks 84 Truc Heavys 0 Heav	rs 0 1822 0 ks 0 62 0 ys <u>0 0 0</u> als 0 1884 0	1822 62 0	Peds Cross: South Peds: 0 South Entering: 1884 South Leg Total: 2724				
	Com	nents	I					



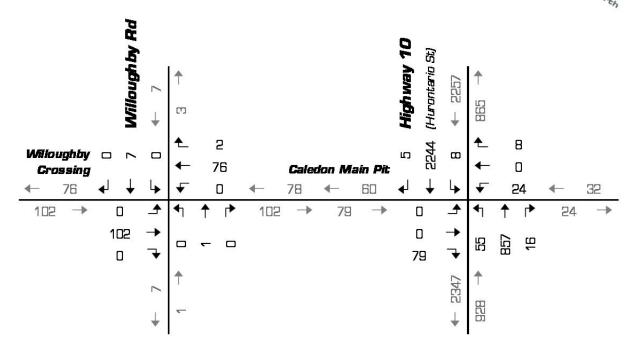


APPENDIX B

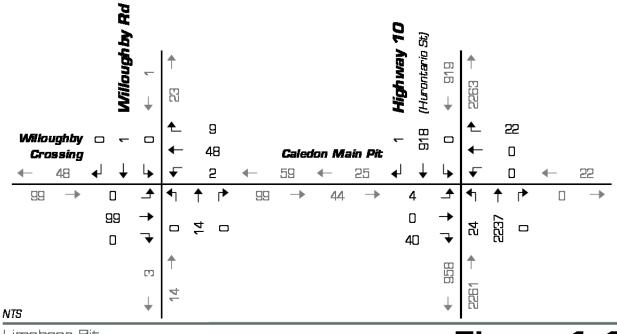
Lafarge Pit Trip Generation



AM Peak Hour



PM Peak Hour



Limebeer Pit Traffic Impact Study



Figure 4.4 Total Traffic Opening Date AM & PM Peak Hour - PCU



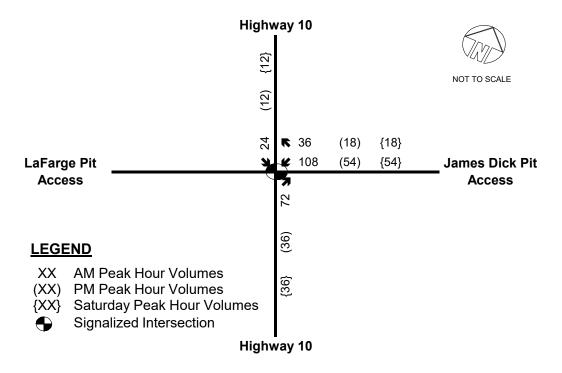
TABLE 4.7: TOTAL TRAFFIC VOLUME – TYPICAL CLASSIFICATION – OPENII	NG DATE HORIZON
---	-----------------

Desire			Intersection Turning Movements												
Design Hour	Intersection	Vehicle Type	Eastbound			Westbound			N	lorthboun	d	5	Gouthboun	d	Total
noui.			L	S	R	L	S	R	L	S	R	L	S	R	IOLAI
1.15-1	Passenger Vehicles	0	0	1	0	0	2	1	521	0	2	2,028	1	2,556	
	Highway 10	Heavy Vehicles	0	0	26	8	0	2	27	112	8	3	72	2	260
Caledon Main Pit	Heavy Vehicle Percent	D%	D%	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	Passenger Vehicles	0	0	0	0	0	0	0	1	0	0	7	0	8
	& & Willoughby Rd	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%
	Crossing	Total Vehicles	0	34	0	0	38	1	0	1	0	0	7	0	81
	10	Passenger Vehicles	1	0	1	0	0	22	0	2,036	0	0	735	1	2,796
	Highway 10	Heavy Vehicles	1	0	13	0	0	0	12	67	0	0	61	0	154
lour	Caledon Main Pit	Heavy Vehicle Percent	50%	0%	93%	0%	0%	0%	100%	3%	0%	0%	8%	0%	5%
Peak Hour		Total Vehicles	2	0	14	0	0	22	12	2,103	0	0	796	1	2,950
	Willoughby Rd	Passenger Vehicles	0	0	0	2	0	7	0	14	0	0	1	0	24
Md	&	Heavy Vehicles	0	33	0	0	24	1	0	0	0	0	0	0	58
	Willoughby Rd	Heavy Vehicle Percent	D%	100%	0%	0%	100%	13%	0%	0%	0%	0%	D%	D%	71%
	Crossing	Total Vehicles	0	33	0	2	24	8	0	14	0	0	1	0	82



APPENDIX C

Estimated Site Trips PCE





APPENDIX D

Capacity Analysis

	٦	-	\mathbf{r}	4	-	۰.	1	t	۲	1	Ļ	~
ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBI
ane Configurations		4			4		5	↑ ↑ 716	1	5	**1 2292	
Traffic Volume (vph)	6	0	39	9	0	10	13	716	16	11		
uture Volume (vph)	6	0	39	9	0	10	13	716	16	11	2292	
deal Flow (vphpl)	1900 0.0	1900	1900 0.0	1900 0.0	1900	1900 0.0	1900 60.0	1900	1900 80.0	1900 80.0	1900	190 80.
Storage Length (m) Storage Lanes	0.0		0.0	0.0		0.0	60.0		00.0 1	80.0 1		00.
Taper Length (m)	7.6		U	7.6		U	40.0			80.0		
Right Turn on Red	1.0		Yes	1.0		Yes	10.0		Yes	00.0		Ye
ink Speed (k/h)		80			80			80			80	
ink Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
ane Group Flow (vph)	0	45	0	0	19	0	13	716	16	11	2293	
furn Type	Perm	NA 8		Perm	NA 4		Perm	NA 6	Perm	Perm	NA 2	
Protected Phases Permitted Phases	8	ð		4	4		6	6	6	2	2	
Permitted Phases Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase	0	U		+	4		0	0	0	2	4	
Ainimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
/inimum 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%	
(ellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
All-Red Time (s) .ost Time Adjust (s)	2.6	2.6 0.0		2.6	2.6 0.0		1.4 0.0	1.4 0.0	1.4 0.0	1.4 0.0	1.4 0.0	
Fotal Lost Time (s) Lead/Lag		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
.ead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
/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 13.6			0.0 3.1		0.0 8.6	0.0	0.0	0.0 4.2	0.0	
Total Delay Queue Length 50th (m)		0.0			3.1 0.0		0.0	3.7 22.9	0.4	4.2	6.0 78.6	
Queue Length 95th (m)		9.9			1.8		3.4	29.8	0.6	2.0	91.9	
nternal Link Dist (m)		111.6			157.9			177.1			234.8	
furn 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 Reduced v/c Ratio		0 0.17			0 0.08		0	0 0.24	0 0.01	0	0 0.58	
		0.17			0.06		0.14	0.24	0.01	0.02	0.00	
ntersection Summary												
Area Type:	Other											
Cycle Length: 105												
Actuated Cycle Length: 105 Difset: 0 (0%), Referenced to ph	and 2.CPTL one		art of Croo	•								
Vatural Cycle: 60	Idse 2.3D I L dife	10.IND I L, 36		11								
Control Type: Actuated-Coordina	ated											
1												
Splits and Phases: 1: Highway	y 10 & Lafarge A	Access/Jame	s Dick Acc	ess								
No									•	-		
♥ [™] Ø2 (R)										∜ Ø4		
83.3 s									21	7s		
A and a second										<u>A.</u>		
Ø6 (R)									_	- 1Ø8		
53.3 S									21	/s		

HCM Signalized Intersection Capacity Analysis 1: Highway 10 & Lafarge Access/James Dick Access $\mathcal{F} \rightarrow \gamma \neq \leftarrow \checkmark \checkmark \uparrow \neq \downarrow \downarrow \downarrow$

2017 Baseline Traffic AM Peak Hour

	-	-	•	•			1		<i>r</i>		*	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBI
Lane Configurations		4.			£.,		ľ	**	1	<u> </u>	**1	
Traffic Volume (vph)	6	0	39	9	0	10	13	716	16	11	2292	
Future Volume (vph)	6	0	39	9	0	10	13	716	16	11	2292	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
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	1.0
Adj. Flow (vph)	6	0	39	9	0	10	13	716	16	11	2292	
RTOR Reduction (vph)	0	41	0	0	17	0	0	0	4	0	0	
Lane Group Flow (vph)	0	4	0	0	2	0	13	716	12	11	2293	
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	но	M 2000 Lev	al of Sonvia	20		A			
HCM 2000 Volume to Capacity ratio			0.56	пс	AVI 2000 LEV	ei ui Selviu	.c		A			
Actuated Cycle Length (s)			105.0	S.	m of lost tim	o (c)			14.0			
Intersection Capacity Utilization			71.9%		J Level of S				14.0 C			
Analysis Period (min)			15	101	D LEVEI UI 3	CI VILLO			U			
c Critical Lane Group			10									

TMIG

Synchro 10 Report

Lane Configurations Lane Configurations Lane Configurations T	ane Configurations raffic Volume (vph) uture Volume (vph)	FBI		¥ .	•		۰.	7	†	1		•	-
and Configurations 4. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.4 7. 7. 4.0 0 <th>ane Configurations raffic Volume (vph) uture Volume (vph)</th> <th></th> <th>EBT</th> <th>EBR</th> <th>WBL</th> <th>WBT</th> <th>WBR</th> <th>NBL</th> <th>NBT</th> <th>NBR</th> <th>SBL</th> <th>SBT</th> <th>SBF</th>	ane Configurations raffic Volume (vph) uture Volume (vph)		EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
'Line Volume (rph) 1 0 3 0 0 10 0 2091 0 0 929 Strage Langh (m) 0.0 0.0 0.0 0.0 1900 19	raffic Volume (vph) uture Volume (vph)												
deal Flow (priph) 1900 1900 1900 1900 1900 1900 1900 190		1	0	3	0	0	10	0	2091	0	0	929	2
Strage Length (m) 0.0 0.0 0.0 0.0 0.0 0.0 1 1 1 Taper Length (m) 7.6 7.6 40.0 80.0 <td>leal Flow (vphpl)</td> <td></td>	leal Flow (vphpl)												
Storage Lengs 0 0 0 1 1 1 Sight Turo Red Yes Yes Yes Yes No Sight Turo Red Yes Yes Yes No 80.0 Ink Destance (m) 135.6 181.9 20.1 2258.8 90.0 11.6 armoticity Flow (vph) 0 4 0 0 0 0 931 Turo Type Perm NA NA Perm NA Perm NA Yotected Phases 8 4 6 6 6 2 2 Attrinum Intal (s) 15.0 15.0 15.0 25.0 </td <td></td> <td></td> <td>1900</td> <td></td> <td></td> <td>1900</td> <td></td> <td></td> <td>1900</td> <td></td> <td></td> <td>1900</td> <td>190</td>			1900			1900			1900			1900	190
Tape Length (m) 7.6 7.6 40.0 80. mix Speed (kh) 80 80 80 80 80 mix Detance (m) 135.6 181.9 201.1 225.8 Travel Ture (s) 6.1 8.2 9.0 0 931 um Type Perm NA NA Perm NA Perm NA role Group Flow (vph) 0 4 0 0 0 931 um Type Perm NA NA Perm NA Perm NA roletade Phases 8 4 6 6 2 2 dimum Split (s) 15.0 15.0 15.0 25.0 25.0 25.0 25.0 dimum Split (s) 21.7 21.7 21.7 21.7 32.3 33.3 83.3 83.3 dial Split (%) 20.7% 20.7% 20.7% 73.3													80.
Ves Ves <td></td> <td></td> <td></td> <td>0</td> <td></td> <td></td> <td>0</td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td>				0			0			1			
nink Destance (Vn) 80 80 80 80 nink Destance (m) 135.6 181.9 201.1 258.8 rare (Time (s) 6.1 8.2 9.0 11.6 rare (Time (s) 0 0 0.0 2051 0 9.31 rare (Time (s) Perm NA Perm NA Perm NA Protected Phases 8 4 6 6 2 2 Permited Phases 8 4 4 6 6 2 2 Vector Phase 8 4 4 6 6 2 2 Vector Phase 8 8 4 4 6 6 2 2 Vector Phase 8 8 4 4 6 6 2 2 Vector Phase 8 8 4 4 6 6 6 2 2 Vector Phase 8 8 4 4 6 6 5 7 5 5 5 5 5 5<		7.6			7.6			40.0			80.0		
ink Distance (m) 135.6 181.9 201.1 256.8 inre Vitre (s) 6.1 8.2 9.0 11.6 inre Orgap Flow (vph) 0 4 0 0 0 9.0 11.6 inro Type Perm NA NA Perm NA Perm Perm NA Protected Phases 8 4 6 6 2 2 Which Phase 8 4 4 6 6 2 2 Which Phase 8 4 4 6 6 2 2 Minimum Infails (s) 15.0 15.0 15.0 25.0 25.0 25.0 25.0 25.0 Otal Split (s) 21.7 21.7 21.7 21.7 3.3 3.83 83.3	ight Turn on Red			Yes			Yes			Yes			Ye
Travel Time (s) 6.1 8.2 9.0 11.6 and Group Flow (vph) 0 4 0 0 0 2091 0 9.31 funn Type Perm NA NA Perm NA Perm NA Valuetad Phases 8 4 6 6 2 2 Permited Phases 8 4 4 6 6 2 2 Valuetad Phases 8 4 4 6 6 2 2 Valuetad Phases 8 4 4 6 6 2 2 Valuetad Phases 8 4 4 6 6 2 2 Valuetad Phases 15.0 15.0 15.0 15.0 25.0	nk Speed (k/h)												
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PM Peak Hour 1: Highway 10 & Lafarge Access/James Dick Access ×. ٦ -1 \• ⋞ -+ \mathbf{r} ۴ EBL NBL NBT NBR Movement EBT EBR WBL WBT WBR SBT SF Lane Configurations 2091 ****1 1 1** Traffic Volume (vph) 10 Future Volume (vph) 2091 929 10 0 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 1.00 1.00 Flt Permitted 0.91 1.00 1573 1662 4767 Satd. Flow (perm) 3544 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) 10 0 2091 929 0 3 0 0 0 0 RTOR Reduction (vph) 0 0 10 0 0 0 0 0 0 0 0 Lane Group Flow (vph) 0 0 0 0 Δ 0 0 2091 0 931 Heavy Vehicles (%) Turn Type Protected Phases 0% 0% 0% 0% 0% 0% 0% 3% 0% 0% 10% 0% Perm NA NA Perm NA Perm Perm NA 8 4 6 2 Permitted Phases 8 4 6 6 2 Actuated Green, G (s) 88.0 88.0 3.0 3.0 Effective Green, g (s) Actuated g/C Ratio 3.0 3.0 88.0 88.0 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 44 2970 3995 Lane Grp Cap (vph) 47 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 1.00 1.00 Progression Factor 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 HCM 2000 Volume to Capacity ratio HCM 2000 Level of Service 41 Α 0.68 Actuated Cycle Length (s) Intersection Capacity Utilization Sum of lost time (s) 14.0 105.0 ICU Level of Service 82.0% D Analysis Period (min) 15 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

