



September 14, 2016
McElhanney File: 2121-00209-01

City of Pitt Meadows
12007 Harris Road
Pitt Meadows BC V3Y 2B5

Attention: Forrest Smith, P.Eng
Director of Engineering and Operations

Dear Sir:

South Bonson Traffic Study, Addendum Traffic Analysis

1.0 BACKGROUND

McElhanney recently completed a Traffic Study for the South Bonson Area to assess the impacts of future developments on the performance of the road network, intersection control methods, and pedestrian safety/ accessibility. The findings of the study were presented to the Mayor and Council on May 03, 2016.

The study area along Harris Road in the original study extended from Fraser Way to Fieldstone Walk, however, the City has subsequently requested additional traffic analysis of Harris Road with a focus on key intersections between Hammond Road and Lougheed Highway for all study horizons established in the original study. This analysis is presented herein as an addendum carrying all assumptions about developments size, staging, trip generation/distribution and traffic growth rate same as in the original South Bonson Traffic study.

Figure 1 illustrates the study area for this additional analysis.

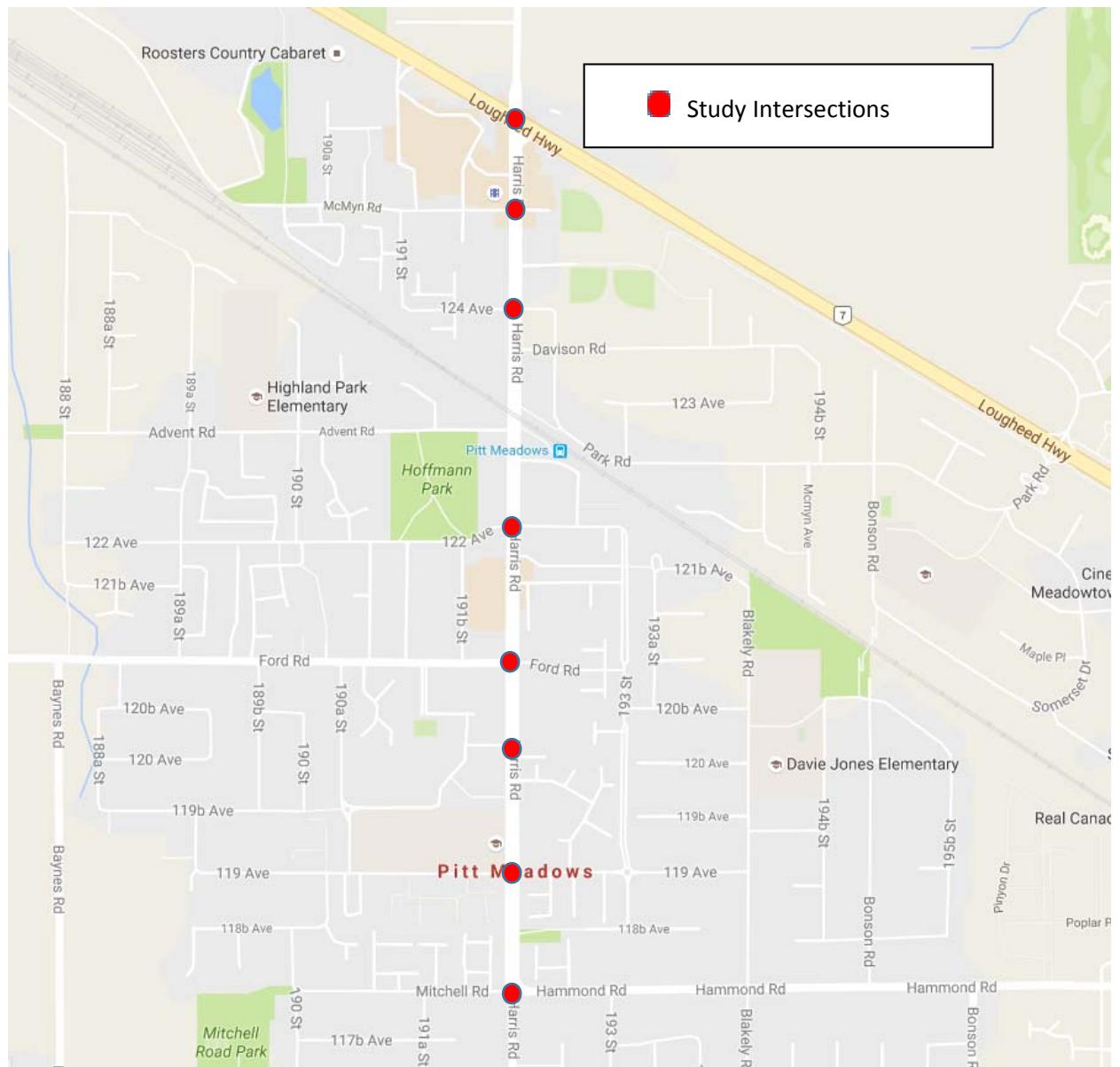


Figure 1 Study Area



2.0 SCOPE OF WORK

The scope of work for this addendum is as follows:

- Document existing and projected AM/PM traffic volumes at Harris Road intersections between Hammond Road and Lougheed Highway;
- Apply a 2% growth rate, as per the original study, to the existing volumes to forecast short term (2021) and long term (2031) background traffic volumes;
- Using the trip generation and distribution estimates from the original study establish 2021 and 2031 combined traffic volumes;
- Conduct existing condition (2016), short term (2021) and long term (2031) horizons AM/PM peak hour capacity analysis at the following eight study intersections:
 - Harris Road / Hammond Road (Signal)
 - Harris Road / 119 Avenue (Signal)
 - Harris Road / Ford Road (Signal)
 - Harris Road / Civic Centre Access (Pedestrian Signal)
 - Harris Road / 122 Avenue / 122A Avenue (Signal)
 - Harris Road / 124 Avenue (Signal)
 - Harris Road / McMyn Road (Signal)
 - Harris Road / Lougheed Highway (Signal)
- Identify capacity issues at the study intersections and propose mitigation measures, limited to signal phasing changes and optimization;
- Using the established trip generation/distribution in the original traffic study, a midblock crossing option on Airport Way will be investigated.
- Investigate traffic calming measures for Airport Way keeping in view the arterial nature of this route.
- Investigate options for a midblock crossing on Airport Way between Harris Road and Bonson Road.

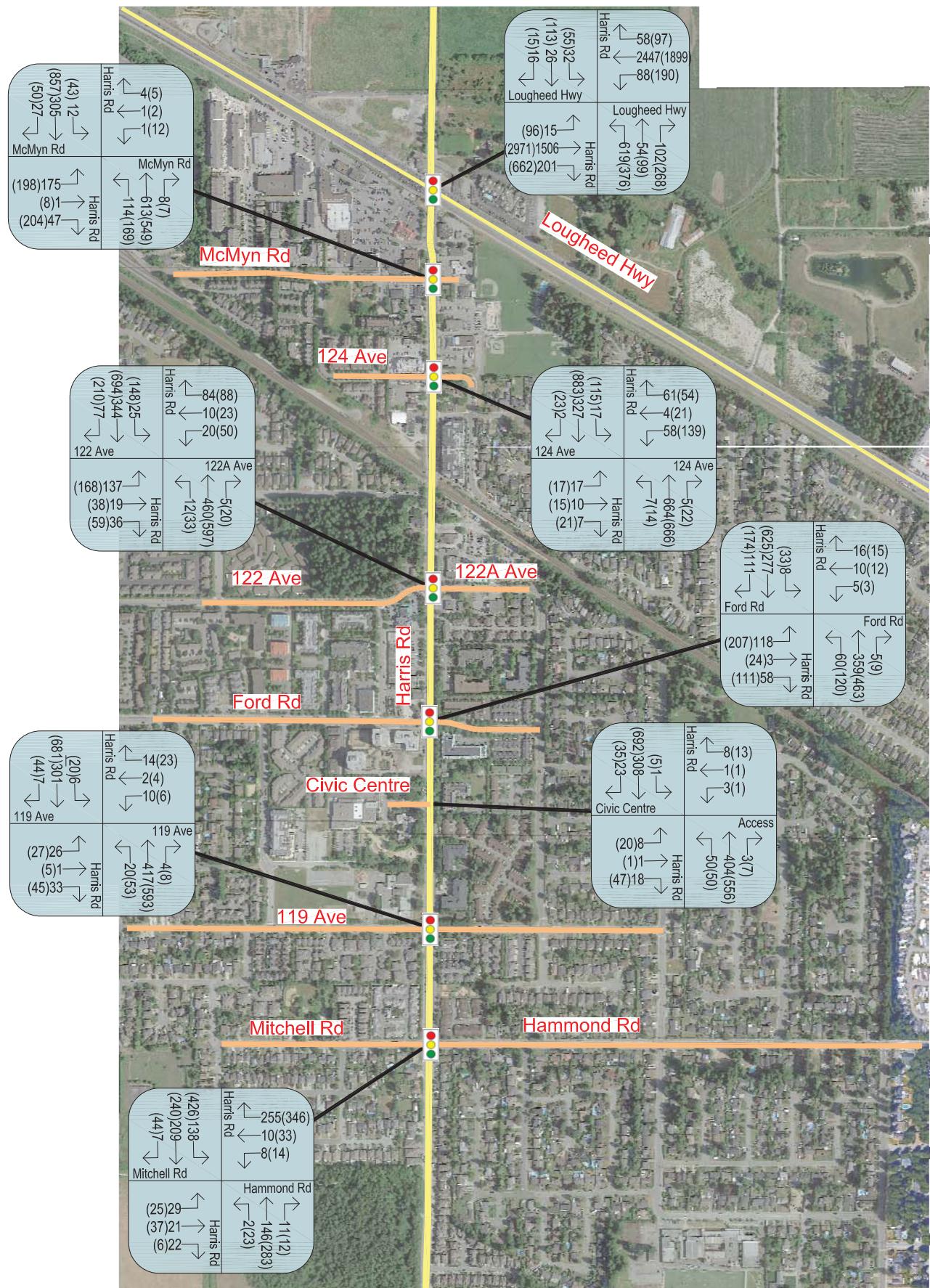


3.0 TRAFFIC VOLUMES

3.1 Existing and 2040 Peak Hour Volumes

Weekday AM and PM peak period turning movement counts at the eight study intersections, listed in Section 2.0, were recorded between Tuesday, July 12, 2016, and Thursday, July 14, 2016, by Creative Transportation Solutions (CTS). Weekday AM peak traffic volumes were recorded from 7 AM to 9 AM, and weekday PM peak volumes from 3 PM to 6 PM.

Existing (2016) peak hour traffic volumes at the study intersections are shown in [Figure 2](#). Detailed intersection volume counts can be found in [Appendix A](#).