TMIG

Synchro 10 Report

2017 Baseline Traffic

Lane Croup EBL EBT EBT EBT WBL WBT WBT NBT NBT NBT SBL SBL <th< th=""><th></th><th>٦</th><th>-</th><th>\mathbf{r}</th><th>4</th><th>+</th><th>۰.</th><th>•</th><th>Ť</th><th>۲</th><th>1</th><th>ţ</th><th>4</th></th<>		٦	-	\mathbf{r}	4	+	۰.	•	Ť	۲	1	ţ	4
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Jase Capacity (vph) 326 3348 1545 378 4505 Starvation Cap Reductn 0 0 0 0 0 0 Starvation Cap Reductn 0 0 0 0 0 0 0 Storage Cap Reductn 0			111.6			157.9			177.1			234.8	
Starvation Cap Reductin 0 0 0 0 0 Spillback Cap Reductin 0 0 0 0 0 0 Spillback Cap Reductin 0 0 0 0 0 0 0 Spillback Cap Reductin 0 0 0 0 0 0 0 0 Storage Cap Reductin 0.01 0.38 0.00 0.01 0.26 Intersection Summary													
Spillback Cap Reductin 0 0 0 0 0 Storage Cap Reductin 0 0 0 0 0 0 Storage Cap Reductin 0 0.01 0.38 0.00 0.01 0.26 Intersection Summary 0 0 0.01 0.38 0.00 0.01 0.26 Area Type: Other Other Sycle Length: 105 Statuated Cycle Length: 105 Statuated Cycle: 55 Statuated Cycle: 55 Statuated Cycle: 55 Statuated Coordinated Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access Image: 204 204 33.3 s Image: 204 21.7 s Image: 204 Image: 204 </td <td></td>													
Sincage Cap Reductin 0													
Reduced v/c Ratio 0.01 0.38 0.00 0.01 0.26 Intersection Summary													
ntersection Summary Area Type: Other Cycle Length: 105 Cycle Length: 105 Subtract O(9%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green Valural Cycle: 55 Oritrof Type: Actuated-Coordinated Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access													
Area Type: Other Cycle Length: 105 Other 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 Image: Control Type: Con													
ycle Length: 105 Vycle Length: 105 Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green latural Cycle: 55 Sontrol Type: Actuated-Coordinated Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access ↓ Ø2 (R) Ø3.3 s ↓ 02 (R) Ø4 21.7 s		01											
kchated Čycle Length: 105 Tyfet: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green katural Cycle: 55 Sontrol Type: Actuated-Coordinated Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access Ø2 (R) Ø3.3 € ↓ Ø2 ↓ Ø2		Other											
Offect 0 (0)%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green vatural Cycle: 55 Spirits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access Ø2 (R) 33.3 s													
Valural Cycle: 55 Control Type: Actuated-Coordinated Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access 20 (R) 33.3 € 4 21.7 5 21.7 5	Offset: 0 (0%). Referenced to pha	ase 2:SBTL and	6:NBTL. St	art of Gree	n								
Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access	latural Cycle: 55												
	Control Type: Actuated-Coordina	ted											
33.3s 21.7s 21.7s	plits and Phases: 1: Highway	10 & Lafarge A	Access/Jame	s Dick Acc	ess								
33.3s 21.7s 21.7s	(m)									•	Zar		
4 φ ₆ (R) 21.7 s	V 102 (R)										▼ Ø4		
¶Ø6 (R)	50,0 S									2			
217 c	(D)										2 mag		
	100(K)									21	7.		
	2010 2									2.			

HCM Signalized Intersection Capacity Analysis 1: Highway 10 & Lafarge Access/James Dick Access 2017 Baseline Traffic Saturday Peak Hour + 4 4 ۶ € t → > 1 Movement Lane Configurations EBL EBT EBR WBL WBT NBL NBT NBR VBR \$ \$ ** ۳. 1

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		Α			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			2.4	HC	M 2000 Lev	el of Service			A			
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			105.0	Su	m of lost time	e (s)			14.0			
Intersection Capacity Utilization			59.7%	ICI	J Level of Se	rvice			В			
Analysis Period (min)			15									
c Critical Lane Group												

TMIG

Synchro 10 Report

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SBL

SBT

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
ane Configurations		4			4 2		N.	** 739	1	5	4 4 %	
Traffic Volume (vph)	0		79	9		10	55		16	11	2366	(
-uture Volume (vph)	0	0	79	9	0	10	55	739	16	11	2366	
deal Flow (vphpl)	1900 0.0	1900	1900	1900 0.0	1900	1900	1900 60.0	1900	1900	1900 80.0	1900	190
Storage Length (m) Storage Lanes	0.0		0.0 0	0.0		0.0	60.0		80.0 1	80.0		80.0
aper Length (m)	7.6		U	7.6		U	40.0			80.0		
Right Turn on Red	1.0		Yes	1.0		Yes	40.0		Yes	00.0		Ye
ink Speed (k/h)		80	100		80	100		80	100		80	
ink Distance (m)		135.6			181.9			201.1			258.8	
ravel Time (s)		6.1			8.2			9.0			11.6	
ane Group Flow (vph)	0	79	0	0	19	0	55	739	16	11	2371	
furn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	8	8		4	4			6	0	2	2	
Permitted Phases Detector Phase	8	8		4	4		6 6	6	6 6	2	2	
Switch Phase	đ	0		4	4		0	0	0	2	2	
Ainimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
/inimum 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	
otal Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
(ellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
II-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
ost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
otal Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
.ead/Lag .ead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
/c Ratio	110110	0.29		110110	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) nternal Link Dist (m)		19.7 111.6			1.8 157.9		#18.5	30.8 177.1	0.6	2.0	98.1 234.8	
Furn Bay Length (m)		111.0			157.9		60.0	1//.1	80.0	80.0	234.0	
Base Capacity (vph)		276			251		76	2761	1280	555	3715	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn		Ő			ů		ů 0	ů 0	ů 0	0	ů.	
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	
ntersection Summary												
vrea Type:	Other											
Cycle Length: 105	Other											
Actuated Cycle Length: 105												
Offset: 0 (0%), Referenced to ph	nase 2:SBTL and	6:NBTL, St	art of Gree	n								
latural Cycle: 65												
Control Type: Actuated-Coordin												
95th percentile volume exce		eue may be	longer.									
Queue shown is maximum a	iter two cycles.											
Splits and Phases: 1: Highwa	y 10 & Lafarge A	ccess/Jame	s Dick Acc	229								
	y to a calarge /	000030/001110	5 DIGK 7100	000					0.32	<u>.</u>		5
🕈 Ø2 (R)										04		
83.3 s									21	.7 s	-	
										4		
Ø6 (R)									1	108		
33.3 s									20	. / 5		

HCM Signalized Intersection Capacity Analysis 1: Highway 10 & Lafarge Access/James Dick Access

2019 Background Traffic AM Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		÷			4		*	**	1	1	**1	
Traffic Volume (vph)	0	0	79	9	0	10	55	739	16	11	2366	ł
Future Volume (vph)	0	0	79	9	0	10	55	739	16	11	2366	;
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	
Fit 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	(
Lane Group Flow (vph)	0	39	0	0	2	0	55	739	12	11	2371	C
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	н	M 2000 Le	el of Servi	-0		A			
HCM 2000 Volume to Capacity ratio			0.68	HCM 2000 Level of Service					~			
Actuated Cycle Length (s)			105.0	Sum of lost time (s)					14.0			
Intersection Capacity Utilization			71.9%		J Level of S				14.0 C			
Analysis Period (min)			15	10	20101010	0.1100						
c Critical Lane Group			10									

TMIG

Synchro 10 Report

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
ane Configurations		4			4		<u>5</u>	↑ 2159	1	5	##%	
raffic Volume (vph)	4	0	40	0		10	24		0	0	959	
uture Volume (vph)	4 1900	0	40 1900	0	0	10	24	2159 1900	0	0	959 1900	190
deal Flow (vphpl) Storage Length (m)	0.0	1900	0.0	1900 0.0	1900	1900 0.0	1900 60.0	1900	1900 80.0	1900 80.0	1900	80.
Storage Lanes	0.0		0.0	0.0		0.0	1		1	1		00.
aper Length (m)	7.6		Ŭ	7.6		Ū	40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Ye
ink Speed (k/h)		80			80			80			80	
ink Distance (m)		135.6			181.9			201.1			258.8	
ravel Time (s) ane Group Flow (vph)	0	6.1 44	0	0	8.2 10	0	24	9.0 2159	0	0	11.6 960	
um Type	Perm	NA	0	U	NA	U	Perm	2159 NA	Perm	Perm	NA	
Protected Phases	T Gilli	8			4		T CHI	6	r cim	1 cmi	2	
Permitted Phases	8	Ű		4			6	Ű	6	2	-	
Detector Phase	8	8		4	4		6	6	6	2	2	
Switch Phase												
/linimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
/inimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
otal Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
otal Split (%) 'ellow Time (s)	20.7% 4.1	20.7% 4.1		20.7% 4.1	20.7% 4.1		79.3% 5.9	79.3% 5.9	79.3% 5.9	79.3% 5.9	79.3% 5.9	
I-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
ost Time Adjust (s)	2.0	0.0		2.0	0.0		0.0	0.0	0.0	0.0	0.0	
otal Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
.ead/Lag												
ead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
/c Ratio		0.16 13.2			0.04		0.05	0.73			0.24 3.6	
Control Delay Queue Delay		0.0			0.2		4.3 0.0	9.3 0.0			0.0	
otal 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	
nternal Link Dist (m)		111.6			157.9			177.1			234.8	
urn Bay Length (m)							60.0					
Base Capacity (vph)		271			276		458	2957			3978	
Starvation Cap Reductn		0			0		0	0			0	
Spillback Cap Reductn Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.16			0.04		0.05	0.73			0.24	
ntersection Summary	Other											
vrea Type: Cycle Length: 105	Other											
Actuated Cycle Length: 105												
Offset: 0 (0%), Referenced to ph	ase 2:SBTL and	6:NBTL, St	art of Gree	n								
latural Cycle: 80												
Control Type: Actuated-Coordina	ated											
Splits and Phases: 1: Highwa	y 10 & Lafarge A		- Diel: A									
I I I I I I I I I I I I I I I I I I I	y 10 & Lalarge P	UCESS/JdITIE	S DICK ACC	555								
Ø2 (R)									I 1	V Ø4		
33.3 s									21	.7 s		
									_			
Ø6 (R)									- -	- 1Ø8		
33.3 s									21	.7s		

HCM Signalized Intersection Capacity Analysis 2019 Background Traffic PM Peak Hour 1: Highway 10 & Lafarge Access/James Dick Access ۰. ٦ 1 1 -\• -+ \mathbf{r} EBL NBL NBT NBR Movement EBT EBR WBL WBT WBR SBT Lane Configurations 2159 2159 ****1** 959 **1 1** 24 Traffic Volume (vph) 10 4 40 Future Volume (vph) 40 24 959 10 Ideal Flow (vphpl) 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 1.00 Flt Permitted 0.97 1.00 0.29 1.00 1631 1662 Satd. Flow (perm) 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 Adj. Flow (vph) 0 40 0 10 24 2159 959 4 0 0 0 RTOR Reduction (vph) 0 40 0 0 0 0 0 0 0 0 9 Lane Group Flow (vph) 0 4 0 0 0 24 2159 0 0 960 Heavy Vehicles (%) Turn Type Protected Phases 0% 0% 0% 0% 0% 0% 0% 3% 0% 0% 10% Perm NA NA Perm NA Perm Perm NA 8 4 6 2 Permitted Phases 8 4 6 2 6 Actuated Green, G (s) 82.0 82.0 82.0 9.0 9.0 Effective Green, g (s) Actuated g/C Ratio 9.0 9.0 82.0 82.0 82.0 0.09 0.09 0.78 0.78 0.78