LEGEND

20(50) AM(PM) PEAK HOUR VOLUME

SOUTH BONSON TRAFFIC STUDY

EXISTING 2016 VOLUMES

FIGURE 2



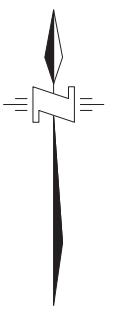
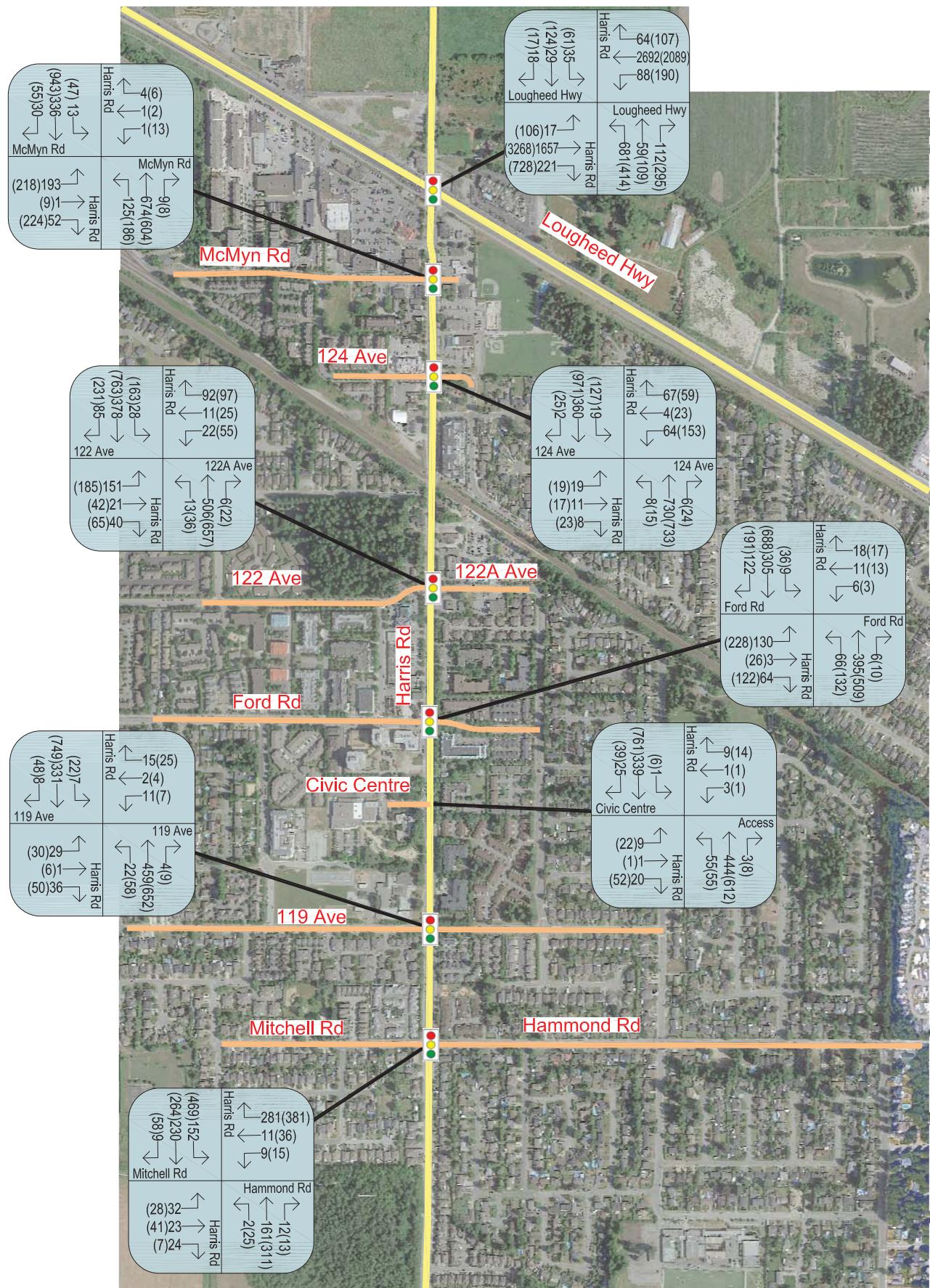
McElhanney

McElhanney Consulting Services Ltd.



3.2 Anticipated Growth

Similar to the original study TIA, a 2% annual linear growth rate was used based on the Previous traffic impact studies in the area and discussions with the City to determine background traffic volumes for Future Years 2021 and 2031. The 2021 and 2031 Background traffic volumes can be found in **Figures 3 and 4**, respectively.



LEGEND

20(50) AM(PM) PEAK HOUR VOLUME

SOUTH BONSON TRAFFIC STUDY

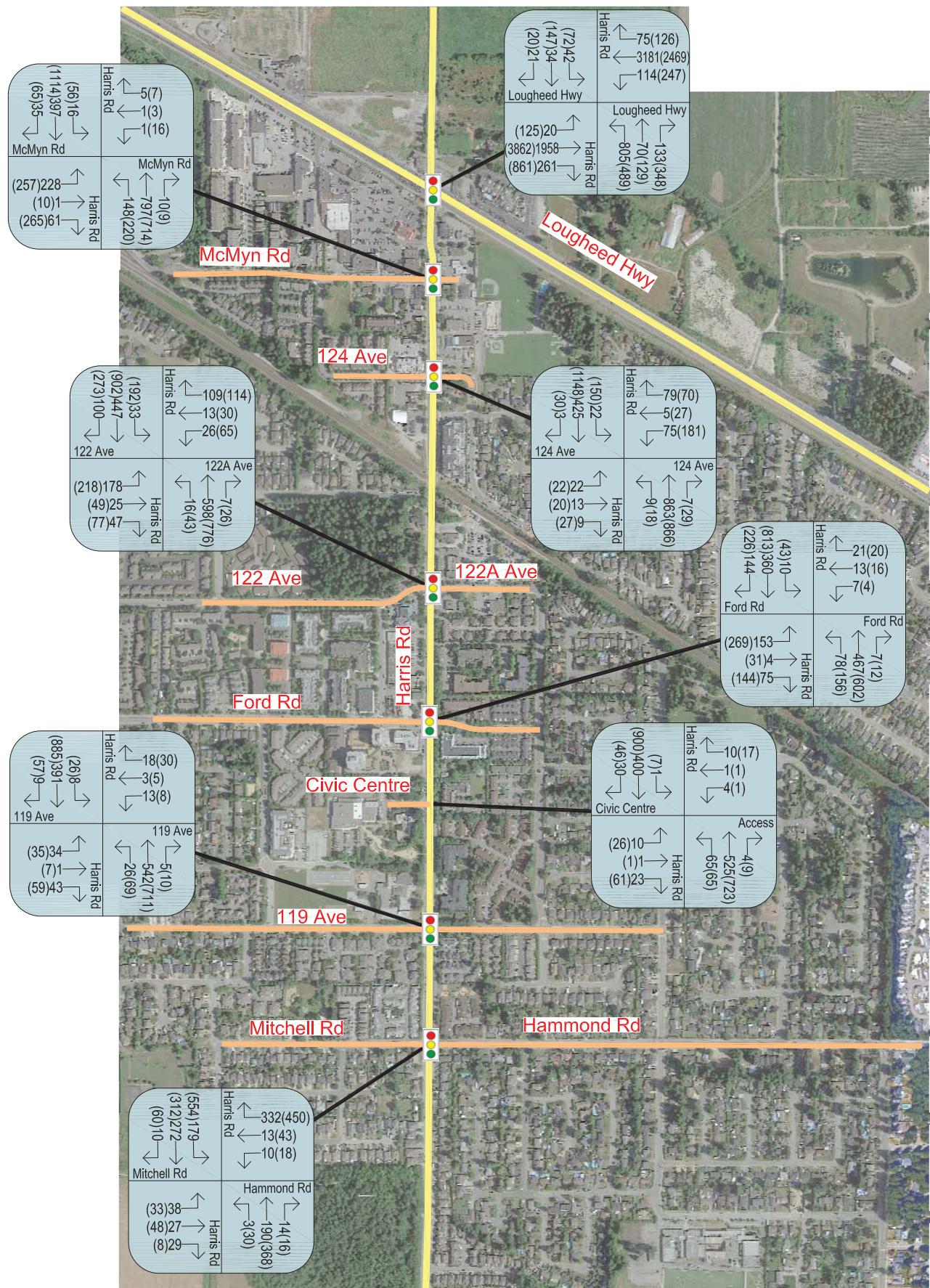
2021 BACKGROUND VOLUMES

FIGURE 3



McElhanney

McElhanney Consulting Services Ltd.



LEGEND

20(50) AM(PM) PEAK HOUR VOLUME

SOUTH BONSON TRAFFIC STUDY

2031 BACKGROUND VOLUMES

FIGURE 4



McElhanney

McElhanney Consulting Services Ltd.



3.3 Trip Generation and Distribution

Trip generation for the Golden Ears Business Park (GEBP) Phase 2 to 4, Sutton Avenue residential development and the future elementary school was calculated in the original study using the Institute of Transportation Engineers (ITE) Trip Generation Manual.

The proposed developments expected to be completed by 2021 were estimated to generate an additional 1,401 weekday AM peak hour trips (1,077 inbound and 324 outbound), and 1,850 weekday PM peak hour trips (448 inbound and 1,402 outbound).

Compared to 2016 traffic condition, the proposed developments completed by 2031 were expected to generate an additional 1,943 weekday AM peak hour trips (1,502 inbound and 441 outbound), and 2,626 weekday PM peak hour trips (622 inbound and 2,004 outbound).

The existing traffic distribution along the study intersections is as shown in [Figure 5](#). the traffic distribution assumed in this addendum was similar to the distribution used in the previous Traffic Impact Assessment report by EBA Consulting for GEBP Phase 2 and also in the MMM Group's GEBP Phase 3 / 4 Transportation Impact Study, 2015. Trip distribution assumptions are shown in [Table 1](#).

Table 1 Trip Distribution Assumptions - South Bonson Traffic study

Direction	Trip Distribution
East on Airport Way towards Golden Ears Way	50%
West on Airport Way towards Bayne Road	0%
North on Harris Road towards Lougheed Highway	30%
North on Bonson Road towards Hammond Road	15%
South on Harris Road towards Fraser Way	5%
Total	100%

Table 1 shows that 30% of the development trips to/from the developments are assumed to be heading north on Harris Road. For analysis purposes, a further distribution of these 30% Harris Road trips can be described as follows:

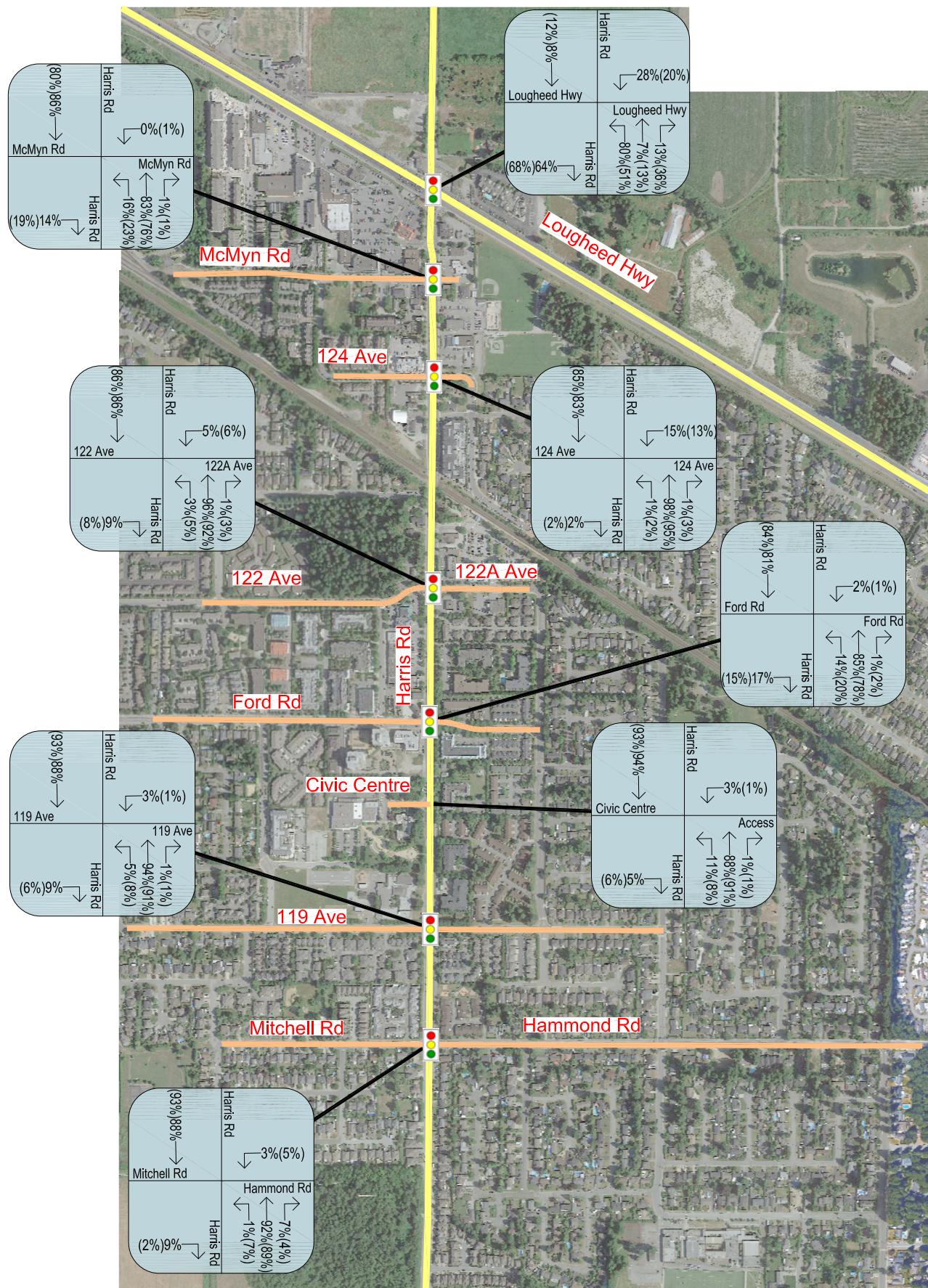
- 80% destined to/from Lougheed Highway.
- The remaining 20% will turn on Harris Road along intersections between Hammond Road and Lougheed Highway as shown in [Figure 6](#).

The rationale for this distribution assumption is that the majority of the new trips in the South Bonson area will be industrial traffic generated by the GEBP. This industrial traffic



Page 10
Our File: 2121-00209-01

will not necessarily follow the existing turning movement patterns at the study intersections but, instead, the majority will head towards Lougheed Highway.



LEGEND

20%(50%) AM(PM) PEAK HOUR DISTRIBUTION

EXISTING TRAFFIC DISTRIBUTION

FIGURE 5

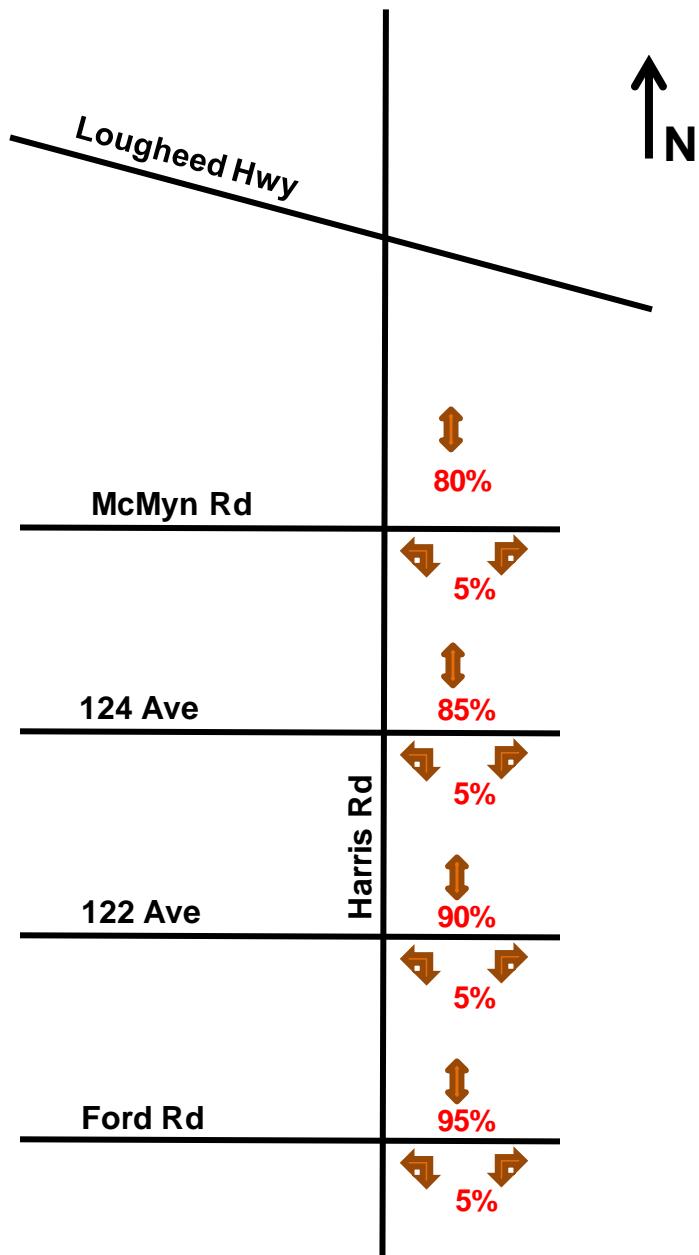


McElhanney

McElhanney Consulting Services Ltd.



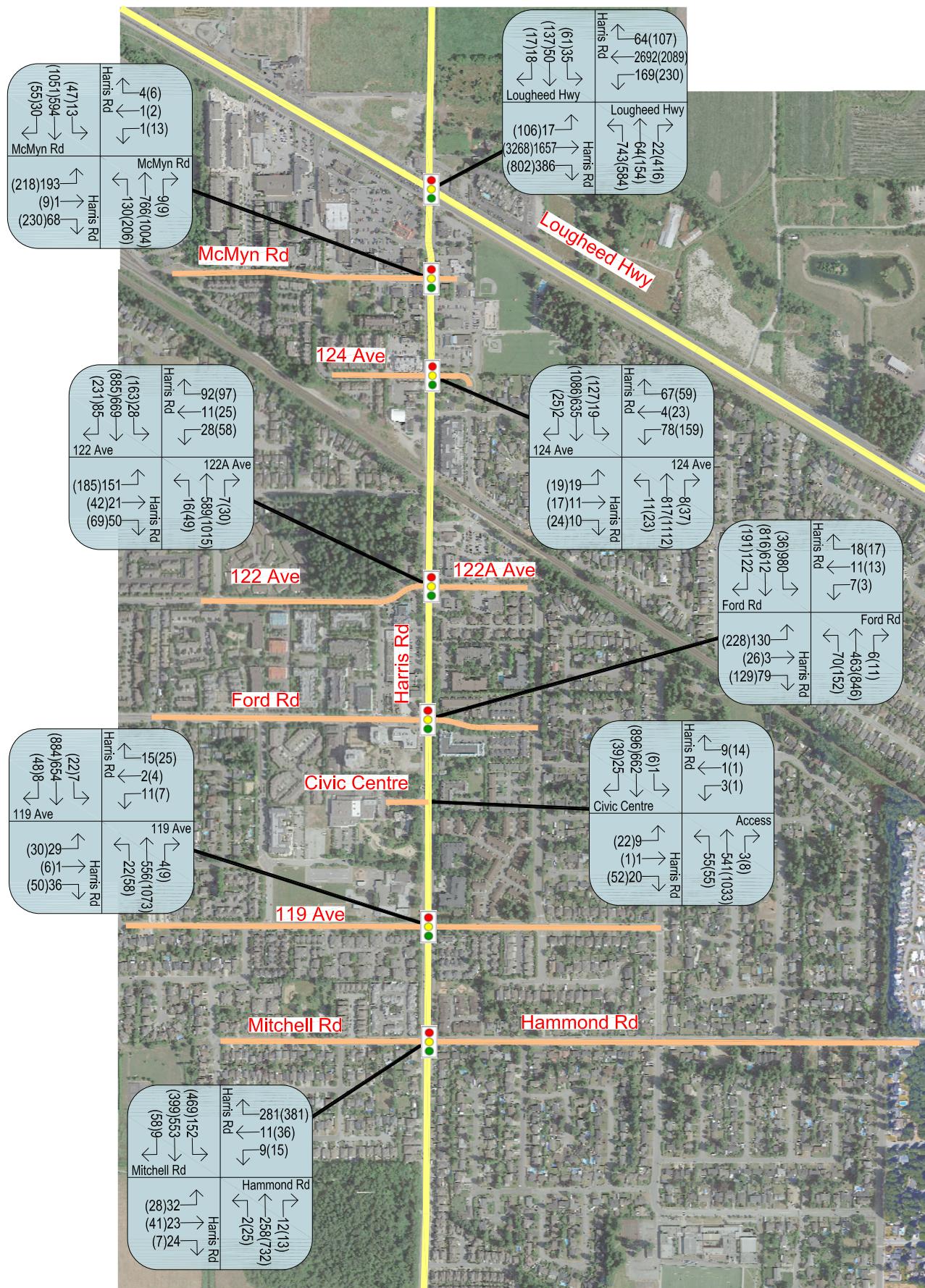
Figure 6 Trip Distribution





3.5 Combined Traffic

The 30% of total calculated trips generated by the expected developments were added to the background traffic to estimate the total future combined volumes for 2021 and 2031 along Harris Road intersections. The total combined traffic volumes are summarized in *Figures 7 and 8*.



LEGEND

20(50) AM(PM) PEAK HOUR VOLUME

SOUTH BONSON TRAFFIC STUDY

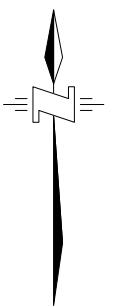
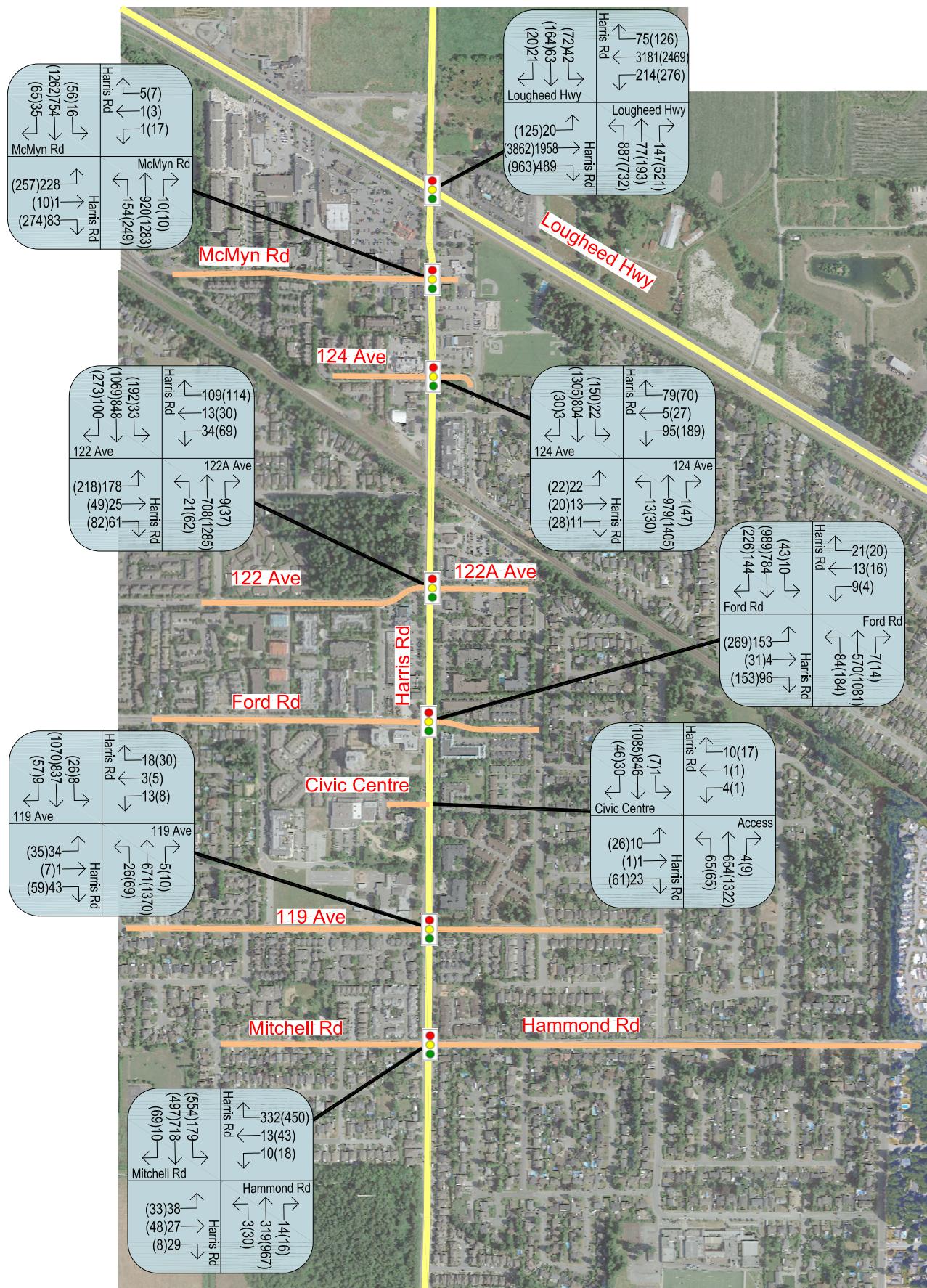
2021 COMBINED VOLUMES

FIGURE 7



McElhanney

McElhanney Consulting Services Ltd.



LEGEND

20(50) AM(PM) PEAK HOUR VOLUME

SOUTH BONSON TRAFFIC STUDY

2031 COMBINED VOLUMES

FIGURE 8



McElhanney

McElhanney Consulting Services Ltd.