6.7

3.0

139

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 1.00 1.00 1.00 Progression Factor 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 Α Intersection Summary HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio HCM 2000 Level of Service 7.6 Α 0.71 Sum of lost time (s) Actuated Cycle Length (s) Intersection Capacity Utilization 14.0 105.0 ICU Level of Service 83.8% E Analysis Period (min) 15 c Critical Lane Group

6.7

3.0

142

0.00

7.3

3.0

428 2767

7.3

3.0

c0.61

TMIG

Clearance Time (s)

Vehicle Extension (s)

Lane Grp Cap (vph) v/s Ratio Prot

Synchro 10 Report

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SF

1900

1.00

0%

7.3

3.0

3723

0.20

NBR 2 1900 80.0 1 Yes 2 Perm 6 6	SBL 4 4 1900 80.0 1 80.0 4 Perm	SBT ++12 1194 1194 1900 80 258.8 11.6 1195	190(80.((
2 1900 80.0 1 Yes 2 Perm 6	4 4 1900 80.0 1 80.0	1194 1900 80 258.8 11.6 1195	1 1900 80.0 (
2 1900 80.0 1 Yes 2 Perm 6	4 1900 80.0 1 80.0	1194 1900 80 258.8 11.6 1195	190(80.((
1900 80.0 1 Yes 2 Perm 6	1900 80.0 1 80.0	80 258.8 11.6 1195	190 80.0
80.0 1 Yes 2 Perm 6	80.0 1 80.0	80 258.8 11.6 1195	80.
1 Yes 2 Perm 6	1 80.0 4	258.8 11.6 1195	
Yes 2 Perm 6	4	258.8 11.6 1195	
2 Perm 6	4	258.8 11.6 1195	Ye
2 Perm 6		258.8 11.6 1195	
Perm 6		11.6 1195	
Perm 6		1195	
Perm 6			
6	Perm		
		NA	
	0	2	
0	2	2	
	2	2	
25.0	25.0	25.0	
32.3	32.3	32.3	
83.3	83.3	83.3	
79.3%	79.3%	79.3%	
5.9	5.9	5.9	
7.3	7.3	7.3	
C-Max	C-Max	C-Max	
0.0	4.2	3.9	
0.0	0.0	0.0	
0.0	4.2	3.9	
0.0			
0.0	1.1		
90.0	00.0	234.8	
		3078	
0	0	0	
0.00	0.01	0.30	
			,
	1.4 0.0 7.3 C-Max 0.00 0.0 0.0 0.0 0.0 0.0 0.0 1368 0 0 0 0 0	1.4 1.4 0.0 0.0 7.3 7.3 0.00 0.01 0.0 0.1 0.0 4.2 0.0 0.2 0.0 1.1 80.0 80.0 1368 301 0 0 0 0 0 0 0 0	1.4 1.4 1.4 0.0 0.0 0.0 7.3 7.3 7.3 C-Max C-Max 0.00 0.01 0.0 0.01 0.30 0.0 0.0 4.2 3.9 0.0 0.0 0.0 4.2 3.9 0.0 0.0 0.0 0.0 0.2 28.3 0.0 1.1 34.3 234.8 80.0 80.0 1368 301 3978 0 0 0 0 0 0 0 0 0 0 0

۰. ٦ 1 -۴ \• Ť \mathbf{r} ⋞ EBL NBL NBT NBR Movement EBT EBR WBL WBT WBR SBT SB Lane Configurations **↑** 1328 ****1 1** 4. 24 Traffic Volume (vph) 4 40 Future Volume (vph) 24 1328 1194 40 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 1.00 Flt Permitted 0.97 1.00 0.22 1.00 0.19 1.00 1632 1662 Satd. Flow (perm) 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) 0 40 24 1328 1194 4 0 0 2 4 RTOR Reduction (vph) 0 40 0 0 0 0 0 0 2 0 0 Lane Group Flow (vph) 0 4 0 0 24 1328 2 4 1195 Heavy Vehicles (%) Turn Type Protected Phases 0% 0% 0% 0% 0% 0% 0% 3% 0% 0% 10% 0% Perm NA NA Perm NA Perm Perm NA 8 4 6 2 Permitted Phases 8 4 6 6 Actuated Green, G (s) 82.0 82.0 82.0 82.0 82.0 9.0 9.0 Effective Green, g (s) Actuated g/C Ratio 9.0 9.0 82.0 82.0 82.0 82.0 82.0 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 3.0 139 335 2767 1275 281 Lane Grp Cap (vph) 142 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 1.00 Progression Factor 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 Α A Α A Approach Delay (s) 44.1 43.9 4.6 3.6 Approach LOS D D A Α Intersection Summary HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio HCM 2000 Level of Service 48 Α 0.44 Actuated Cycle Length (s) Intersection Capacity Utilization 105.0 Sum of lost time (s) 14.0 ICU Level of Service 71.9% С Analysis Period (min) 15 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: Highway 10 & Lafarge Access/James Dick Access

TMIG

Synchro 10 Report

2019 Background Traffic

Saturday Peak Hour

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBI
ane Configurations		4			1		5	** 739	1	۳.	**%	
Fraffic Volume (vph)	0		79	117		46	55		88	35	2366	
Future Volume (vph)	0	0	79	117	0	46	55	739	88	35	2366	
deal Flow (vphpl)	1900 0.0	1900	1900	1900 0.0	1900	1900	1900 60.0	1900	1900 80.0	1900 80.0	1900	190 80.
Storage Length (m) Storage Lanes	0.0		0.0 0	0.0		0.0	60.0		00.0	00.0		00.
Taper Length (m)	7.6		U	7.6		U	40.0			80.0		
Right Turn on Red	1.0		Yes	1.0		Yes	10.0		Yes	00.0		Ye
ink Speed (k/h)		80			80			80			80	
ink Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
ane Group Flow (vph)	0	79	0	0	163	0	55	739	88	35	2371	
furn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4		0	6	0	0	2	
Permitted Phases Detector Phase	8	8		4	4		6 6	6	6 6	2	2	
Switch Phase	đ	0		4	4		0	0	0	2	2	
Vinimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Vinimum 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%	
(ellow 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	
ost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
fotal Lost Time (s) .ead/Lag		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
.ead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
/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)		19.7 111.6			#51.6		#17.3	30.8	3.7	4.6	98.1	
nternal Link Dist (m) Furn Bay Length (m)		111.0			157.9		60.0	177.1	80.0	80.0	234.8	
Base Capacity (vph)		276			233		73	2565	1206	511	3452	
Starvation Cap Reductn		0			0		0	0	0	0	0402	
Spillback Cap Reductn		0			0		0	0	0	0	0	
torage 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	
ntersection Summary												
vea Type: Cycle Length: 105 vctuated Cycle Length: 105 Mifset: 0 (0%), Referenced to ph latural Cycle: 65 Control Type: Actuated-Coordina 95th percentile volume excee Queue shown is maximum af	ited eds capacity, qu			n								
Ø2 (R) 83.3 s	/ 10 & Lafarge A	.ccess/Jame	s Dick Acc	ess					21	Ø4 .7s		
									1	Ø8		
Ø6 (R)												

۰. 1 ٦ -1 ⋞ \mathbf{r} NBL NBT NBR Movement EBL EBT EBR WBL WBT WBR SB SBT Lane Configurations ****** 739 ****1 1 1** × × 7 Traffic Volume (vph) 117 46 55 35 0 79 Future Volume (vph) 79 117 739 35 2366 46 55 88 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 1662 Satd. Flow (perm) 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) 79 117 46 55 739 88 35 2366 0 0 0 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 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) Actuated g/C Ratio 15.0 76.0 76.0 0.72 76.0 76.0 76.0 15.0 0.14 0.14 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 3.0 237 1181 Lane Grp Cap (vph) 194 73 2565 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 5.1 1.00 Uniform Delay, d1 39.5 42.5 8.8 4.2 4.2 8.0 1.00 Progression Factor 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 A Е A А A Approach Delay (s) 39.9 49.5 8.7 9.0 Approach LOS D D A Α Intersection Summary HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio 11.5 HCM 2000 Level of Service В 0.73 Actuated Cycle Length (s) Intersection Capacity Utilization 105.0 Sum of lost time (s) 14.0 ICU Level of Service 73.5% D Analysis Period (min) 15 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: Highway 10 & Lafarge Access/James Dick Access

TMIG

Synchro 10 Report

2019 Total Traffic AM Peak Hour

Lane Configurations Image: Configurations <	are Configurations 40 40 40 40 40 40 54 0 28 24 2159 36 12 959 uture (vph) 1900		٦	-	\mathbf{r}	4	+	۰.	•	Ť	۲	1	ţ	4
Future (vph) 4 0 40 54 0 28 24 2169 38 12 959 Strage Length (m) 0.0 0.0 0.00 1900 1	Unture (vph) 4 0 40 54 0 28 24 2169 36 12 969 Strage Langth (m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1900	ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBI
'uture (vph) 4 0 40 54 0 28 24 2163 36 12 959 Strage Langh (m) 0.0 0.0 0.0 0.0 190	Unture (vph) 4 0 40 54 0 28 24 2169 36 12 969 Strage Langth (m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1900	ane Configurations		afa.			afa.		<u>8</u>	**	1	5	##1	
'uture (vph) 4 0 40 54 0 28 24 2163 36 12 959 Strage Langh (m) 0.0 0.0 0.0 0.0 190	Unture (vph) 4 0 40 54 0 28 24 2169 36 12 969 Strage Langth (m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1900						0		24	2159	36	12	959	
Strage Langh (m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1 1 1 Taper Length (m) 7.6 7.6 40.0 80.0	Strage Length (m) 0.0 0.0 0.0 0.0 0.0 80.0 80.0 80.0 80.						0						959	
Storage Langis 0 0 0 1 1 1 Storage Langis 0 0 0 1 1 1 Sign I turn on Red Yes Yes Yes Was No. Sign I turn on Red Yes Yes Yes No. 00 16 Link Distance (m) 135.6 181.9 201.1 225.8 90 11.6 16 Link Distance (m) 0 44 0 0 82.0 2.4 21.9 96 11.2 960 Link Type Perm NA Perm NA Perm NA 1 1.6 1 Link Type Perm NA Perm NA 6 6 2	Storage Langis 0 0 0 1 1 1 Storage Langis 0 0 0 1 1 1 Sign I trum on Red Yes Yes Yes Yes Yes Sign I trum on Red Yes Yes Yes Yes Yes Yes Sins Speed (M) 0 61 18.9 20.1 258.8 258.8 Line Distance (mp) 0 44 0 0 82.0 2.4 2199 36 112 960 Line Type Perm< NA			1900			1900			1900			1900	
Tager Length (m) 7.6 7.6 7.6 40.0 80.0 The second (wh) 80 80 80 80 80 80 80 80 80 80 80 80 80	Tager Length (m) 7.6 7.6 7.6 40.0 80.0 The set of (km) 80 80 80 80 80 80 80 80 80 80 80 80 80													80.
Ves Ves <td>Ves Ves Ves<td></td><td></td><td></td><td>U</td><td></td><td></td><td>U</td><td></td><td></td><td>1</td><td></td><td></td><td></td></td>	Ves Ves <td></td> <td></td> <td></td> <td>U</td> <td></td> <td></td> <td>U</td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td>				U			U			1			
nin Speed (Mr)	nin Speed (Mr) in Speed (Mr) in Speed (Mr) in Speed (Mr) ins Detained in Detained in Detained in Speed (Mr) is Detained is De		7.0		Yes	7.0		Yes	40.0		Yes	00.0		Ye
ink Distance (m) 135.6 181.9 20.1.1 258.8 inver Line (s) 6.1 8.2 9.0 11.6 are Group Flow (vph) 0 44 0 0 82 0 24 2159 36 12 960 ium Type Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA	ink Distance (m) 135.6 181.9 20.11 258.8 inver Time (s) 6.1 8.2 9.0 11.6 are Group Flow (vph) 0 44 0 0 82 0 24 2159 36 12 960 ium Type Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm Perm NA Perm Perm NA Perm Perm NA Perm NA Perm Perm NA Perm NA Perm NA Perm NA Perm Perm NA Perm Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm Perm NA Perm Perm NA Perm Na Perm NA Perm Na Perm Perm NA Perm Perm NA Perm N			80	163		80	163		80	163		80	10
Tarvel Time (s) 6.1 6.2 9.0 11.6 are Group Flow (vph) 0 44 0 0 82 0.2 2159 36 12 960 um Type Perm NA Perm NA Perm NA Perm NA Totected Phases 8 4 6 6 2 2 Winth Phase 8 4 4 6 6 2 2 Minimum Initial (s) 15.0 15.0 15.0 25.0 </td <td>Tarvel Time (s) 6.1 8.2 9.0 11.6 are Group Flow (vph) 0 4.4 0 0 8.2 0.2 2159 36 12 960 um Type Perm NA Perm NA Perm NA Perm NA trained Chapes 8 4 6 6 2 2 demined Phases 8 4 4 6 6 2 2 diminum Solit (s) 15.0 15.0 15.0 25.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9</td> <td></td>	Tarvel Time (s) 6.1 8.2 9.0 11.6 are Group Flow (vph) 0 4.4 0 0 8.2 0.2 2159 36 12 960 um Type Perm NA Perm NA Perm NA Perm NA trained Chapes 8 4 6 6 2 2 demined Phases 8 4 4 6 6 2 2 diminum Solit (s) 15.0 15.0 15.0 25.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9													
ane Group Flow (vph) 0 44 0 0 82 0 24 2159 36 12 960 Protected Phases 8 4 6 6 2 2 Parmited Phases 8 4 6 6 6 2 2 Vector Phase 8 4 4 6 6 6 2 2 Witch Phase 150 15.0 15.0 15.0 25.0	ane Group Flow (vph) 0 44 0 0 82 0 24 2159 36 12 960 Protected Phases 8 4 6 6 2 2 Parmited Phases 8 4 6 6 2 2 Vector Phase 8 4 4 6 6 2 2 Witch Phase 150 150 150 150 250													
Protecting Phases 8 8 4 6 6 2 2 Permitted Phases 8 4 6 6 6 2 2 Permitted Phases 8 4 6 6 6 2 2 Permitted Phases 8 8 4 4 6 6 6 2 2 Witch Phase 8 8 8 4 4 6 6 6 2 2 Witch Phase 8 Witch Pha	Protecting Phases 8 8 4 6 6 2 2 Permitted Phases 8 4 6 6 6 2 2 Permitted Phases 8 4 6 6 6 2 2 Permitted Phases 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 8 4 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		0		0	0		0	24	2159	36	12		
Permited Phases 8 8 4 6 6 6 2 2 Delector Phase 8 8 4 4 6 6 6 2 2 Minimum Initial (s) 115.0 15.0 15.0 15.0 25.0 25.0 25.0 25.0 25.0 Minimum Initial (s) 15.0 15.0 15.0 15.0 25.0 25.0 25.0 25.0 25.0 Total Split (s) 21.7 21.7 21.7 21.7 17 83.3 83.3 83.3 83.3 83.3 83.3 83.3 183.3 Cital Split (s) 21.7 21.7 21.7 21.7 18.3 83.3 83.3 83.3 83.3 83.3 184.5 1	Permited Phases 8 8 4 6 6 6 2 2 Delector Phase 8 8 4 4 6 6 6 2 2 Minimum Initial (s) 115.0 15.0 15.0 15.0 25.0 25.0 25.0 25.0 25.0 Minimum Initial (s) 15.0 15.0 15.0 15.0 25.0 25.0 25.0 25.0 25.0 Total Split (s) 21.7 21.7 21.7 21.7 17 83.3 83.3 83.3 83.3 83.3 83.3 83.3 Chal Split (s) 21.7 21.7 21.7 21.7 18.3 83.3 83.3 83.3 83.3 83.3 83.3 HRed Time (s) 4.1 4.1 4.1 4.1 59 59 59 59 59 59 59 Chal Split (s) 2.6 2.6 2.6 2.6 2.6 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4		Perm			Perm			Perm		Perm	Perm		
Delector Phase 8 8 4 4 6 6 6 2 2 Witch Phase 15.0 15.0 15.0 15.0 15.0 25.0<	Delector Phase 8 8 4 4 6 6 6 2 2 Witch Phase 15.0 15.0 15.0 15.0 15.0 25.0<			8			4			6			2	
Switch Phase Ainimum Initial (s) 15.0 15.0 15.0 15.0 25.0	Switch Phase Animum Initial (s) 15.0 15.0 15.0 15.0 25.0													
Alimimu nihal (s) 15.0 15.0 15.0 15.0 15.0 25.0 25.0 25.0 25.0 25.0 Alimimum Spit (s) 21.7 21.7 21.7 21.7 32.3 32.3 32.3 32.3 32.3 32.3 32.3 32	Inimum Initial (s) 15.0 15.0 15.0 15.0 15.0 25.0 25.0 25.0 25.0 25.0 Animum Spit (s) 21.7 21.7 21.7 21.7 21.7 32.3		8	8		4	4		6	6	6	2	2	
Minimum Spit (s) 21.7 21.7 21.7 21.7 21.7 32.3 32.3 32.3 32.3 32.3 32.3 Total Spit (s) 21.7 21.7 21.7 21.7 83.3 83.3 83.3 83.3 83.3 Total Spit (s) 20.7% 20.7% 20.7% 20.7% 79.3% 79.3% 79.3% 79.3% 79.3% fellow Time (s) 4.1 4.1 4.1 4.1 59 59 5.9 5.9 5.9 5.9 5.9 Level Spit (s) 20.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Minimum Spit (s) 21.7 21.7 21.7 21.7 21.7 32.3 32.3 32.3 32.3 32.3 32.3 Total Spit (s) 21.7 21.7 21.7 21.7 83.3 83.3 83.3 83.3 83.3 Cotal Spit (s) 20.7% 20.7% 20.7% 20.7% 79.3		45.0	15.0		45.0	15.0		05.0	05.0	05.0	05.0	05.0	
Ordel Split (s) 21.7 21.7 21.7 21.7 21.7 21.7 21.7 83.3 83.	Total Split (s) 21.7 21.7 21.7 21.7 21.7 83.3 83.3 83.3 83.3 83.3 83.3 79.3% 73.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3													
Total Split (%) 20.7% 20.7% 20.7% 20.7% 79.3% 73.3% 73.3% 73.3% 73.3% 73.3% 73.3% 73.3% 73.3% 73.3% 73.3% 73.3% <td>Total Split (%) 20.7% 20.7% 20.7% 20.7% 79.3% 70.3% 73 73 73 <</td> <td></td>	Total Split (%) 20.7% 20.7% 20.7% 20.7% 79.3% 70.3% 73 73 73 <													
fellow Time (s) 4.1 4.1 4.1 4.1 5.9 <td>fellow Time (s) 4.1 4.1 4.1 4.1 5.9 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0<td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td>	fellow Time (s) 4.1 4.1 4.1 4.1 5.9 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 <td></td>													
All-Red Time (c) 2.6 2.6 2.6 2.6 1.4 1.4 1.4 1.4 1.4 1.4 1.4 Last Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	NLRed Time (c) 2.6 2.6 2.6 2.6 1.4													
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eadlag Optimize? eadlag Optimize? Recall Mode None None None None C-Max C-M	eadlag Optimize? eadlag Optimize? Recall Mode None None None None C-Max C-M			0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Value None None None None C-Max C-M	Value None None None None C-Max C-M	.ead/Lag		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
<i>h</i> 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 Zoure Delay 0.0 0.0 0.0 0.0 0.0 0.0 Cfol Delay 13.2 25.3 4.6 11.7 1.3 10.2 4.5 Zoure Length 50th (m) 0.0 6.7 1.2 141.4 0.0 0.7 2.14. Zoure Length 55th (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 Tim Bay Length (m) 60.0 80.0 80.0 Save Cap Reduct 0 0 0 0 0 0 0 0 0 Savage Cap Reduct 0 0 0 0 0 0 0 0 Savage Cap Reduct 0 0 0 0 0 0 0 0 Storage Cap Reduct 0 0 0 0 0 0 0 0 0 Storage Cap Reduct 0 0 0 0 0 0 0 0 0 Storage Cap Reduct 0 0 0 0 0 0 0 0 0 0 Storage Cap Reduct 0 0 0 0 0 0 0 0 0 0 0 Storage Cap Reduct 0 0 0 0 0 0 0 0 0 0 0 0 Storage Cap Reduct 0 0 0 0 0 0 0 0 0 0 0 0 Storage Cap Reduct 0 0 0 0 0 0 0 0 0 0 0 0 Storage Cap Reduct 0 0 0 0 0 0 0 0 0 0 0 0 0 Storage Cap Reduct 0 0.16 0.34 0.06 0.78 0.03 0.16 0.26 Hersection Summary Here Type: Other Sycle Length: 105 Storated Cycle Length: 105 S	νic 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 Zueue Delay 0.0 0.													
Control Delay 13.2 25.3 4.6 11.7 1.3 10.2 4.5 Datace Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Datace Delay 13.2 25.3 4.6 11.7 1.3 10.2 4.5 Datace Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Datace Length Sth (m) 0.0 6.7 1.2 14.1 0.0 0.7 21.4 Dateue Length Sth (m) 9.5 20.6 3.5 177.6 2.4 3.4 26.4 Item Bay Length Sth (m) 111.6 157.9 177.1 23.4 26.4 Base Capacity (vph) 271 241 427 2761 1280 76 3714 Staraviton Cap Reductn 0 0 0 0 0 0 0 Spliback Cap Reductn 0 0 0 0 0 0 0 Spliback Cap Reductn 0 0.34 0.66 0.78 0.03 0.16 0.26 Intersection Summary Intersection Summary Intersection Summary Intersection Control Starage Capacity (vph) Intersection Summary Intersection Summary	Control Delay 13.2 25.3 4.6 11.7 1.3 10.2 4.5 Datace Delay 0.0 <		None			None								
Dates 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 Dates Length 50th (m) 0.0 6.7 1.2 141.4 0.0 0.7 21.4 Dates Length 55th (m) 9.5 20.6 3.5 177.6 2.4 3.4 26.6 Dates Length 55th (m) 11.6 157.9 177.7 2.4 3.4 26.6 Jarues Length 50th (m) 11.6 157.9 177.6 2.4 3.4 26.6 Jarues Capacity (rph) 271 241 427 2761 1280 76 3714 Starvatin Cap Reductn 0	Data 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 Dateue Length 50th (m) 0.0 6.7 1.2 141.4 0.0 0.7 21.4 Dateue Length 59th (m) 9.5 20.6 3.5 177.6 2.4 3.4 26.4 Dateue Length 59th (m) 9.5 20.6 3.5 177.6 2.4 3.4 26.4 Dateue Length 59th (m) 11.6 157.9 177.7 2.4 3.4 26.4 Juma Bac Capacity (xph) 27.1 24.1 42.7 27.61 1280 7.6 3.714 Starvatin Cap Reduch 0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>													
Total Delay 13.2 25.3 4.6 11.7 1.3 10.2 4.5 Daueue Length Sth (m) 0.0 6.7 1.2 14.14 0.0 0.7 21.4 Daueue Length Sth (m) 9.5 20.6 3.5 177.6 2.4 23.4 Daueue Length Sth (m) 11.6 157.9 177.1 23.4 23.4 Data Link Dist (m) 111.6 157.9 177.1 23.4 23.4 Dim Bay Length (m) 60.0 80.0 80.0 80.0 Jase Capacity (vph) 27.1 24.1 42.7 27.61 1280 7.6 37.14 Jase Cap Reductn 0 0 0 0 0 0 0 Splitback Cap Reductn 0 0 0 0 0 0 0 Starvation Cap Reductn 0 0.34 0.06 0.76 0.03 0.16 0.26 Intersection Summary 16 0.34 0.06 0.76 0.03 0.16 0.26 Vela Length: 105 15 16 0.34 0.06 0.76 0.33 0.16 0.26 Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Acceess 20.17 20.4	Total Delay 13.2 25.3 4.6 11.7 1.3 10.2 4.5 Daueue Length Sth (m) 0.0 6.7 1.2 14.14 0.0 0.7 21.4 Daueue Length Sth (m) 9.5 20.6 3.5 177.6 2.4 23.4 Daueue Length Sth (m) 11.6 157.9 177.1 23.4 23.4 Daueue Length Sth (m) 11.6 157.9 177.1 23.4 23.4 Darbardtor Cap Reduct 0 0 0 0 0 Sharvation Cap Reduct 0 0 0 0 0 0 Sharvation Cap Reduct 0 0 0 0 0 0 Starvation Cap Reduct 0 0 0 0 0 0 Starvation Cap Reduct 0 0 0 0 0 0 Starvation Cap Reduct 0.16 0.34 0.06 0.78 0.03 0.16 0.26 Intersection Summary - - - - - - - Vela Length: 105 - - - - - - - Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access													
Dause Length 50th (m) 0.0 6.7 1.2 141.4 0.0 0.7 21.4 Dause Length 50th (m) 9.5 20.6 3.5 177.6 2.4 3.4 26.4 Dause Length 50th (m) 9.5 20.6 3.5 177.6 2.4 3.4 26.4 Turm Bay Length (m) 111.6 157.9 177.1 23.4 26.4 24.8 Sase Capacity (vph) 27.1 241 427 27.61 1280.0 80.0 80.0 Sase Capacity (vph) 27.1 241 427 27.61 1280.0 76 37.14 Starvation Cap Reductn 0	Dause Length 50th (m) 0.0 6.7 1.2 141.4 0.0 0.7 21.4 Dause Length 50th (m) 9.5 20.6 3.5 177.6 2.4 3.4 26.4 Dause Length 50th (m) 9.5 20.6 3.5 177.6 2.4 3.4 26.4 Turm Bay Length (m) 111.6 157.9 177.1 20.0 80.0 80.0 3.7 Sase Capacity (vph) 27.1 241 427 27.61 128.0 76 37.14 Starvation Cap Reductn 0													
Jaurue Length 95th (m) 9.5 20.6 3.5 177.6 2.4 3.4 26.4 Internal Link Dist (m) 111.6 157.9 177.1 234.8 234.8 Tim Bay Length (m) 60.0 80.0 80.0 80.0 Jaure Cappedity (rph) 271 24.1 427 2761 1280 76 3714 Jauration Cap Reductin 0 0 0 0 0 0 0 Spliback Cap Reductin 0 0 0 0 0 0 0 Spliback Cap Reductin 0 0 0 0 0 0 0 Spliback Cap Reductin 0.16 0.34 0.06 0.78 0.03 0.16 0.26 Intersection Summary Intersection Summary Intersection Summary Intersection Summary Intersection Summary Vipile Length: 105 Other Syleic Length: 105 Statuated Cycle: 80 Intersection Summary Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access Intersection Summary Intersection Summary Vipile Length: 105 Statuated Cycle: 80 Intersection Summary Intersection Summary Intersection Summary Splits and Phases: 1: Highway 10 & Lafarge Access/Jam	Jacue Length 95th (m) 9.5 20.6 3.5 177.6 2.4 3.4 26.4 Internal Link Dist (m) 111.6 157.9 177.1 234.8 234.8 Tim Bay Length (m) 60.0 80.0 80.0 80.0 Jase Capacity (rph) 271 24.1 427 276 1280 76 3714 Jase Capacity (rph) 271 24.1 427 276 1280 76 3714 Sharvatin Cap Reductin 0 0 0 0 0 0 0 Spilback Cap Reductin 0 0 0 0 0 0 0 Starge Cap Reductin 0 0 0 0 0 0 0 Starge Cap Reductin 0.16 0.34 0.06 0.78 0.03 0.16 0.26 Intersection Summary Extracted Cycle Length: 105 Vipele Length: 105 Start of Green Start of Green Value Cycle: 80 20.17 21.7 24.1 Sortiot Type: Actuated -Coordinated 21.7 24.2 21.7 24.2													
nternal Link Dist (m) 111.6 157.9 177.1 234.8 furm Bay Length (m) 60.0 80.0 80.0 Sase Capacity (vph) 271 241 427 2761 1280 76 3714 Jarvation Cap Reductn 0 0 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	nternal Link Dist (m) 111.6 157.9 177.1 234.8 furm Bay Length (m) 60.0 80.0 80.0 Sase Capacity (vph) 271 241 427 2761 1280 76 3714 Jarvation Cap Reductn 0 0 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 0 0 Reduced vic Rato 0.16 0.34 0.06 0.78 0.03 0.16 0.26 Intersection Summary Varea Type: Other Syce Length: 105 Spills and Phases: 1: Highway 10 & Lafarge Access/James Dick Access 1 202 (R) 33.6 10 111.6 157.9 177.1 234.8 60.0 80.0 80.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0													
Turn Bay Length (m) 60.0 80.0 80.0 80.0 Base Capacity (vph) 271 241 427 2761 1280 76 3714 Stavation Cap Reducth 0	fum Bay Length (m) 60.0 80.0 80.0 80.0 Base Capacity (vph) 271 241 427 2761 1280 76 3714 Base Capacity (vph) 271 241 427 2761 1280 76 3714 Stavation Cap Reductin 0 0 0 0 0 0 0 0 Spillback Cap Reductin 0 0 0 0 0 0 0 0 0 Storage Cap Reductin 0								0.0		2	0.1		
Slarvation Cap Reductn 0 <td>Slarvation Cap Reductn 0<td>furn Bay Length (m)</td><td></td><td></td><td></td><td></td><td></td><td></td><td>60.0</td><td></td><td>80.0</td><td>80.0</td><td></td><td></td></td>	Slarvation Cap Reductn 0 <td>furn Bay Length (m)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>60.0</td> <td></td> <td>80.0</td> <td>80.0</td> <td></td> <td></td>	furn Bay Length (m)							60.0		80.0	80.0		
Slarvation Cap Reductn 0 <td>Slarvation Cap Reductn 0<td>Base Capacity (vph)</td><td></td><td>271</td><td></td><td></td><td>241</td><td></td><td>427</td><td>2761</td><td>1280</td><td>76</td><td>3714</td><td></td></td>	Slarvation Cap Reductn 0 <td>Base Capacity (vph)</td> <td></td> <td>271</td> <td></td> <td></td> <td>241</td> <td></td> <td>427</td> <td>2761</td> <td>1280</td> <td>76</td> <td>3714</td> <td></td>	Base Capacity (vph)		271			241		427	2761	1280	76	3714	
Sbrage Cap Reductin 0	Sbrage Cap Reductin 0	Starvation Cap Reductn												
Reduced v/c Ratio 0.16 0.34 0.06 0.78 0.03 0.16 0.26 Intersection Summary	Reduced vic Ratio 0.16 0.34 0.06 0.78 0.03 0.16 0.26 Intersection Summary													
ntersection Summary Area Type: Other Yop2: Length: 105 Vorde Length: 105 Offset: 00 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green Valural Cycle: 00 Software Type: Actuated-Coordinated Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access	ntersection Summary Area Type: Other Yop2: Length: 105 Vorde Length: 105 Offset: 00 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green Valural Cycle: 80 Software Cycle Length: 105 Offset: 00 (0%), Referenced Vordence V													
Area Type: Other Cycle Length: 105 Cycle Roll Cycle R	Area Type: Other Cycle Length: 105 Cycle Roll Cycle R	Reduced v/c Ratio		0.16			0.34		0.06	0.78	0.03	0.16	0.26	
Syde Length: 105 Actuated Cycle Length: 105 Statuted Cycle Length: 105 Statuted Cycle: 80 Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access ✓ 02 (R) 33.3 c ✓ 04 21.7 c	Sycle Length: 105 Actuated Cycle Length: 105 Statuted Cycle: 80 Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access ✓ Ø2 (R) 83.3 s ✓ Ø4 Ø4 Ø21.7 s	ntersection Summary												
Adviated Cycle Length: 105 Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green Valural Cycle: 0 Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access 02 (R) 03.3 c 04 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 05 04 05 05 05 05 05 05 05 05 05 05	Actuated Cycle Length: 105 Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green Valural Cycle: 0 Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access 02 (R) 03.3 c 04 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 04 05 05 05 05 05 05 05 05 05 05	Area Type:	Other											
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green Vatural Cycle: 80 Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access Ø2 (R) 83.3 s	Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green Vatural Cycle: 80 Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access Ø2 (R) 83.3 s													
Valural Cycle: 80 Control Type: Actuated-Coordinated Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access	Valural Cycle: 80 Control Type: Actuated-Coordinated Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access													
Control Type: Actuated-Coordinated Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access 02 (R) 03.3 s 21.7 s	Control Type: Actuated-Coordinated Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access Ø2 (R) Ø3.3 s 21.7 s		ase 2:SBTL and	I 6:NBTL, St	art of Gree	n								
Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access	Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access ✓ Ø2 (R) Ø2 (R) Ø2 (R) Ø2 (R)													
Ø2 (R) Ø3.3s ▲	Ø2 (R) 33.35 221.7 5 ■	control Type: Actuated-Coordina	ited											
Ø2 (R) Ø3.3s ▲	Ø2 (R) 33.35 221.7 5 ■	Solite and Phases: 1: Hinhway	10 & Lafarne 4	cross/lame	s Dick Acc	220								
83.3s 21.7s	83.3s 21.7s		To a Lalarge /	000030/001110	5 DIGK / 100						0.32	<u>.</u>		
33.3s 21.7s	33.3s 21.7s	Ø2 (R)										04		
▲ Ø6 (R) 33,3 s 21.7 s 21.7 s	▲ 26 (R) 33,3 s 21.7 s	83.3 s									21	.7 s		
₩ 26 (R)	1 1 26 (R)											4	1.1	-
21.7 s	21.7 s	Ø6 (R)									1	08		
		83.3 s									21	.7s		