4.0 TRAFFIC ANALYSIS

4.1 Intersection Level of Service Criteria

Roadway facility traffic operations are described in terms of Level of Service (LOS). LOS is a commonly used measure of the quality of traffic conditions experienced along a roadway or at an intersection. The Level of Service is typically measured as a function of the control delay per vehicle (seconds / vehicle). Six service levels are defined ranging from LOS A, the best operating conditions, to LOS F, the worst operating conditions. LOS E corresponds to “at or near capacity” operations. When volumes exceed capacity, stop-and-go conditions result and operations are designated LOS F. The typical urban criterion for acceptable intersection operation is LOS D.

The signalized intersections were analyzed using the methodology contained in the Highway Capacity Manual (HCM). This methodology determines the level of service by comparing the average control delay for all vehicles approaching the intersection to the delay thresholds shown in *Table 2*.

Table 2 Level of Service and Delay Criteria

LOS	Delay Criteria (sec/veh)		Description
	Signalized	Unsignalized	
A	<10	<10	Represents free flow. Individual users are virtually unaffected by others in the traffic stream.
B	>10 and <20	>10 and <15	Stable flow, but the presence of other users in the traffic stream begins to be noticeable.
C	>20 and <35	>15 and <25	Stable flow, but the operation of individual users becomes significantly affected by interactions with others in the traffic stream.
D	>35 and <55	>25 and <35	Represents high-density, but stable flow.
E	>55 and <80	>35 and <50	Represents operating conditions at or near the capacity level.
F	>80	>50	Represents forced or breakdown flow.

The signalized intersections were analyzed using Synchro version 9.0, which incorporates the Highway Capacity Manual (HCM) methodologies.

4.2 Traffic Analysis Results

A summary of the overall intersection performance in terms of LOS and average delays in seconds/vehicle (s/veh) for each study intersection is shown in *Table 3*. Synchro output sheets are included in *Appendix B*.



Table 3 Intersection Performance Summary – Harris Road

Intersection	Control Type	Peak	2016		2021 Background		2031 Background		2021 Combined		2031 Combined	
			LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
Harris Road / Hammond Road	Signal	AM	A	6.6	A	6.7	A	7.1	A	7.6	A	9.1
		PM	A	9.9	B	11.8	B	13.6	C	34.8	F	155.5
Harris Road / 119 Avenue	Signal	AM	A	3.5	A	3.6	A	3.8	A	3.5	A	3.8
		PM	A	3.6	A	3.8	A	4.7	A	4.1	A	6.3
Harris Road / Civic Centre Access	Signal	AM	A	1.8	A	1.8	A	2.6	A	1.8	A	2.7
		PM	A	3.8	A	4.0	A	4.5	A	4.4	A	5.8
Harris Road / Ford Road	Signal	AM	A	8.9	A	9.3	B	10.1	B	10.5	B	12.3
		PM	B	15.4	B	17.5	C	23.1	C	21.8	C	25.1
Harris Road / 122 Avenue	Signal	AM	A	9.4	B	10.5	B	11.6	B	10.6	B	12.3
		PM	B	13.6	B	15.3	B	18.9	B	18.9	C	24.5
Harris Road / 124 Avenue	Signal	AM	A	5.5	A	5.7	A	6.3	A	6.1	A	7.0
		PM	A	8.0	A	8.7	B	11.2	B	10.8	B	17.1
Harris Road / McMyn Road	Signal	AM	B	11.8	B	12.7	B	14.1	B	13.4	B	16.0
		PM	B	18.3	B	19.9	C	26.1	C	21.8	D	46.6
Harris Road / Lougheed Highway	Signal	AM	D	52.9	E	68.2	F	128.6	F	84.8	F	151.1
		PM	F	99.7	F	130.9	F	200.2	F	155.8	F	242.8

Notes:

Bold indicates unacceptable operation (LOS E or F)

C Acceptable overall intersection LOS with some movements at E/F

The intersection results show that all intersections except Harris Road / Lougheed Highway intersection are expected to operate at an acceptable overall intersection LOS D or better by 2021. In 2031, Harris / Hammond intersection LOS drops to E. The scenarios highlighted in orange show that although the overall intersection LOS is acceptable (D or better), one or more individual movements will experience LOS E or F, and some mitigation measures are required to operate all movements at LOS D or better in that particular scenario.

4.3 Mitigation Measures

Based on Synchro results, signal timings and phasing were optimized to improve performance at all study intersections. **Table 4** summarizes the signal timing changes required at the study intersections.



Table 4 Mitigation Measures Summary

Intersection	Movements with LOS E/F	Mitigations	Comment
Harris Road / Hammond Road	SB left – LOS F in 2021 PM	<p>By 2021</p> <ul style="list-style-type: none">Protected/ permitted SB left turn phaseOptimize Signal timings <p>By 2031</p> <ul style="list-style-type: none">Dual SB left turn lanes with protected phase and the SB right turn lane be converted to shared thru/rightTwo EB receiving lanes on Hammond Road to accommodate the dual left turn lanesExisting NB Right lane be converted to a shared NB Thru/Right (and extended to meet 95th % queue i.e., about 95 m)	
Harris Road / 119 Avenue			No mitigations required
Harris Road / Civic Centre Access			No mitigations required
Harris Road / Ford Road			No mitigations required
Harris Road / 122 Avenue			No mitigations required
Harris Road / 124 Avenue	SB left – LOS F in 2031 PM WB Left – LOS E in 2031 PM	By 2031 <ul style="list-style-type: none">Protected/ permitted SB left turn phaseOptimize Signal timings	
Harris Road / McMyn Road	SB Thru left – LOS E in 2031 PM EB Thru Left – LOS E in 2031 PM	By 2031 <ul style="list-style-type: none">Optimize Signal timings	
Harris Road / Lougheed Highway	Majority movements at LOS E/F	An interchange or other major upgrades required by 2021	Signal timing optimization and/or phase changes will not improve LOS



The synchro results for mitigated models show that Harris Road intersections between Hammond Road and McMyn Road can operate at acceptable LOS mainly through signal timing/phase optimization for all background and combined scenarios. The Hammond Road intersection is expected to require SB dual left turn lanes with two EB through receiving lanes on Hammond Road by 2031.

The Harris Road / Lougheed Highway intersection will require a major upgrade in order to operate traffic at acceptable LOS. Without upgrades at this intersection the Harris Road intersections will experience traffic backups and the queues will spill over to adjacent intersections in short and long term horizons. It is noted that this upgrade will be necessary even for background traffic alone. The City is advised to work with Ministry of Transportation and Infrastructure (MoTI) to discuss intersection improvement strategies.



5.0 Midblock Crossing on Airport Way

The original study analyzed a right-in-right out access on Airport Way for the 19451 Sutton Avenue residential development and concluded that this access will perform at an acceptable LOS with manageable queues in the short and long term horizons. The study also recommended a grade-separated pedestrian overpass across Airport Way from the Sutton Avenue development to the ball fields on the north side if the Roundabout option is implemented at the Airport Way / Bonson Road intersection. The signalized intersection option will not require a pedestrian overpass due to enhanced safety with signalized pedestrian crosswalks.

This section analyzes the option of a midblock (at-grade) crossing on Airport Way between Harris Road and Bonson Road to consolidate and accommodate the GEBP and Sutton Avenue development traffic.

5.1 Full Movement Signalized Midblock Intersection

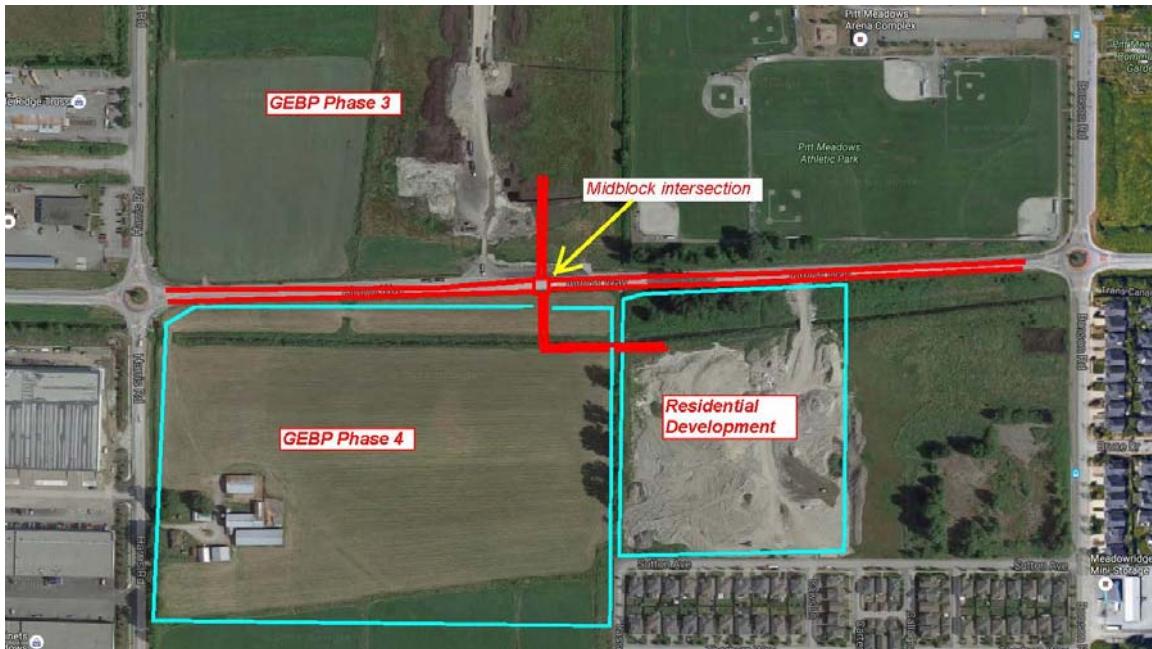
A full movement signalized intersection was analyzed in synchro which will accommodate part of the traffic to/from the Sutton Avenue development and the GEBP Phases 3 and 4 along the Airport Way. A schematic of the midblock intersection concept is shown in *Figure 8*.

The Synchro results show that the midblock intersection will accommodate the traffic at acceptable LOS for 2031 AM /PM peak scenarios. However, following are some disadvantages in installing a midblock intersection on Airport Way:

- Eastbound / westbound left turn storage lanes may be difficult to accommodate due to right of way limitations along Airport Way.
- Traffic from Sutton Avenue residential development will be served through the south leg of the midblock intersection which will require the residential traffic to traverse through the industrial area of GEBP Phase 3, and this is not a recommended practice in terms of traffic flow. This will also require access easement through GEBP property, south of Airport Way. This shared access can pose challenge for it's management / maintenance.
- The objective is to minimize access points on arterial roads, as their primary purpose is to flow traffic at relatively higher speeds with minimal stops/delays. Adding a midblock intersection will defeat this purpose.
- Intersection installation will increase travel time and delays along Airport Way, which may cause traffic congestion and add to driver frustration. As a result, some traffic would be expected to detour through adjacent residential roads traversing through neighborhoods which is not a desirable outcome.



Figure 8 Midblock Intersection Concept



Two options for pedestrian crossing are recommended depending on the type of intersection control selected for Airport Way intersections at Bonson Road and Harris Road.

Option 1 – If the existing single lane roundabouts on Airport Way at Harris Road and Bonson Road are upgraded to two-lane roundabouts, then a midblock crossing, overhead or at grade, is recommended. The at-grade crossing can be installed at a lower cost as compared to an overhead pedestrian crossing. However, the overhead option has the obvious benefit of safer pedestrian/traffic operations, and no additional delays to through traffic on Airport Way. Also, roundabouts will reduce the probability of rear end, head-on and left turn collisions, and reduce the severity of collisions that do occur.

Option 2 - If signals are installed at Bonson Road / Airport Way and Harris Road / Airport Way intersections, a midblock crossing will not be required/recommended. Both vehicular traffic and pedestrians can be served through the signalized intersections in a safe and efficient manner.



6.0 Traffic Calming Along Airport Way

Traffic calming is defined by the Institute of Transportation Engineers (ITE) as, “*the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behaviour and improve conditions for non-motorized street users*”. Traffic calming is a series of features coordinated to address a known or anticipated neighbourhood issue of speed, short-cutting, or safety. Traffic calming features generally fall into five (5) categories:

Obstructions: Features that obstruct specific vehicle movements. Obstructions discourage shortcutting, reduce conflicts, and enhance the neighbourhood environment. They are typically applied to intersections, but can be used mid-block.

Vertical Deflections: Features that require a motorist to reduce speed due to varied surface level. Vertical deflections have the primary benefit of reduced vehicle speeds, and can result in decreased volumes, reduced conflicts, and enhanced pedestrian conditions.

Horizontal Deflections: Features that require a motorist to alter their direction or choose an entirely different route. Horizontal deflections can be applied to reduce neighbourhood short-cutting, reduce vehicle speeds, or reduce conflicts.

Signage: Features that regulate traffic movements within a neighbourhood. Signage requires police enforcement and in many cases can be replaced with self-enforcing features.

Technology: Features that utilize newer technologies to communicate a message to motorists, such as radar speed signs.

The basic function of a street is to provide varying levels of both movement and access depending on the road classification. Traffic calming should be used on roads to retain their intended functions, and is typically installed to achieve one or more of the following objectives:

- Reduce vehicle travel speeds
- Reduce traffic volumes
- Discourage neighbourhood short-cutting
- Minimize conflicts between vehicles and other street users
- Improve the neighbourhood environment

Traffic calming on arterial streets such as Airport Way is challenging because of the multiple purposes served by arterial streets. Arterial streets move people and goods efficiently within and through the City; provide routes for quick and efficient emergency response; and provide controlled access to collector roads serving neighbourhood streets.



Airport Way is intended to provide for continuous vehicle travel at higher speeds, and would typically be controlled-access (connected to local collector roadways via a signalized intersection). Technological and signage controls are the only appropriate method of traffic calming for this type of arterial road. Due to its linkage to the Golden Ears Bridge, Airport Way has become the main access to the Golden Ears Connector system in the southern area of Pitt Meadows and is considered a new gateway into the community.

Owing to the Arterial classification and the anticipated heavy vehicles from GEBP, the following physical traffic calming measures, are recommended for arterial roads such as Airport Way when traffic speeds are a concern.

Radar Speed Signs – By displaying the speed of oncoming vehicles, these signs provide direct feedback to drivers and remind them to slow down. This can be an effective device for multi-lane arterial streets like the Airport Way.



Oversize Signs and Pavement Markings

Oversize signs or specialized signs and pavement markings are potential treatments for Airport Way due to the anticipated increase in heavy vehicle traffic in the future traffic scenarios.



Roadside / Median Barriers

The addition of roadside or median barrier would have little to no impact on traffic calming, but would serve as an additional safety improvement, as head-on and off-road left/right crashes would be mitigated. However, roadside barrier is usually reserved for higher speed facilities or where specific safety concerns exist (i.e. steep drop-off, sharp curve, lack of clear zone, etc.), and median barrier where average daily volumes (2-way) are expected to exceed 20,000 vpd.

Roundabout Effect on Traffic Calming

The roundabout options on Airport Way at the Harris Road and Boson Road intersections would also serve as traffic calming measures by lowering the speeds of approaching vehicles. Roundabouts create a calmed steady flow of traffic and reduce conflict points, which can lead to fewer collisions and reduced severity. Roundabouts help to sustain lowered vehicle speeds when they're used in a series.

7.0 Closure

The information provided in this report is true and accurate to the best of our knowledge. Please call the undersigned if you have any questions regarding any aspect of this study.

Sincerely,

McELHANNEY CONSULTING SERVICES LTD.

Prepared by:

Reviewed by:



Page 25
Our File: 2121-00209-01

A handwritten signature in blue ink, appearing to read "Ahmad Puri".

Ahmad Puri, P.Eng., M.Eng.
Traffic Engineer
Highways & Traffic

email: apuri@mcelhanney.com

A handwritten signature in purple ink, appearing to read "José S. Pinto".

José S. Pinto, P.Eng. PTOE
Division Manager
Highways & Traffic

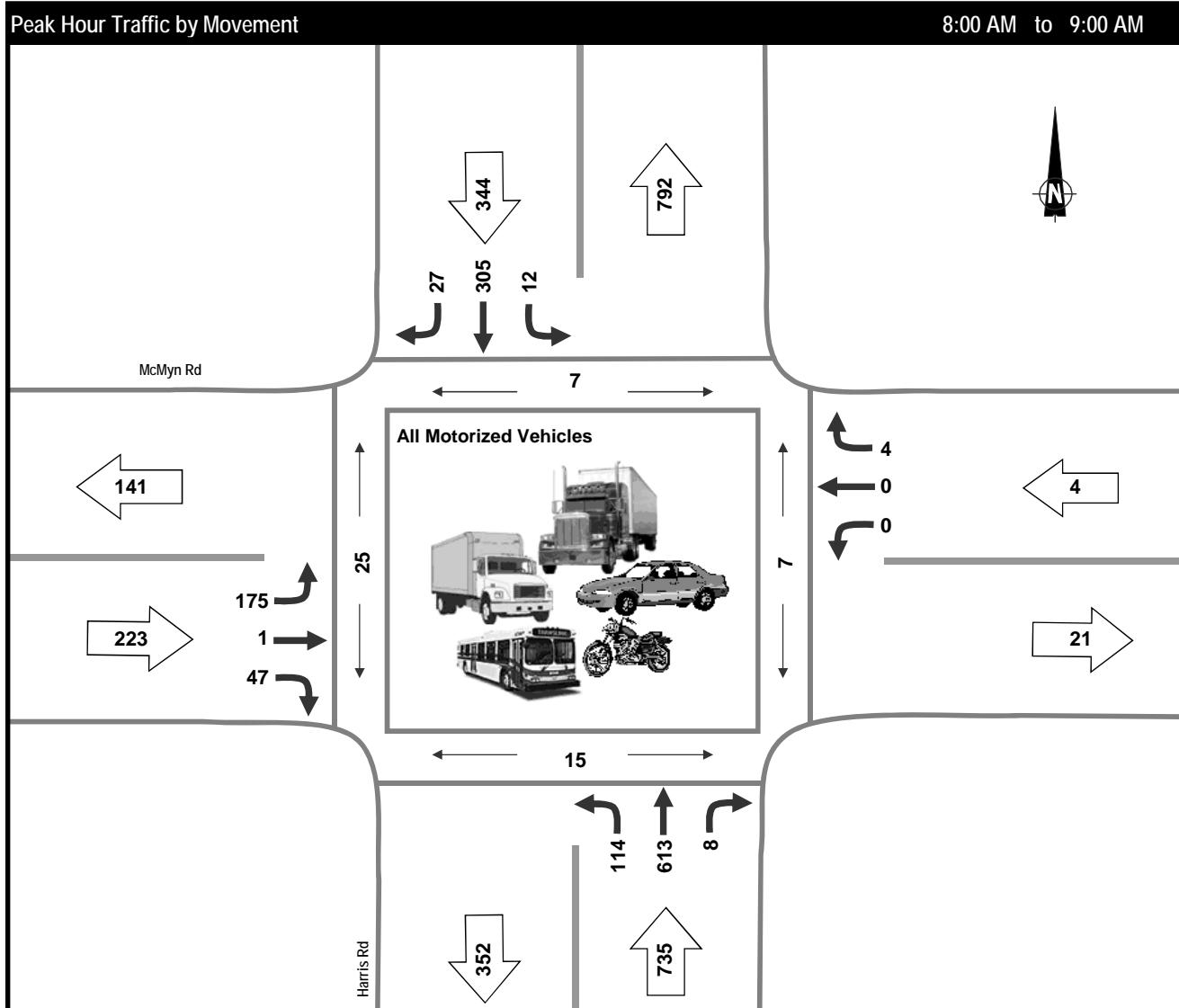
email: jpinto@mcelhanney.com



APPENDIX A

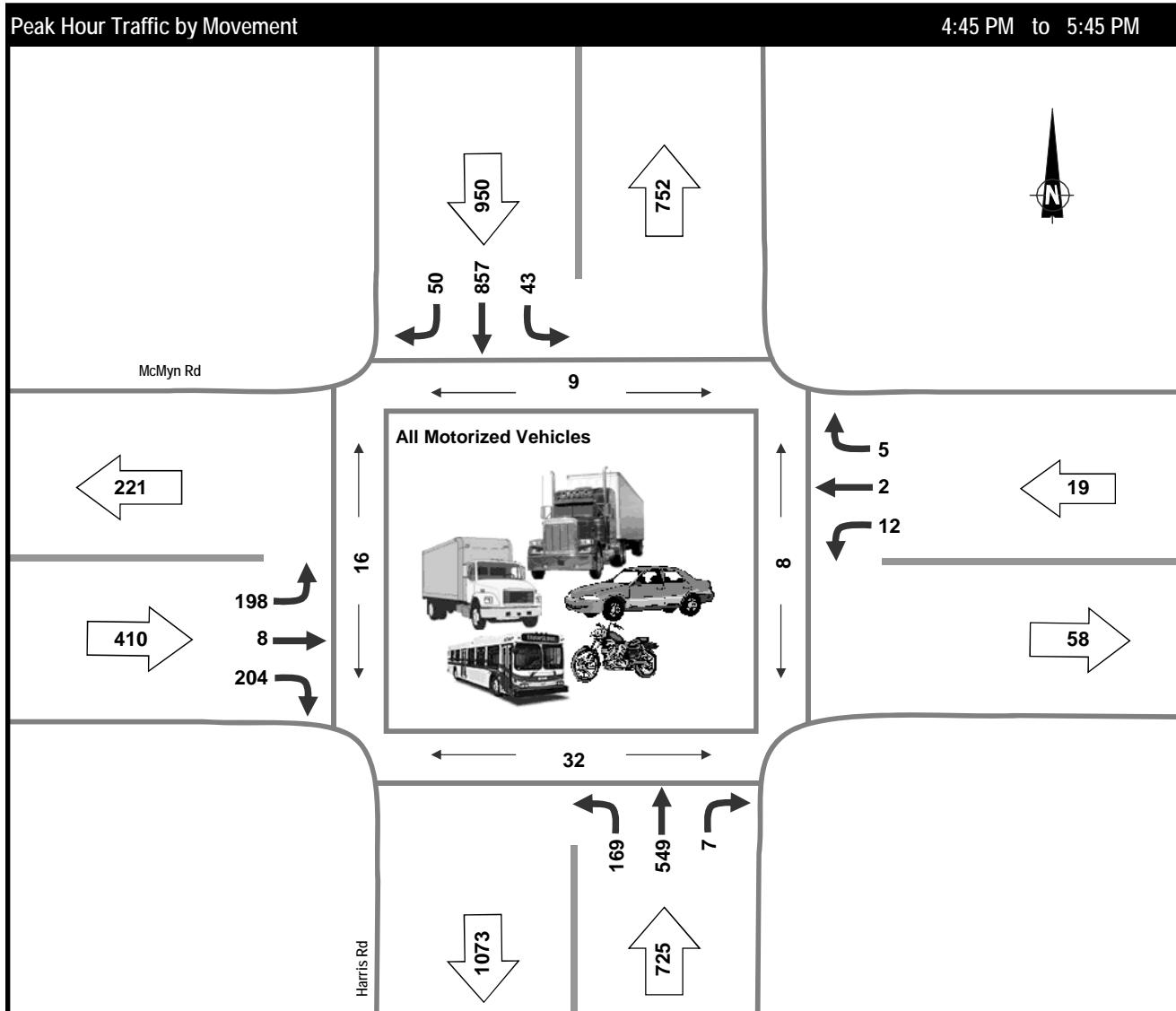
Traffic Counts

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Cloudy
Vehicle Class: All Motorized Vehicles