Novement		-	`	-	-	<u> </u>	•	T		×	÷	-
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	• SBT	SBF
ane Configurations	LUL		LDIX	WDL		WDIN	NDL NDL	**	1	300	441	501
Traffic Volume (vph)	4	4	40	54	4	28	24	2159	36	12	959	
uture Volume (vph)	4	0	40	54	0	28	24	2159	36	12	959	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
fotal Lost time (s)	1900	6.7	1900	1900	6.7	1900	7.3	7.3	7.3	7.3	7.3	190
ane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
ane Ulli. Factor		0.88					1.00	1.00	0.85		1.00	
					0.95					1.00		
It 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	
It 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	1.0
Adj. Flow (vph)	4	0	40	54	0	28	24	2159	36	12	959	
RTOR Reduction (vph)	0	39	0	0	40	0	0	0	9	0	0	
ane Group Flow (vph)	0	5	0	0	42	0	24	2159	27	12	960	
leavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	10%	00
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	
/ehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	
ane Grp Cap (vph)		186			162		413	2666	1228	72	3587	
/s Ratio Prot		100			102			c0.61	TELO		0.20	
/s Ratio Perm		0.00			c0.03		0.04	00.01	0.02	0.12	0.20	
/c Ratio		0.03			0.26		0.06	0.81	0.02	0.17	0.27	
Jniform 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	
ncremental 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	
evel of Service		41.4 D			4J.J		3.0 A	B	3.5 A	0.0 A	4.2 A	
Approach Delay (s)		41.4			43.3		~	10.8	~	~	4.3	
Approach LOS		41.4 D			40.0 D			B			4.5 A	
ntersection Summary												
ICM 2000 Control Delay			10.1	HCM 2000 Level of Service		e		В				
ICM 2000 Volume to Capacity ratio			0.74	HCINI 2000 Level of Service			-					
Actuated Cycle Length (s)			105.0	Su	m of lost tim	e (s)			14.0			
ntersection Capacity Utilization			83.8%		J Level of S				E			
Analysis Period (min)			15	101					-			

TMIG

Synchro 10 Report

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
ane Configurations		4			4		5	** 1328	1	5	ቀ ቶሴ	
raffic Volume (vph)	4		40	54		20	24		38	16	1194	
uture Volume (vph)	4	0	40	54	0	20	24	1328	38	16	1194	
deal Flow (vphpl)	1900 0.0	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
Storage Length (m) Storage Lanes	0.0		0.0 0	0.0 0		0.0 0	60.0 1		80.0 1	80.0 1		80.
aper Length (m)	7.6		U	7.6		U	40.0			80.0		
Right Turn on Red	1.0		Yes	7.0		Yes	40.0		Yes	00.0		Ye
ink Speed (k/h)		80			80			80			80	
ink Distance (m)		135.6			181.9			201.1			258.8	
ravel Time (s)		6.1			8.2			9.0			11.6	
ane Group Flow (vph)	0	44	0	0	74	0	24	1328	38	16	1195	
urn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	0	8			4		c	6	6	0	2	
Permitted Phases Detector Phase	8	8		4	4		6 6	6	6 6	2	2	
Switch Phase	0	0		4	4		0	U	U	2	2	
/inimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
/inimum Split (s)	21.7	21.7		21.7	21.7		32.3	32.3	32.3	32.3	32.3	
otal Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	83.3	83.3	83.3	
otal Split (%)	20.7%	20.7%		20.7%	20.7%		79.3%	79.3%	79.3%	79.3%	79.3%	
'ellow Time (s)	4.1	4.1		4.1	4.1		5.9	5.9	5.9	5.9	5.9	
II-Red Time (s)	2.6	2.6		2.6	2.6		1.4	1.4	1.4	1.4	1.4	
ost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
otal Lost Time (s) ead/Lag		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
ead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
/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	
otal 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)		9.5 111.6			18.3		3.7	67.4	2.5	2.8	34.3	
nternal Link Dist (m) 'urn Bay Length (m)		111.0			157.9		60.0	177.1	80.0	80.0	234.8	
Base Capacity (vph)		271			238		331	2761	1280	272	3714	
Starvation Cap Reductn		0			0		0	0	0	0	0	
pillback Cap Reductn		0			0		0	0	0	0	0	
torage 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	
ntersection Summary												
vrea Type:	Other											
Cycle Length: 105	outor											
Actuated Cycle Length: 105												
Offset: 0 (0%), Referenced to ph	ase 2:SBTL and	I 6:NBTL, St	art of Gree	n								
latural Cycle: 60												
Control Type: Actuated-Coordina	ated											
plits and Phases: 1: Highway	y 10 & Lafarge A	anna / Inma	o Diek Ase									
I I I I I I I I I I I I I I I I I I I	y to a calarge P	000033/301110	5 DICK ACC	555					0.36	÷		-
Ø2 (R)										04		
33.3 s									21	.7 s		
										A		
Ø6 (R)									1	08		
3.3 s								_	21	.7s		

Movement .ane Configurations Traffic Volume (vph) -ture Volume (vph) deal Flow (vphp) Total Lost time (s) ane Util. Factor "It Protected Satd. Flow (prot) "It Permitted Satd. Flow (port) "Referentiated Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph) RTOR Reduction (vph) ane Group Flow (vph)	EBL 4 1900	EBT 0 0 1900 6.7 1.00 0.88 1.00 1678 0.97 1631	EBR 40 40 1900	WBL 54 54 1900	WBT 0 0 1900 6.7 1.00	WBR 20 20 1900	NBL 24 24 24 1900	NBT 1328 1328 1328 1900	NBR 7 38 38 38 1900	SBL 16 16	SBT ** 1194 1194	SBI
ane Configurations Traffic Volume (vph) toture Volume (vph) deal Flow (vphp) Total Lost time (s) ane Util. Factor "It Protected Satd. Flow (prot) "It Permitted Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph)	4 4 1900	0 0 1900 6.7 1.00 0.88 1.00 1678 0.97	40 40	54 54	0 0 1900 6.7	20 20	24 24 24	1328 1328	7 38 38	16 16	**1 1194 1194	
Traffic Volume (vph) Future Volume (vph) deal Flow (vphpi) Total Lost time (s) 	4 1900 1.00	0 1900 6.7 1.00 0.88 1.00 1678 0.97	40	54	0 0 1900 6.7	20	24 24	1328 1328	38 38	16 16	1194 1194	
Future Volume (vph) deal Flow (vphpl) Total Lost time (s) .ane Util. Factor Frt Til: Protected Satd. Flow (port) Flt Permitted Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph) TIOR Reduction (vph)	4 1900 1.00	0 1900 6.7 1.00 0.88 1.00 1678 0.97	40	54	0 1900 6.7	20	24	1328	38	16	1194	
deal Flow (vphp) Total Lost time (s) ane Util. Factor Fit Fit Portected Satd. Flow (port) Tit Permitted Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph) TIOR Reduction (vph)	1900	1900 6.7 1.00 0.88 1.00 1678 0.97			1900 6.7							
Total Lost time (s) aune Util. Factor Frt Flt Protected Satd. Flow (port) Flt Permitted Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph) TOR Reduction (vph)	1.00	6.7 1.00 0.88 1.00 1678 0.97	1900	1900	6.7	1900	1900	1900				
ane Util. Factor rt til Protected Satd. Flow (prot) Flt Permitted Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph) TIOR Reduction (vph)		1.00 0.88 1.00 1678 0.97								1900	1900	190
Frt Fit Protected SatJ. Flow (prot) Fit Permitted SatJ. Flow (perm) Peak-hour factor, PHF Agl, Flow (vph) TIOR Reduction (vph)		0.88 1.00 1678 0.97			1.00		7.3	7.3	7.3	7.3	7.3	
Tt Protected Sald. Flow (prot) Sald. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph) TOR Reduction (vph)		1.00 1678 0.97					1.00	0.95	1.00	1.00	0.91	
Satd. Flow (prot) "It Permitted Satd. Flow (perm) Peak-hour factor, PHF Adj, Flow (vph) RTOR Reduction (vph)		1678 0.97			0.96		1.00	1.00	0.85	1.00	1.00	
Fit Permitted Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph) ATJOR Reduction (vph)		0.97			0.96		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm) Peak-hour factor, PHF Adj. Flow (vph) RTOR Reduction (vph)					1786		1825	3544	1633	1825	4768	
Peak-hour factor, PHF Adj. Flow (vph) RTOR Reduction (vph)		1631			0.76		0.22	1.00	1.00	0.18	1.00	
Adj. Flow (vph) RTOR Reduction (vph)					1400		424	3544	1633	350	4768	
RTOR Reduction (vph)	4	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
		0	40	54	0	20	24	1328	38	16	1194	
ane Group Elow (yoh)	0	39	0	0	40	0	0	0	9	0	0	
	0	5	0	0	34	0	24	1328	29	16	1195	
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	
/ehicle 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	
/s Ratio Prot		100			100		010	c0.37	TELO	200	0.25	
/s Ratio Perm		0.00			c0.02		0.06	00.01	0.02	0.05	0.20	
/c Ratio		0.03			0.21		0.08	0.50	0.02	0.06	0.33	
Jniform 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	
ncremental 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		41.4 D			42.5 D		A.	0.0 A	A	A	4.0 A	
Approach Delay (s)		41.4			42.9		~	5.7	~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	4.5	
Approach LOS		D			D			A			A	
ntersection Summary												
HCM 2000 Control Delay			6.8	HC	M 2000 Lev	el of Servic	е		A			_
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			105.0	Su	m of lost tim	e (s)			14.0			
Intersection Capacity Utilization			71.9%		J Level of S				C			
Analysis Period (min)			15						-			

TMIG

Synchro 10 Report

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
ane Configurations		aî.			4		5	↑ 800	1	7	↑↑↑ 2562	
Fraffic Volume (vph)	0	0	79	117		46	55		88	35		
uture Volume (vph)	0	0	79	117	0	46	55	800	88	35	2562	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		80.0	80.0		80.0
Storage Lanes Faper Length (m)	7.6		0	7.6		0	1 40.0		1	1 80.0		
Right Turn on Red	7.0		Yes	7.0		Yes	40.0		Yes	00.0		Ye
ink Speed (k/h)		80	163		80	163		80	163		80	10
Link Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
ane Group Flow (vph)	0	79	0	0	163	0	55	800	88	35	2567	(
Furn 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	15.0	45.0		45.0	45.0		25.0	05.0	25.0	25.0	25.0	
Vinimum Initial (s)	21.7	15.0 21.7		15.0 21.7	15.0 21.7		25.0	25.0 32.3	25.0	25.0 32.3	25.0	
Vinimum Split (s) Fotal Split (s)	21.7	21.7		21.7	21.7		83.3	83.3	32.3 83.3	83.3	83.3	
Fotal 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	
ost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
Fotal Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
_ead/Lag												
_ead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
/c Ratio		0.29 23.4			0.70 48.0		0.75 70.7	0.31	0.07	0.07 4.7	0.74 10.4	
Control Delay Queue Delay		23.4			48.0		0.0	5.5 0.0	1.1 0.0	4.7	10.4	
Fotal 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	
nternal Link Dist (m)		111.6			157.9			177.1			234.8	
Furn 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	
ntersection Summary												
Area Type:	Other											
Cycle Length: 105												
Actuated Cycle Length: 105												
Offset: 0 (0%), Referenced to pha	ase 2:SBTL and	6:NBTL, St	art of Gree	n								
Natural Cycle: 70 Control Type: Actuated-Coordina	tod											
# 95th percentile volume excee		aua may ba	onger									
Queue shown is maximum aft		cuc may be	ionger.									
Splits and Phases: 1: Highway	10 & Lafarge A	ccess/Jame	s Dick Acc	ess								
No.										t-		
🕈 🖉 Ø2 (R)										V Ø4		-
83.3 s									21	L7s		
<t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>A</td><td></td><td></td></t<>										A		
Ø6 (R)									1	Ø8		
120 (K)												

AM Peak Hour 1: Highway 10 & Lafarge Access/James Dick Access ۰. 1 ٦ -1 ⋞ \mathbf{r} NBL NBT NBR Movement EBL EBT EBR WBL WBT WBR SB SBT SF Lane Configurations ****** 800 ****1** 2562 **1 1** × × 7 Traffic Volume (vph) 117 46 55 35 0 79 Future Volume (vph) 79 117 800 35 2562 46 55 88 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 1662 657 Satd. Flow (perm) 1363 101 3544 1633 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 79 117 46 55 800 88 35 2562 0 0 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 Heavy Vehicles (%) Turn Type 0% 0% 0% 0% 0% 0% 0% 3% 0% 0% 10% 0% 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) Actuated g/C Ratio 15.0 76.0 76.0 0.72 76.0 76.0 76.0 15.0 0.14 0.14 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 3.0 237 194 1181 475 Lane Grp Cap (vph) 73 2565 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 39.5 1.00 5.2 1.00 Uniform Delay, d1 42.5 8.8 4.2 4.2 8.7 Progression Factor 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 A A Е Α В Approach Delay (s) 39.9 49.5 8.6 10.1 Approach LOS D D A В Intersection Summary HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio 12.0 HCM 2000 Level of Service В 0.73 Actuated Cycle Length (s) Intersection Capacity Utilization 105.0 Sum of lost time (s) 14.0 ICU Level of Service 77.2% D Analysis Period (min) 15 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

TMIG

Synchro 10 Report

2024 Total Traffic

Lame Group EBL EBT EBR WBL WBT WBL NBL		٦	-	\mathbf{r}	4	+	۰.	•	t	۲	1	ţ	~
'uture Volume (vph) 4 0 40 64 6 28 24 237 36 12 1030 Strage Lanes 0 00 1900	ane Group	EBL	EBT	EBR	WBL	WBT	WBR			NBR	SBL	SBT	SBF
uture Volume (vph) 4 0 40 64 0 28 24 237 36 12 100 Solar path (m) 0.0 </td <td></td> <td></td> <td><u>م</u>ړ.</td> <td></td> <td></td> <td>£.</td> <td></td> <td>N</td> <td>**</td> <td>1</td> <td>N</td> <td>ቀቶሴ</td> <td></td>			<u>م</u> ړ.			£.		N	**	1	N	ቀ ቶሴ	
deal Flow (cychpi) 1900 1900 1900 1900 1900 1900 1900 190													
Strage Length (m) 0.0 0.0 0.0 0.0 0.0 60.0 80.0 80.0 Taper Length (m) 7.6 7.8 40.0 80.0 80.0 Taper Length (m) 7.6 7.8 40.0 80.0 80.0 Taper Length (m) 7.6 7.8 40.0 80.0 80.0 Taper Length (m) 7.6 7.8 80.0 80.0 80.0 Taper Length (m) 7.6 80.0 80.0 80.0 80.0 11.0 1.0 258.8 80.0 Taper Length (m) 7.6 80.0 80.0 10.0 82.0 9.0 4.2337 36 12 1039 Lum Type Perm NA Perm NA Perm NA Perm NA Perm NA 200.0 10.0 80.0 20.0 20.0 20.0 20.0 20.0 20.0 2													190
biorge Lange 0 0 0 0 1 1 1 biorge Lange 0 7.6 Yes Yes 80.0 80.0 sight Turn on Red Yes Yes 201.1 258.8 80.0			1900			1900			1900			1900	80.0
Top: T.6 T.6 Yes Yes Yes No ink Speed (hft) 80 80 80 80 80 80 ink Speed (hft) 135.6 1819 201.1 258.8 12 1039 ink Speed (hft) 0 44 0 0 82 9.0 12 1039 inroll Type Perm NA Perm NA Perm NA 7.6 2 2 237 36.6 12 1039 inroll Type Perm NA Perm NA Perm NA Perm NA 2 1039 2 1039 2 1039 2 1039 2 1039 2 1039 2 1039 2 1039 2 1039 2 1039 2 1039 2 2 2 2 2 2 2 2 2 2 3 32.3 32.3 32.3 32.3 32.3 32													00.
min Speed (Mn) 80 80 80 80 min Distance (min) 1356 1819 201.1 288.8 are Group Flow (vph) 0 44 0 0.82 0 24 2337 36 12 1039 furm Type Perm NA PA PA PA <				-			-	40.0			80.0		
ink Distance (m) 1356 1819 20.1 2888 are Group Flow (vph) 0 44 0 0 82 0 24 2337 36 12 1039 Um Type Perm NA Perm NA Perm NA Perm NA Perm Perm NA Permited Phases 8 4 4 6 6 2. 2 Permited Phases 8 4 4 6 6 6 2. 2 Permited Phases 8 8 4 4 6 6 6 2. 2 Statistical Phases 8 8 4 4 6 6 6 2. 2 Statistical Phases 8 8 4 4 8 6 6 6 2. 3 Witch Phase 8 8 8 4 4 8 6 6 6 2. 3 Witch Phase 8 12 17. 21.7 21.7 21.7 32.3 32.3 32.3 32.3 32.3 32.3 32.3 32				Yes			Yes			Yes			Ye
Travel Time (s) 6.1 8.2 9.0 11.6 ane Group Flow (vph) 0 44 0 0 82 0 24 2337 36 12 1039 funn Type Perm NA Perm NA Perm NA Perm NA funner Spit 8 4 6 6 6 2 2 winner Spit 15.0 15.0 15.0 15.0 22.0 25.0 </td <td></td>													
ane Group How (vph) 0 44 0 0 82 0 24 2337 36 12 1039 Urn Type Perm NA Perm NA Perm NA Perm NA Perm NA Permited Phases 8 4 6 6 2 2 Weitch Phase 8 4 6 6 2 2 Winimum Initial (s) 15.0 15.0 15.0 15.0 25.0													
Turn Type Ctr. Perm NA Perm Perm NA Perm P		0		0	0		0	24		36	12		
Protectand Phases 8 8 4 6 6 2 2 Permitted Phases 8 8 4 6 6 6 2 2 Permitted Phases 8 8 4 4 6 6 6 6 2 2 Permitted Phases 8 8 4 4 6 6 6 6 2 2 Witch Phase Witch Phas				0			U						
Parmited Phases 8 8 4 4 6 6 6 6 2 2 Switch Phase 8 8 4 4 6 6 6 6 2 2 Switch Phase 8 8 4 4 6 6 6 6 2 2 Switch Phase 8 8 4 4 6 6 6 6 2 2 Switch Phase 8 8 4 4 6 6 6 6 2 2 Switch Phase 8 8 4 4 6 6 6 6 2 2 Switch Phase 8 8 4 4 6 6 6 6 2 2 Switch Phase 8 8 4 4 6 6 6 6 2 2 Switch Phase 8 8 8 4 4 6 6 6 6 2 2 Switch Phase 8 8 8 4 4 6 6 6 6 2 2 Switch Phase 8 8 8 4 4 6 6 6 6 2 2 Switch Phase 8 8 8 4 4 6 6 6 6 6 2 2 Switch Phase 8 8 8 4 8 6 8 2 Switch Phase 8 8 8 4 4 6 6 6 6 6 2 2 Switch Phase 8 8 8 4 8 6 8 2 Switch Phase 8 8 8 4 4 6 6 6 6 6 2 2 Switch Phase 8 8 8 4 4 6 6 6 6 6 2 2 Switch Phase 8 8 8 4 4 6 6 6 6 6 2 2 Switch Phase 8 8 8 4 4 6 6 6 6 6 2 2 Switch Phase 8 8 8 4 4 6 6 6 6 6 2 2 Switch Phase 8 8 8 4 4 6 6 6 6 6 2 Switch Phase 8 8 8 8 4 4 6 6 6 6 6 2 Switch Phase 8 8 8 8 4 4 6 6 6 6 6 2 Switch Phase 8 8 8 8 4 4 6 6 6 6 6 2 Switch Phase 8 8 8 4 4 6 6 6 6 6 2 Switch Phase 8 8 8 4 4 7 8 3 8 3 8 33 8 33 8 33 8 33													
Switch Phase winimum Initial (s) 15.0 15.0 15.0 15.0 25.0	Permitted Phases												
Minimu nihai (s) 150 150 150 150 150 250 250 250 250 250 250 250 250 250 2		8	8		4	4		6	6	6	2	2	
Minimum Spit (s) 21.7 21.7 21.7 21.7 21.7 32.3 32.3 32.3 32.3 32.3 32.3 32.3 32													
Total Spit (%) 21.7 21.7 21.7 21.7 83.3<													
Total Spirit (%) 20.7% 20.7% 20.7% 20.7% 79.3%													
relow Trme (s) 4.1 4.1 4.1 5.9 <td></td>													
Ni-Red Time (s) 2.6 2.6 2.6 2.6 1.4 1.3 1.2 1.5 1.3 <td></td>													
Total Los Time (s) 6.7 6.7 7.3 </td <td></td>													
Leadl ag Leadl Ag Optimize? Recall Mode None None None None C-Max C-Max C-Max C-Max C-Max (c Ratio 0.16 0.34 0.06 0.85 0.03 0.16 0.28 Dortor Delay 13.2 25.3 4.7 14.5 1.3 10.2 4.6 Jueue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Fotal Delay 13.2 25.3 4.7 14.5 1.3 10.2 4.6 Jueue Length 50th (m) 0.0 6.7 1.2 17.5 0.0 0.7 23.6 Jueue Length 50th (m) 9.5 20.6 3.6 224.1 2.4 3.4 29.0 Jueue Length 50th (m) 9.5 20.6 3.6 224.1 2.4 3.4 29.0 Jueue Length 50th (m) 9.5 20.6 3.6 224.1 2.4 3.4 29.0 Jueue Length 50th (m) 9.5 20.6 3.6 224.1 2.4 3.4 29.0 Jueue Length 50th (m) 9.5 20.6 3.6 224.1 2.4 3.4 29.0 Jueue Length 50th (m) 9.5 20.6 3.6 224.1 2.4 3.4 29.0 Jueue Length 50th (m) 9.5 20.6 3.6 224.1 2.4 3.4 29.0 Jueue Length 50th (m) 9.5 20.6 3.6 2.24.1 2.4 3.4 29.0 Jueue Length 50th (m) 9.5 20.6 3.6 2.24.1 2.4 3.4 29.0 Jueue Length 50th (m) 9.5 20.6 3.6 2.24.1 2.4 3.4 29.0 Jueue Length 50th (m) 9.5 20.6 3.6 2.24.1 2.4 3.4 29.0 Jueue Length 50th (m) 9.5 2.25.3 4.7 14.5 1.3 10.2 4.6 Jueue Length 50th (m) 9.5 2.25.3 4.7 14.5 1.3 10.2 4.6 Jueue Length 50th (m) 9.5 2.25.1 1.280 7.6 3.714 Jueue Length 50th (m) 9.5 2.25.1 1.280 7.6 3.714 Jueue Length 50th (m) 0 0 0 0 0 0 0 0 Jueue Length 50th (m) 0.0 0 0 0 0 0 0 0 Jueue Length 50th (m) 0.0 0 0 0 0 0 0 0 Jueue Length 50th (m) 0.0 0 0 0 0 0 0 0 Jueue Length 50th (m) 0.16 0.34 0.06 0.85 0.03 0.16 0.28 Hersection Summary Hersection Summary Jueue Length 105 Jueue Length 105 Jueue Length 105 Jueue Length 205 Jueue Length 104 Lafarge Access/James Dick Access Jueue Soft and Phases: 1: Highway 10 & Lafarge Access/James Dick Access Jueue Soft and Phases 1: Highway 10 & Lafarge Access/James Dick Access													
ead-La Optimize? ead-La Opti			6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Becall Mode None None None C-Max													
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1: Highway 10 & Lafarge Access/James Dick Access ۰. 1 ٦ -1 ⋞ ↘ EBL NBL NBT NBR Movement EBT EBR WBL WBT WBR SB SBT Lane Configurations 2337 ****1 1** 4 24 12 Traffic Volume (vph) 54 28 4 40 Future Volume (vph) 40 54 28 24 2337 1038 12 36 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 1630 Satd. Flow (perm) 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) 40 54 28 24 2337 36 12 1038 4 0 0 RTOR Reduction (vph) 0 39 0 0 40 0 0 0 9 0 0 Lane Group Flow (vph) 0 5 0 0 42 0 24 2337 27 12 1039 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) Actuated g/C Ratio 12.0 79.0 79.0 79.0 79.0 79.0 12.0 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 3.0 186 162 380 2666 1228 3587 Lane Grp Cap (vph) 72 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 Α Α B А A Approach Delay (s) 41.4 43.3 13.6 44 Approach LOS D D В A Intersection Summary HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio 11.9 HCM 2000 Level of Service В 0.80 Actuated Cycle Length (s) Intersection Capacity Utilization 105.0 Sum of lost time (s) 14.0 ICU Level of Service 88.8% Е Analysis Period (min) 15 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