Morning Peak Period


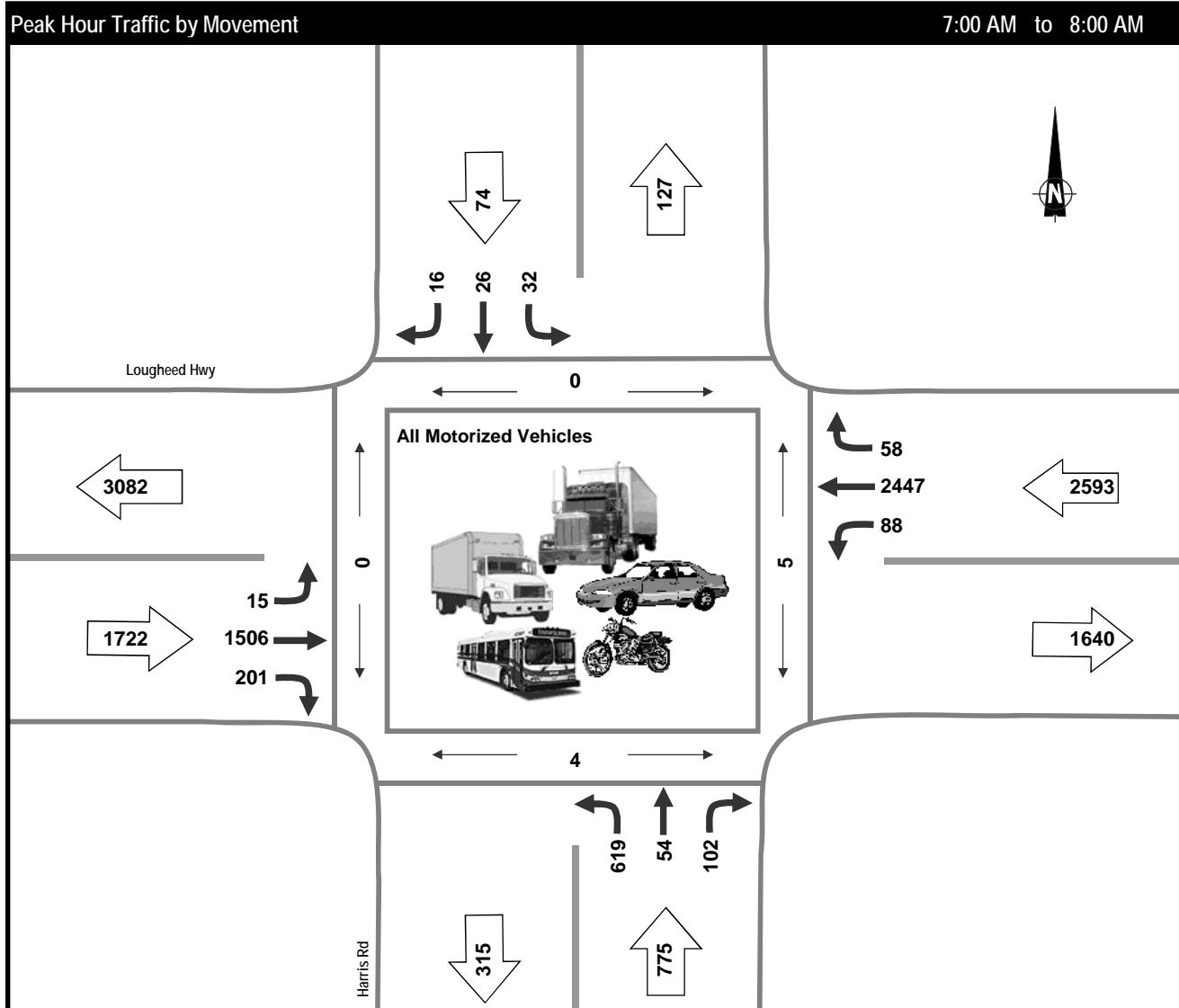
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	12	305	27	114	613	8	175	1	47	0	0	4	7	15	25	7	1,306
PH Factor	0.75	0.91	0.96	0.57	0.92	0.50	0.93	0.25	0.78	0.00	0.00	0.33	0.58	0.75	0.52	0.58	0.95
Peak 15 X 4	16	336	28	200	664	16	188	4	60	0	0	12	12	20	48	12	1,372
Average Hour	8	294	19	95	618	5	154	2	46	0	0	3	4	14	17	5	1,244
Survey Total	16	588	37	190	1,235	9	308	3	92	0	0	5	8	27	34	10	2,483
7:00	2	52	4	18	150	0	30	1	8	0	0	1	0	2	3	0	266
7:15	0	62	1	17	159	1	30	0	6	0	0	0	0	2	1	1	276
7:30	0	76	2	19	173	0	35	1	19	0	0	0	1	5	4	2	325
7:45	2	93	3	22	140	0	38	0	12	0	0	0	0	3	1	0	310
8:00	1	63	7	24	166	3	42	0	15	0	0	0	0	5	12	0	321
8:15	4	84	6	20	134	1	45	0	10	0	0	3	3	2	5	3	307
8:30	3	81	7	20	162	0	47	1	14	0	0	0	2	4	6	3	335
8:45	4	77	7	50	151	4	41	0	8	0	0	1	2	4	2	1	343

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Cloudy
Vehicle Class: All Motorized Vehicles

Afternoon Peak Period


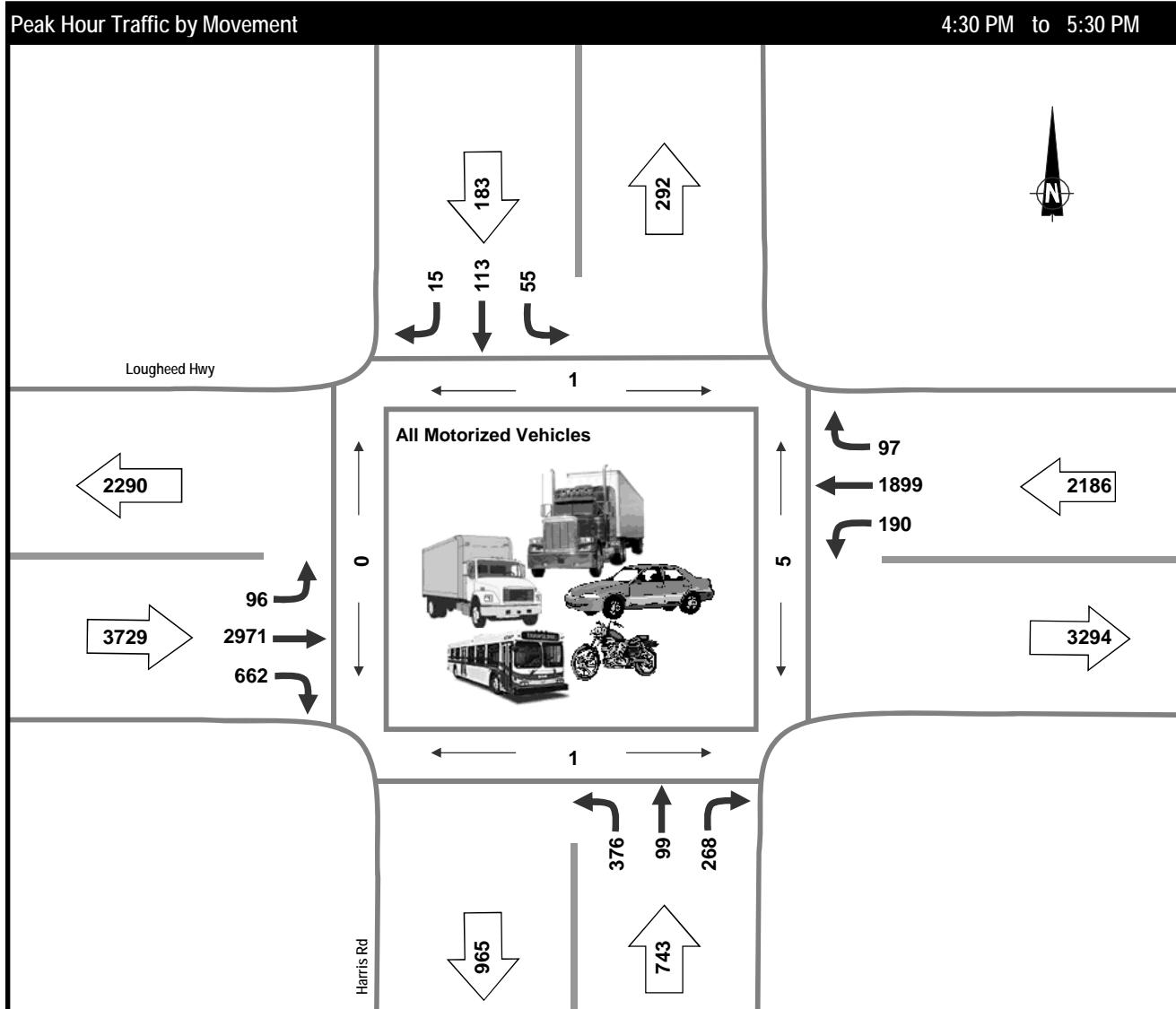
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	43	857	50	169	549	7	198	8	204	12	2	5	9	32	16	8	2,104
PH Factor	0.72	0.97	0.74	0.88	0.86	0.58	0.93	0.67	0.88	0.75	0.50	0.42	0.75	0.47	0.57	0.67	0.95
Peak 15 X 4	60	884	68	192	636	12	212	12	232	16	4	12	12	68	28	12	2,212
Average Hour	36	679	44	152	486	7	198	9	173	9	4	6	15	30	30	8	1,803
Survey Total	134	2,547	164	571	1,823	26	744	32	650	32	16	23	58	114	113	31	6,762
14:30	7	137	12	33	137	1	62	1	36	2	2	1	7	9	14	1	431
14:45	10	164	12	37	124	1	65	4	37	2	0	1	0	4	8	2	457
15:00	4	117	11	37	110	0	52	2	35	2	1	1	6	4	8	2	372
15:15	11	145	13	35	118	1	47	0	42	1	2	2	3	5	11	0	417
15:30	10	161	12	36	127	3	63	4	45	3	1	4	6	18	18	2	469
15:45	10	174	16	49	152	4	52	3	59	2	1	1	3	14	7	5	523
16:00	7	210	12	44	129	2	44	1	47	2	1	3	7	1	4	3	502
16:15	7	203	12	41	121	1	50	3	49	2	1	2	13	9	8	7	492
16:30	15	193	3	45	137	3	59	2	49	2	3	1	2	9	16	1	512
16:45	12	207	10	48	117	2	48	2	51	2	1	3	1	17	5	1	503
17:00	15	216	10	42	159	2	53	1	49	4	0	2	3	7	7	3	553
17:15	9	221	13	44	132	0	46	3	46	3	1	0	2	2	2	2	518
17:30	7	213	17	35	141	3	51	2	58	3	0	0	3	6	2	2	530
17:45	10	186	11	45	119	3	52	4	47	2	2	2	2	9	3	0	483

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Cloudy
Vehicle Class: All Motorized Vehicles

Morning Peak Period


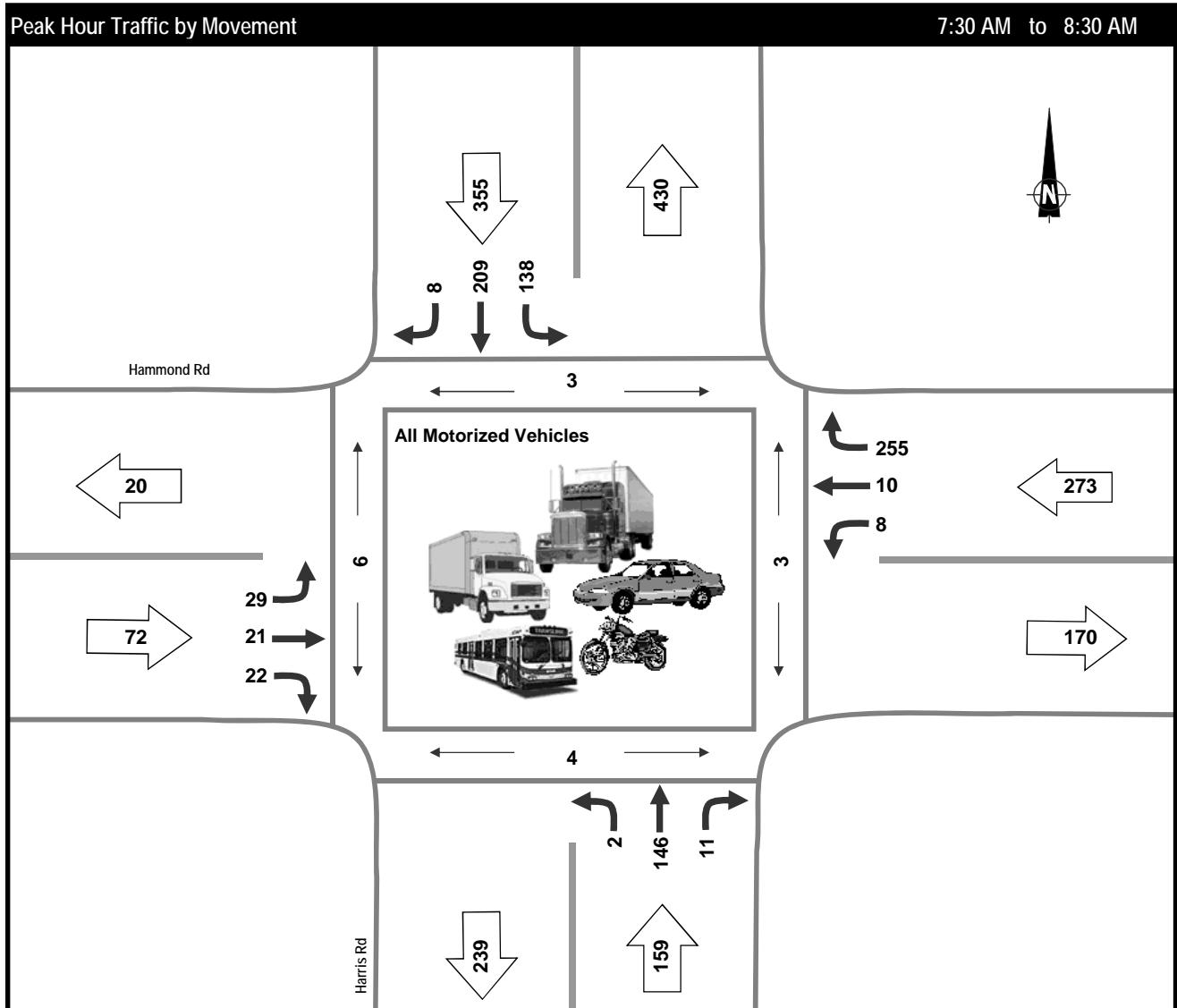
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	32	26	16	619	54	102	15	1506	201	88	2447	58	0	4	0	5	5,164
PH Factor	0.73	0.59	0.80	0.94	0.71	0.71	0.63	0.89	0.74	0.85	0.96	0.76	0.00	0.50	0.00	0.42	0.98
Peak 15 X 4	44	44	20	660	76	144	24	1,700	272	104	2,544	76	0	8	0	12	5,284
Average Hour	43	30	14	573	51	154	18	1,486	214	114	2,280	52	0	2	1	6	5,029
Survey Total	85	60	28	1,146	102	308	35	2,971	427	228	4,560	104	0	4	1	11	10,054
7:00	8	2	5	162	19	18	1	316	36	23	631	8	0	0	0	0	1,229
7:15	11	7	3	165	9	18	2	372	47	19	636	19	0	2	0	1	1,308
7:30	8	11	4	147	10	30	6	425	50	26	591	13	0	0	0	3	1,321
7:45	5	6	4	145	16	36	6	393	68	20	589	18	0	2	0	1	1,306
8:00	14	10	1	143	10	48	3	364	43	22	557	13	0	0	1	0	1,228
8:15	8	6	2	108	11	44	6	376	62	38	520	14	0	0	0	1	1,195
8:30	10	10	7	168	11	48	3	376	64	34	545	8	0	0	0	4	1,284
8:45	21	8	2	108	16	66	8	349	57	46	491	11	0	0	0	1	1,183

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Cloudy
Vehicle Class: All Motorized Vehicles

Afternoon Peak Period


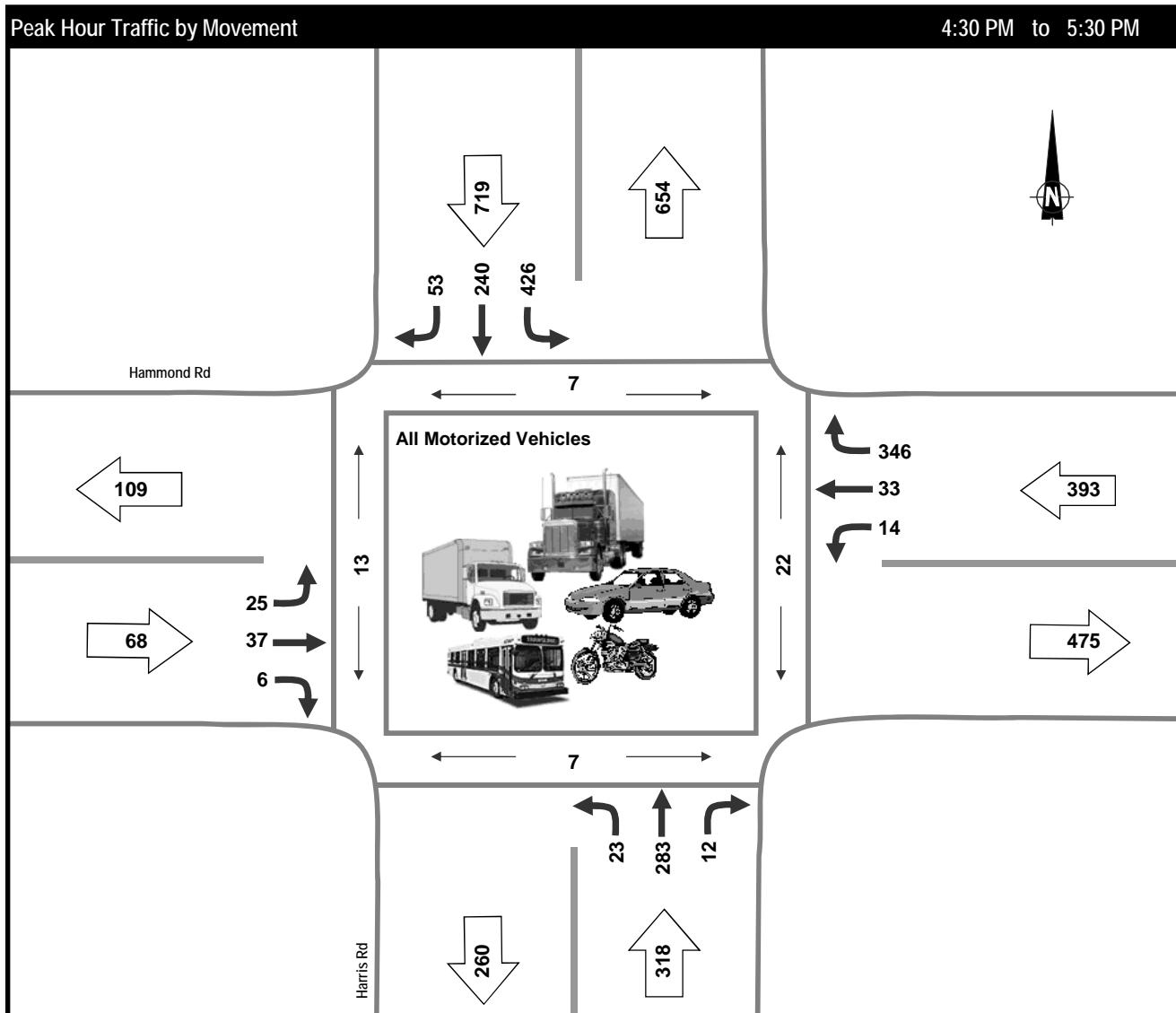
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	55	113	15	376	99	268	96	2971	662	190	1899	97	1	1	0	5	6,841
PH Factor	0.76	0.94	0.75	0.90	0.73	0.91	0.86	0.97	0.95	0.79	0.95	0.66	0.25	0.25	0.00	0.63	0.99
Peak 15 X 4	72	120	20	420	136	296	112	3,056	700	240	2,004	148	4	4	0	8	6,936
Average Hour	60	85	14	350	78	234	59	2,531	536	182	1,647	77	1	1	0	12	5,853
Survey Total	224	319	52	1,314	291	878	222	9,490	2,009	681	6,176	290	3	3	0	44	21,946
14:30	22	20	6	93	12	75	9	594	103	53	372	21	0	0	0	2	1,380
14:45	19	25	1	89	21	63	8	558	122	51	353	19	0	0	0	26	1,329
15:00	21	15	4	90	20	63	5	455	79	52	427	20	1	0	0	1	1,251
15:15	10	16	6	90	22	54	9	646	125	55	440	22	0	0	0	3	1,495
15:30	23	28	9	87	9	62	15	699	140	51	392	19	0	1	0	2	1,534
15:45	14	12	2	125	22	70	14	681	148	45	483	23	0	1	0	1	1,639
16:00	18	18	1	75	17	50	19	795	177	43	511	13	1	0	0	1	1,737
16:15	21	32	1	105	16	63	28	727	156	48	460	21	0	0	0	2	1,678
16:30	10	26	4	92	19	73	22	711	155	60	488	19	0	0	0	0	1,679
16:45	12	29	5	80	26	54	28	745	175	42	501	37	0	0	0	1	1,734
17:00	18	30	2	99	34	74	25	764	163	41	431	25	0	0	0	2	1,706
17:15	15	28	4	105	20	67	21	751	169	47	479	16	1	1	0	2	1,722
17:30	15	19	4	85	27	61	9	678	171	45	432	20	0	0	0	1	1,566
17:45	6	21	3	99	26	49	10	686	126	48	407	15	0	0	0	0	1,496

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Sunny
Vehicle Class: All Motorized Vehicles

Morning Peak Period


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	138	209	8	2	146	11	29	21	22	8	10	255	3	4	6	3	859
PH Factor	0.93	0.76	0.50	0.50	0.78	0.69	0.73	0.48	0.55	0.50	0.50	0.82	0.75	0.33	0.50	0.38	0.90
Peak 15 X 4	148	276	16	4	188	16	40	44	40	16	20	312	4	12	12	8	956
Average Hour	131	178	10	3	129	9	34	19	19	8	9	244	3	11	16	2	793
Survey Total	261	356	20	5	257	17	68	37	38	15	18	487	5	21	31	4	1,579
7:00	22	38	3	0	11	0	10	3	2	2	2	49	0	1	1	0	142
7:15	28	32	3	1	29	1	12	2	6	1	0	60	1	4	2	1	175
7:30	37	55	1	0	28	3	10	2	10	1	5	61	0	1	2	1	213
7:45	35	69	0	1	47	3	9	3	4	2	3	63	1	0	1	0	239
8:00	37	45	4	0	34	1	6	5	3	4	0	78	1	0	0	2	217
8:15	29	40	3	1	37	4	4	11	5	1	2	53	1	3	3	0	190
8:30	32	47	4	2	30	2	9	9	4	2	4	60	0	9	18	0	205
8:45	41	30	2	0	41	3	8	2	4	2	2	63	1	3	4	0	198

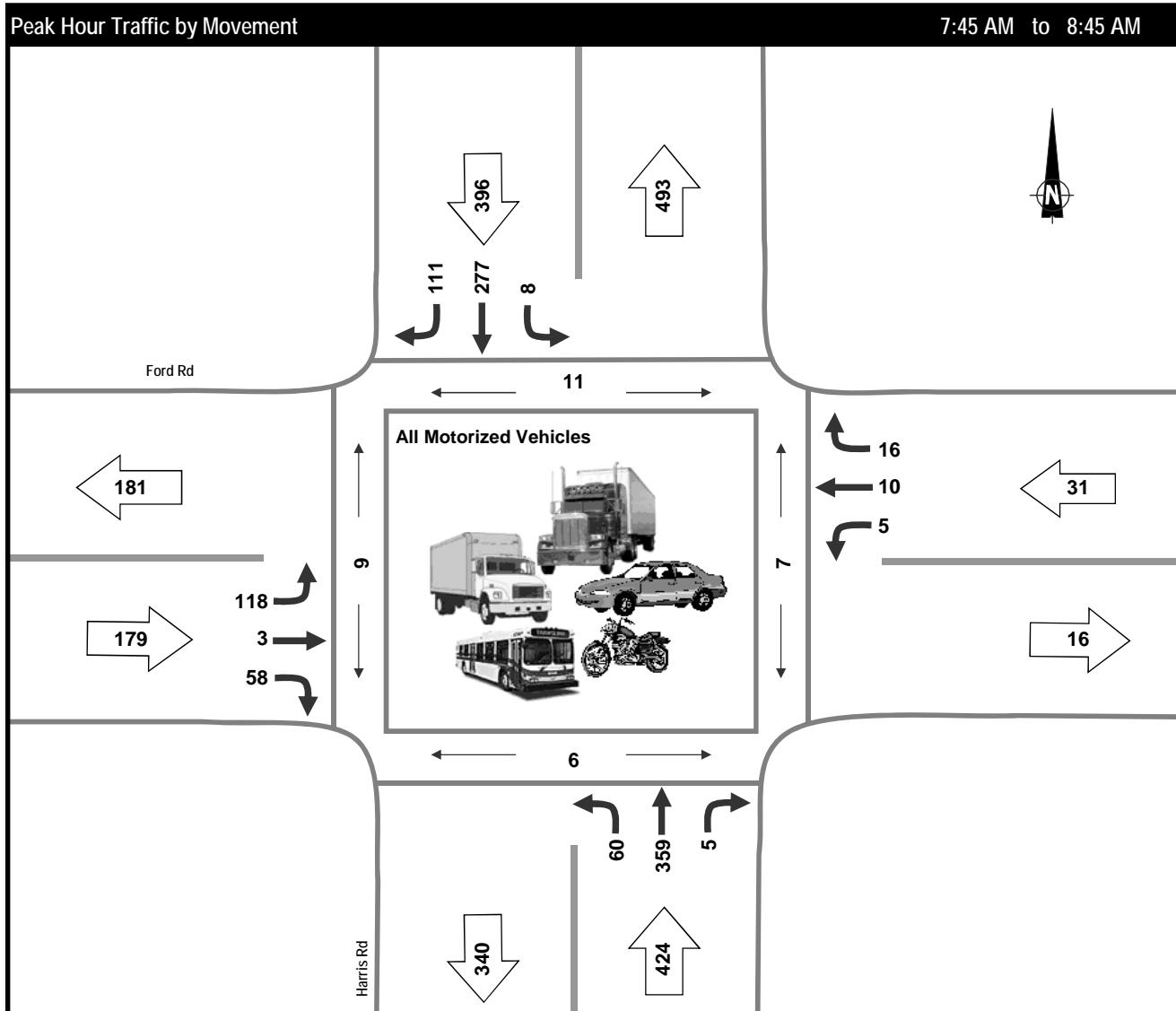
Project: #5535: McElhanney - July 2016 Harris Rd TMC's
 Municipality: Pitt Meadows
 Weather: Sunny
 Vehicle Class: All Motorized Vehicles