TMIG

Synchro 10 Report

2024 Total Traffic PM Peak Hour

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21.7 s	Ø6 (R)									1	PØ8		
	3.3 s									2	1.7s		

۰. ٦ \$ -1 ↘ EBL NBL NBT NBR Movement EBT EBR WBL WBT WBR SBT SB SF Lane Configurations **▲**▲ 1438 **1399 **1** 4 24 × Traffic Volume (vph) 54 4 40 20 Future Volume (vph) 40 54 20 24 1438 1399 38 16 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 1.00 Flt Permitted 0.97 0.76 0.17 1.00 0.16 1.00 1631 303 Satd. Flow (perm) 1400 333 3544 1633 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) 40 54 20 24 1438 38 16 1399 4 0 0 RTOR Reduction (vph) 0 39 0 0 40 0 0 0 9 0 0 Lane Group Flow (vph) 0 5 0 0 34 0 24 1438 29 16 1400 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) Actuated g/C Ratio 12.0 79.0 79.0 79.0 79.0 79.0 12.0 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 3.0 186 160 250 2666 1228 227 3587 Lane Grp Cap (vph) 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 Α А A А A Approach Delay (s) 41.4 42.9 6.1 49 Approach LOS D D A A Intersection Summary HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio HCM 2000 Level of Service 69 Α 0.50 Actuated Cycle Length (s) Intersection Capacity Utilization 105.0 Sum of lost time (s) 14.0 ICU Level of Service 71.9% С Analysis Period (min) 15 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: Highway 10 & Lafarge Access/James Dick Access

TMIG

Synchro 10 Report

2024 Total Traffic Saturday Peak Hour

Lane Configurations Image Conf		٦	-	\mathbf{r}	4	-	×	•	t	۲	1	Ŧ	~
Unture (rph) 0 0 79 117 0 46 55 866 88 35 2773 Strage Langh (m) 0.0 0.0 0.0 0.0 1900	ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL		NBR	SBL		SBI
Unture (rph) 0 0 79 117 0 46 55 866 88 35 2773 Strage Langh (m) 0.0 0.0 0.0 0.0 1900	ane Configurations		4			.		5	44	1	5	##16	
eak Flow (wphp) 1900 1900 1900 1900 1900 1900 1900 190													
Strage Length (m) 0.0 0.0 0.0 0.0 0.0 60.0 80.0 80.0 80.0													
Sinage Lanes 0 0 0 0 1 1 1 Sinar Bar Langh (n) 7.6 40.0 Yes Yes Yes Yes Sign Turn Red Yes Yes Yes Yes Yes Yes Sign Turn Red 6.1 8.2 9.0 11.6 and Coup Flow (vph) 0 79 0 0 163.3 0 55 886 88 35 2778 Vin Type NA Perm NA Statistics Statistics Statistics Statistics Statistics Statistics Statistics Statistics Statistics			1900			1900			1900			1900	
Tager Length (m) 7.6 7.6 7.6 40.0 80.0 The set of the													80.
Yes Yes <thyes< th=""> <thyes< th=""> <thyes< th=""></thyes<></thyes<></thyes<>				U			U			1			
nin Speed (h) 80 80 80 80 nin Detaine (n) 13556 1819 201.1 2258.8 rarel Time (s) 6.1 8.2 9.0 11.6 are Group Flow (vph) 0 79 0 0 163 0 55 866 88 35 2778 um Type NA Perm NA NA Perm NA NA Perm NA NA Perm NA		7.0		Yes	7.0		Yes	40.0		Yes	00.0		Ye
ink Distance (m) 135.6 181.9 2011 258.8 inke Time ITme (s) 6.1 8.2 90. 116 ane Group Flow (vph) 0 79 0 0 163 0 55 866 88 35 2778 ium Type NA Perm NA PAR PAR PAR PAR PAR PAR PAR PAR PAR PA			80	105		80	105		80	100		80	10
ane Group Flow (vph) 0 79 0 0 163 0 55 866 88 35 2778 Vin Type NA Perm NA Perm NA Perm NA Perm NA Perm NA Perm NA Protected Phases 8 4 4 6 6 6 2 2 Vernited Phases 8 4 4 6 6 6 6 2 2 Vernited Phases 8 4 4 6 6 6 6 2 2 Vernited Phases 8 8 4 4 6 6 6 6 2 2 Vernited Phases 8 8 4 4 6 6 6 6 2 2 Vernited Phases 8 8 4 4 6 6 6 6 2 2 Vernited Phase 8 8 8 4 4 6 6 6 6 6 2 2 Vernited Phase 8 8 8 4 4 6 6 6 6 6 2 2 Vernited Phase 8 8 8 4 4 6 6 6 6 6 2 2 Vernited Phase 8 8 8 4 4 1 6 6 6 6 6 2 2 Vernited Phase 8 8 8 4 4 1 6 6 6 6 6 2 2 Vernited Phase 8 8 8 4 4 1 6 6 6 6 6 2 2 Vernited Phase 8 8 8 4 4 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7													
NA Perm NA Perm NA Perm NA Perm NA Type: Na 6 2<	Travel Time (s)		6.1			8.2			9.0			11.6	
Prodecide Phases 8 4 6 2 Pareliade Phases 8 8 4 6 6 6 2 2 Perindiad Phases 8 8 4 4 6 6 6 2 2 Which Phase .		0		0			0						
Parmited Phases 8 8 4 4 6 6 6 2 2 2 Minimum Split (s) 15.0 15.0 15.0 15.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 2					Perm			Perm		Perm	Perm		
Delector Phase 8 8 4 4 6 6 6 2 2 Minimum Initial (s) 15.0 15.0 15.0 15.0 25.0 <			8			4			6			2	
Switch Phase Animum Initial (s) 15.0 15.0 15.0 15.0 25.0													
Minimum Initiatie (s) 15.0 15.0 15.0 15.0 15.0 15.0 25.		8	8		4	4		6	6	6	2	2	
Minimum Spit (s) 21.7 21.7 21.7 21.7 21.7 32.3 32.3 32.3 32.3 32.3 32.3 32.3 for all Spit (s) 21.7 21.7 21.7 21.7 21.7 83.3 68.3 68.3 68.3 68.3 68.3 68.3 67.4 59.5 59 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9		15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
fordal Spit (%) 21.7 21.7 21.7 21.7 83.3	/inimum Solit (s)												
Total Spit (%) 20.7% 20.7% 20.7% 20.7% 79.3% 70.3% 70.3 73 73 73 73 73	Intal Solit (s)												
rellow Time (s) 4.1 4.1 4.1 4.1 5.9													
Ni-Red Time (s) 2.6 2.6 2.6 2.6 1.4 <td></td>													
Total Last Time (s) 6.7 6.7 7.3<													
LeadLag Optimize? Recall Mode None None None None C-Max C-			0.0			0.0		0.0	0.0	0.0	0.0	0.0	
eacl-La Optimize? eacl-La Optimize? eacl-Made None None None None C-Max C-Max C-Max C-Max C-Max C-Max (C-Max C-Max C-Max (C-Max C-Max (C-Max C-Max (C-Max C-Max (C-Max C-Max (C-Max (C-Max C-Max (C-Max (C			6.7			6.7		7.3	7.3	7.3	7.3	7.3	
Value None None One C-Max C-M													
1/c Ratio 0.29 0.70 0.77 0.34 0.07 0.08 0.80 Control Delay 23.4 48.0 70.7 5.7 1.1 4.8 12.0 Data Delay 0.0<													
Dartic Delay 23.4 48.0 70.7 5.7 1.1 4.8 12.0 Dareue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Dareue Delay 23.4 48.0 70.7 5.7 1.1 4.8 12.0 Dareue Length 50th (m) 6.2 23.1 5.8 29.3 0.0 1.8 118.4 Dareue Length 59th (m) 19.7 #51.6 #17.3 37.4 3.7 4.7 138.9 Item Bay Length (m) 111.6 157.9 177.1 234.8 234.8 234.8 Saec Capacity (vph) 276 233 73 2565 1206 439 3452 Sarvation Cap Reductn 0 0 0 0 0 0 0 Sarvation Cap Reductn 0 0 0 0 0 0 Starvation Cap Reductn 0 0 0 0 0 0 Iterasection Summary Vera Type: Other Vera Type: Vera Typ		None			None								
Dates 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 Dates Length 50th (m) 6.2 23.1 5.8 29.3 0.0 1.8 118.4 Dates Length 55th (m) 19.7 #51.6 #17.3 3.7.4 3.7 4.7 138.9 Dates Length 55th (m) 19.7 #51.6 #17.3 3.7.4 3.7 4.7 138.9 Dates Length 50th (m) 19.7 #51.6 #17.3 3.7.4 3.7 4.7 138.9 Stareation Cap Reductin 0													
Total Delay 23.4 48.0 70.7 5.7 1.1 4.8 12.0 Daraue Length Sthi (m) 6.2 23.1 5.8 29.3 0.0 1.8 118.4 Daraue Length Sthi (m) 19.7 #51.6 #17.3 37.4 3.7 4.7 138.9 Internal Link Dist (m) 111.6 157.9 177.1 234.8 234.8 233.3 73 2565 1206 43.9 3452 Javardin Cap Reductn 0 0 0 0 0 0 0 0 Splitback Cap Reductn 0 0 0 0 0 0 0 Starage Cap Reductn 0.29 0.70 0.75 0.34 0.07 0.08 0.800 Starage Cap Reductn 0.29 0.70 0.75 0.34 0.07 0.08 0.800 Valued Cycle Length: 105 0.54 0.70 0.75 0.34 0.07 0.08 0.800 Valued Cycle Length: 105 0.54 0.70 0.75 0.34 0.07 0.08 0.800 Valued Cycle Length: 105 0.54 0.70 0.75 0.34 0.07 0.08 0.800 Scheer Olifer Cycle Ength: 105 0.5													
Durue Length 50th (m) 6.2 23.1 5.8 29.3 0.0 1.8 118.4 Durue Length 50th (m) 19.7 #51.6 #17.3 37.4 3.7 4.7 138.9 Durue Length 50th (m) 111.6 157.9 17.7 234.8 233.8 23.2 234.8 furm Bay Length (m) 60.0 80.0 80.0 80.0 3452 Sae Capacity (vph) 27.6 233 7.3 25.65 120.6 439 3452 Starvation Cap Reductn 0 0 0 0 0 0 0 0 0 Strage Cap Reductn 0													
Durue Length 95th (m) 19.7 #51.6 #7.3 37.4 3.7 4.7 138.9 Internal Link Dist (m) 111.6 157.9 177.1 234.8 Tim Bay Length (m) 60.0 80.0 80.0 80.0 Jace Capacity (ryh) 276 233 73 2565 1206 43.9 3452 Jarvatin Cap Reductin 0													
fum Bay Length (m) 60.0 80.0 80.0 80.0 Jase Capacity (vph) 276 233 73 2565 1206 439 3452 Jase Capacity (vph) 0						#51.6							
Base Capacity (vph) 276 233 73 2565 1206 439 3452 Starvation Cap Reductn 0<	nternal Link Dist (m)		111.6			157.9			177.1			234.8	
Starvation (a) Reductin 0 <td></td>													
Spillback Cap Reductn 0													
Sincage Cap Reductin 0													
Reduced vice Ratio 0.29 0.70 0.75 0.34 0.07 0.08 0.80 Intersection Summary													
Intersection Summary vrea Type: Other Syde Length: 105 Other Viculated Cycle Length: 105 Strutter Cycle Length: 105 Offset 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green Statural Cycle: 80 Control Type: Actuated-Coordinated 4 4 50th 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 Ø2 (R) # 33.3 s #													
vrea Type: Other Vycle Length: 105 Other Victuated Cycle Length: 105 Other Valuated Cycle: 80 Other Optimum Type: Actuated-Coordinated Other 4 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles. Other Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access Ø2 (R) Ø4 33.3 s Ø2			0.29			0.70		0.75	0.54	0.07	0.06	0.00	
ycle Length: 105 kctuated Cycle Length: 105 Miterit (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green Matural Cycle: 80 Autural Cyc													
Offset 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green Valural Cycle: 80 Sorthof 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 Ø2 (R) 83.3 s	Cycle Length: 105	Other											
Control Type: Actuated-Coordinated	Offset: 0 (0%), Referenced to pha	ase 2:SBTL and	6:NBTL, St	art of Gree	n								
		tod											
Splits and Phases: 1: Highway 10 & Lafarge Access/James Dick Access	95th percentile volume excee	ds capacity, qu	eue may be	longer.									
Ø2 (R) Ø3.3s ▲ ▲			ccess/Jame	s Dick Acc	ess								
33.3s	Na Star										04	-	
√Ø6 (R) →Ø8										21	L.7 s		
	1 Ø6 (R)									10	- 1 Ø8		

۰. ٦ \$ -1 ⋞ \mathbf{r} NBL NBT NBR Movement EBL EBT EBR WBL WBT WBR SB SBT Lane Configurations **▲** 866 ****1** 2773 **1 1** × × 7 Traffic Volume (vph) 117 46 55 0 79 35 Future Volume (vph) 117 866 35 2773 79 46 55 88 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 1662 608 Satd. Flow (perm) 1363 101 3544 1633 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) 79 117 46 55 866 88 35 2773 0 0 0 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 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) Actuated g/C Ratio 15.0 76.0 76.0 0.72 76.0 76.0 76.0 15.0 0.14 0.14 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 3.0 237 194 1181 440 Lane Grp Cap (vph) 73 2565 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 39.5 1.00 Uniform Delay, d1 42.5 8.8 5.3 4.2 4.2 9.6 1.00 Progression Factor 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 A Е Α В Approach Delay (s) 39.9 49.5 8.5 11.6 Approach LOS D D A В Intersection Summary HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio 12.9 HCM 2000 Level of Service B 0.78 Actuated Cycle Length (s) Intersection Capacity Utilization 105.0 Sum of lost time (s) 14.0 ICU Level of Service 81.3% D Analysis Period (min) 15 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: Highway 10 & Lafarge Access/James Dick Access

TMIG

Synchro 10 Report

2029 Total Traffic AM Peak Hour

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBI
ane Configurations		4			41 0		5	44	1	5	**1 , 1124	
Traffic Volume (vph)	4		40	54		28	24	2530	36	12		
uture Volume (vph)	4	0	40	54	0	28	24	2530	36	12	1124	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
Storage Length (m)	0.0		0.0 0	0.0		0.0	60.0 1		80.0 1	80.0 1		80.
Storage Lanes Faper Length (m)	7.6		U	7.6		U	40.0		1	80.0		
Right Turn on Red	7.0		Yes	7.0		Yes	40.0		Yes	00.0		Ye
ink Speed (k/h)		80	105		80	105		80	103		80	
ink Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
ane Group Flow (vph)	0	44	0	0	82	0	24	2530	36	12	1125	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8			4		_	6	_		2	
Permitted Phases	8	0		4			6	6	6	2	0	
Detector Phase Switch Phase	8	8		4	4		6	6	6	2	2	
Minimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Ainimum 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%	
(ellow 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	
ost Time Adjust (s)		0.0			0.0		0.0	0.0	0.0	0.0	0.0	
otal Lost Time (s)		6.7			6.7		7.3	7.3	7.3	7.3	7.3	
.ead/Lag												
ead-Lag Optimize?	NI	Marca		News	NL		0.14	0.14	0.14	0.14	0.14	
Recall Mode //c Ratio	None	None 0.16		None	None 0.34		C-Max 0.07	C-Max 0.92	C-Max 0.03	C-Max 0.16	C-Max 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	
nternal Link Dist (m)		111.6			157.9			177.1			234.8	
furn 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 Reduced v/c Ratio		0 0.16			0 0.34		0 0.07	0 0.92	0	0 0.16	0 0.30	
		0.10			0.34		0.07	0.92	0.03	0.10	0.30	
ntersection Summary												
Area Type:	Other											
Cycle Length: 105												
Actuated Cycle Length: 105 Dffset: 0 (0%), Referenced to pha	an 2-CPTL and		art of Croo	•								
Vatural Cycle: 100	150 Z.OD I L di lu	10.IND I L, 36		1								
Control Type: Actuated-Coordinal	ed											
95th percentile volume excee		eue mav be	lonaer.									
Queue shown is maximum after			J.									
plits and Phases: 1: Highway	10 & Lafarge A	ccess/Jame	s Dick Acc	ess								
No										1		
♥ [™] Ø2 (R)								_	_	V Ø4		_
33.3 s									21	.7s		
96 (R)										2		
									100	Ø8		
1 26 (R)												

1: Highway 10 & Lafarge Access/James Dick Access ۰. ٦ \$ -1 ⋞ \mathbf{r} EBL NBL NBT NBR Movement EBT EBR WBL WBT WBR SR SBT Lane Configurations **▲**▲ 2530 ****1 1** 4 24 12 Traffic Volume (vph) 54 28 4 40 Future Volume (vph) 40 54 28 24 2530 1124 12 36 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 1630 Satd. Flow (perm) 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) 40 54 28 24 2530 36 12 1124 4 0 0 RTOR Reduction (vph) 0 39 0 0 40 0 0 0 9 0 0 Lane Group Flow (vph) 0 5 0 0 42 0 24 2530 27 12 1125 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 79.0 79.0 79.0 79.0 79.0 12.0 Effective Green, g (s) Actuated g/C Ratio 12.0 79.0 79.0 79.0 79.0 79.0 12.0 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 3.0 186 162 346 1228 3587 Lane Grp Cap (vph) 2666 72 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 Α А С А A Approach Delay (s) 41.4 43.3 19.9 4.5 Approach LOS D D В A Intersection Summary HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio 16.1 HCM 2000 Level of Service В 0.86 Actuated Cycle Length (s) Intersection Capacity Utilization 105.0 Sum of lost time (s) 14.0 ICU Level of Service 94.1% Analysis Period (min) 15 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

TMIG

Synchro 10 Report

2029 Total Traffic PM Peak Hour

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBI
ane Configurations		1			4		5	↑ ↑ 1556	1	٦	↑↑1 1399	
Traffic Volume (vph)	4		40	54		20	24		38	16		
Future Volume (vph)	4 1900	0 1900	40 1900	54 1900	0 1900	20 1900	24 1900	1556 1900	38	16 1900	1399 1900	190
deal Flow (vphpl) Storage Length (m)	1900	1900	0.0	0.0	1900	0.0	60.0	1900	1900 80.0	80.0	1900	80.
Storage Lanes	0.0		0.0	0.0		0.0	00.0		00.0	00.0		00.
Taper Length (m)	7.6		0	7.6		U	40.0			80.0		
Right Turn on Red			Yes			Yes			Yes			Ye
ink Speed (k/h)		80			80			80			80	
ink Distance (m)		135.6			181.9			201.1			258.8	
Travel Time (s)		6.1			8.2			9.0			11.6	
ane Group Flow (vph)	0	44	0	0	74	0	24	1556	38	16	1400	
furn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	8	8		4	4		6	6	0	0	2	
Permitted Phases Detector Phase	8	8		4	4		6	6	6 6	2	2	
Switch Phase	0	0		4	4		0	0	0	2	2	
Vinimum Initial (s)	15.0	15.0		15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Vinimum 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%	
rellow 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	
.ost 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	
_ead/Lag												
Lead-Lag Optimize? Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	
/c Ratio	NUTIE	0.16		NUTIE	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	
nternal Link Dist (m)		111.6			157.9			177.1			234.8	
Furn Bay Length (m)		0.04					60.0	0.004	80.0	80.0	0.0.4	
Base Capacity (vph)		271			238		258	2761	1280	200	3714	
Starvation Cap Reductn		0			0		0	0	0	0	0	
Spillback Cap Reductn 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	
		0.10			0.01		0.00	0.00	0.00	0.00	0.00	
ntersection Summary Area Type:	Other											
Cycle Length: 105 Actuated Cycle Length: 105												
Offset: 0 (0%), Referenced to pha	ase 2:SBTL and	6:NBTL, St	art of Gree	n								
Natural Cycle: 60												
Control Type: Actuated-Coordina	ted											
Splits and Phases: 1: Highway	10 & Lafarge A	ccess/Jame	s Dick Acc	ess								
<u>_</u>									· ·			
▼ Ø2 (R)										∜ Ø4		
83.3 s									2	1.7 s		
A the second										<u>A</u>		
Ø6 (R)										108		
53.3 S									2	1./S		

۰. ٦ \$ -1 Ť ↘ EBL NBL NBT NBR Movement EBT EBR WBL WBT WBR SBT SB SF Lane Configurations **↑** 1556 **1399 **1** 4 24 × Traffic Volume (vph) 54 4 40 20 Future Volume (vph) 40 54 20 24 1556 1399 38 16 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 1.00 Flt Permitted 0.97 0.76 0.17 1.00 0.13 1.00 1631 Satd. Flow (perm) 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) 40 54 20 24 1556 38 16 1399 4 0 0 RTOR Reduction (vph) 0 39 0 0 40 0 0 0 9 0 0 Lane Group Flow (vph) 0 5 0 0 34 0 24 1556 29 16 1400 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) Actuated g/C Ratio 12.0 79.0 79.0 79.0 79.0 79.0 12.0 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 3.0 186 160 250 2666 1228 193 3587 Lane Grp Cap (vph) 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 1.00 Progression Factor 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 Α А А A Approach Delay (s) 41.4 42.9 6.6 49 Approach LOS D D A A Intersection Summary HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio HCM 2000 Level of Service 71 Α 0.53 Actuated Cycle Length (s) Intersection Capacity Utilization 105.0 Sum of lost time (s) 14.0 ICU Level of Service 71.9% С Analysis Period (min) 15 c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: Highway 10 & Lafarge Access/James Dick Access

TMIG

Synchro 10 Report

2029 Total Traffic Saturday Peak Hour