Afternoon Peak Period


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	426	240	53	23	283	12	25	37	6	14	33	346	7	7	13	22	1,498
PH Factor	0.82	0.94	0.83	0.72	0.85	0.60	0.63	0.71	0.75	0.58	0.69	0.90	0.35	0.58	0.41	0.50	0.96
Peak 15 X 4	520	256	64	32	332	20	40	52	8	24	48	384	20	12	32	44	1,568
Average Hour	302	198	38	15	224	13	23	23	8	12	23	253	3	7	10	14	1,132
Survey Total	1,132	744	143	56	841	47	88	85	30	44	86	948	13	27	37	53	4,244
14:30	49	38	1	2	34	2	4	1	4	2	4	35	1	0	1	3	176
14:45	72	45	6	1	49	1	5	2	0	4	9	54	0	0	1	0	248
15:00	54	42	7	4	50	4	5	4	1	6	5	64	2	3	2	3	246
15:15	72	41	8	2	56	6	5	3	2	4	6	67	0	2	5	1	272
15:30	70	52	12	3	82	4	5	5	3	1	6	58	0	2	4	8	301
15:45	84	56	10	3	49	2	3	8	2	1	3	60	0	4	4	6	281
16:00	87	50	12	6	76	4	10	3	1	2	6	81	1	1	1	0	338
16:15	72	50	7	5	70	3	7	8	3	2	3	69	0	1	3	2	299
16:30	95	64	15	4	73	3	10	10	2	2	6	74	0	3	3	11	358
16:45	103	56	8	8	68	0	8	13	2	2	9	96	5	2	2	4	373
17:00	98	62	14	4	83	4	2	10	1	6	6	85	1	0	6	375	
17:15	130	58	16	7	59	5	5	4	1	4	12	91	1	2	8	1	392
17:30	79	75	11	2	46	5	9	6	3	0	9	59	2	4	2	3	304
17:45	67	55	16	5	46	4	10	8	5	8	2	55	0	3	1	5	281

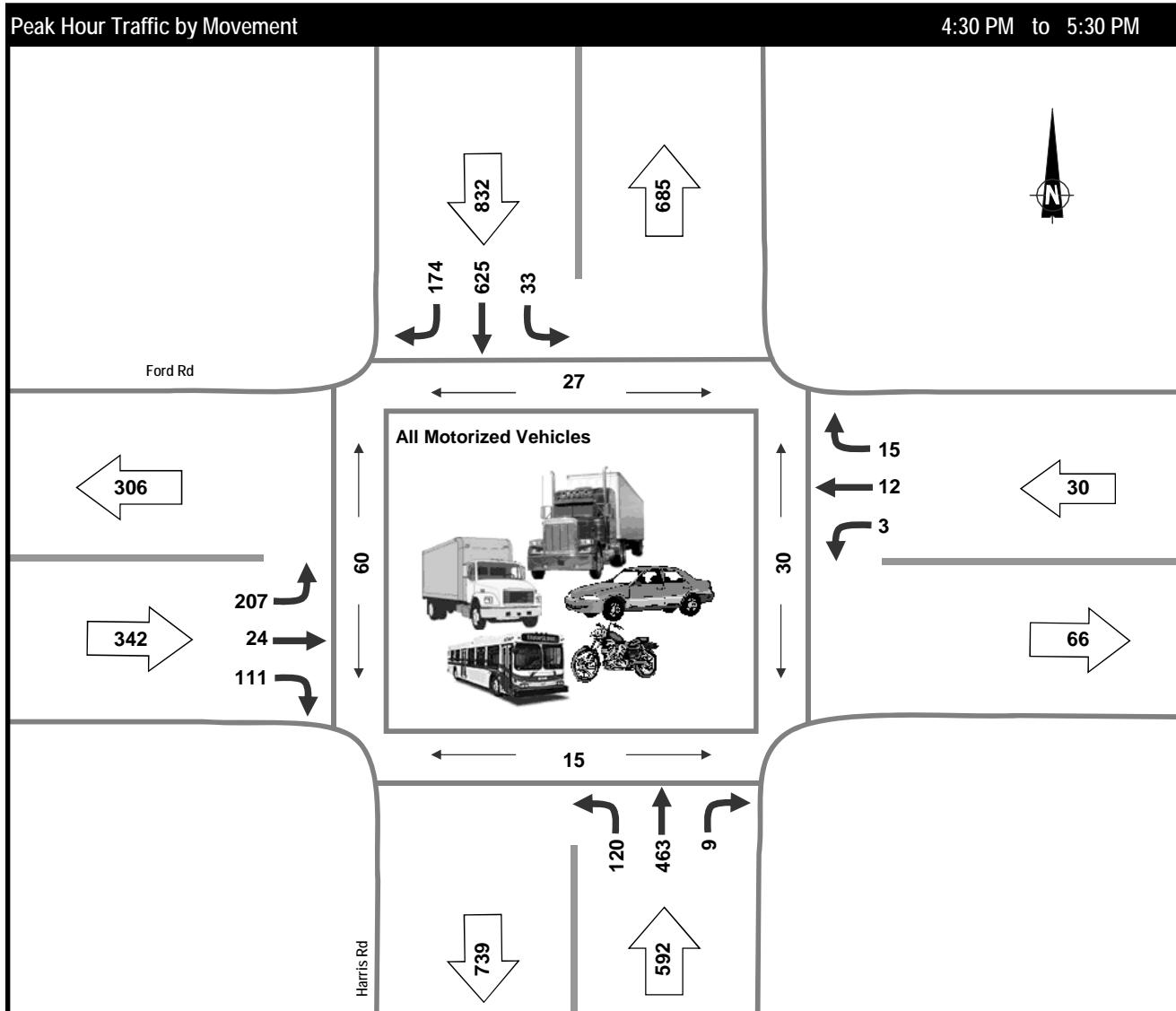
Morning Peak Period

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Sunny
Vehicle Class: All Motorized Vehicles



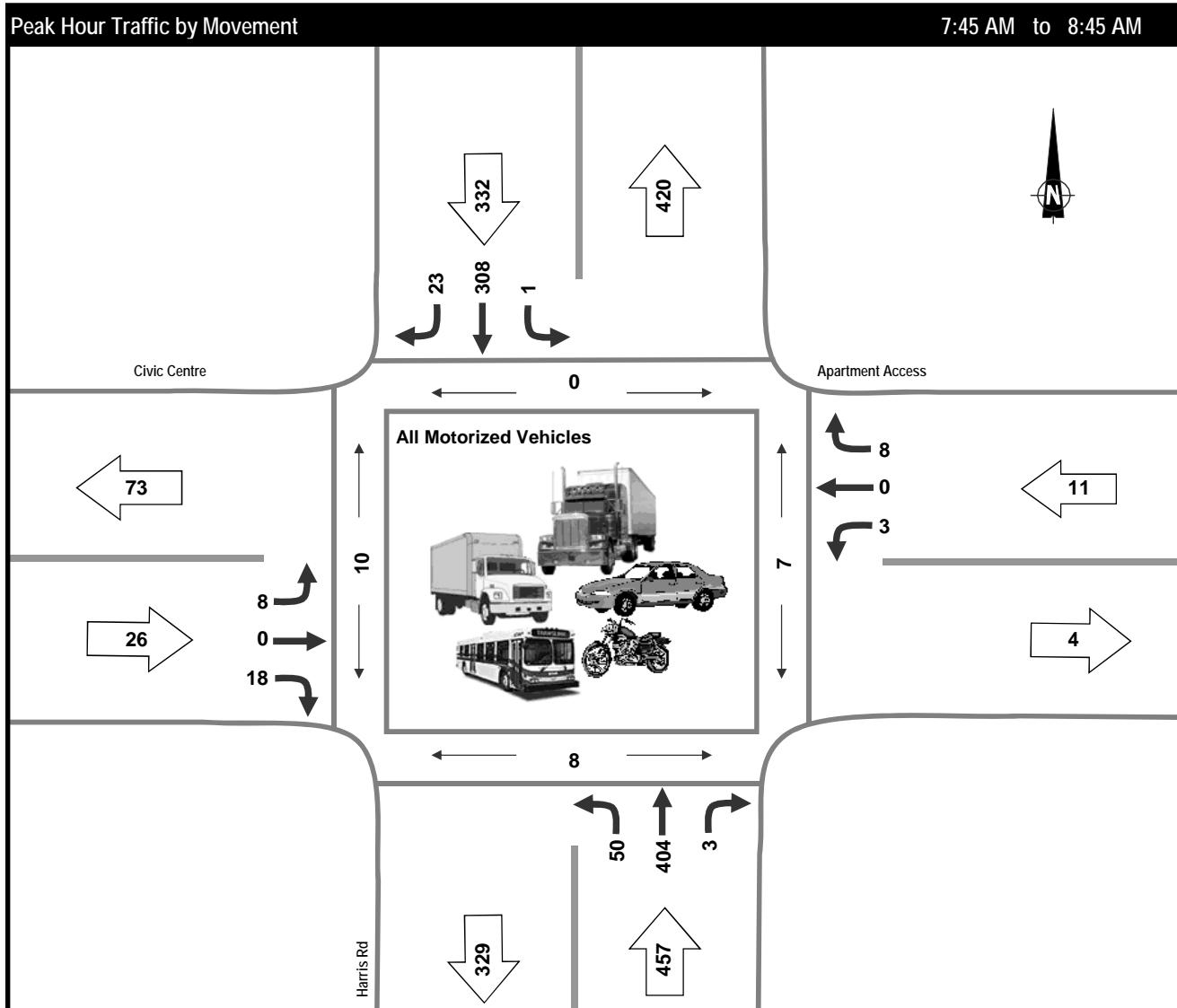
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	8	277	111	60	359	5	118	3	58	5	10	16	11	6	9	7	1,030
PH Factor	0.50	0.79	0.77	0.68	0.93	0.63	0.78	0.38	0.63	0.63	0.63	0.80	0.69	0.50	0.75	0.44	0.88
Peak 15 X 4	16	352	144	88	384	8	152	8	92	8	16	20	16	12	12	16	1,164
Average Hour	6	255	91	54	354	4	113	3	54	4	8	19	10	8	11	14	965
Survey Total	12	510	182	108	708	8	226	6	108	8	16	37	19	16	22	28	1,929
7:00	0	48	21	9	72	0	19	0	17	0	0	5	2	3	3	6	191
7:15	2	63	18	11	97	1	25	1	5	2	1	5	0	0	4	4	231
7:30	0	56	8	15	92	1	22	0	18	0	1	6	1	2	1	4	219
7:45	4	88	36	22	93	1	25	2	14	1	2	3	4	3	1	4	291
8:00	1	62	27	22	85	1	25	0	9	1	4	5	4	1	3	2	242
8:15	3	69	22	10	85	1	38	0	12	2	1	4	1	2	2	1	247
8:30	0	58	26	6	96	2	30	1	23	1	3	4	2	0	3	0	250
8:45	2	66	24	13	88	1	42	2	10	1	4	5	5	5	5	7	258

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Sunny
Vehicle Class: All Motorized Vehicles

Afternoon Peak Period


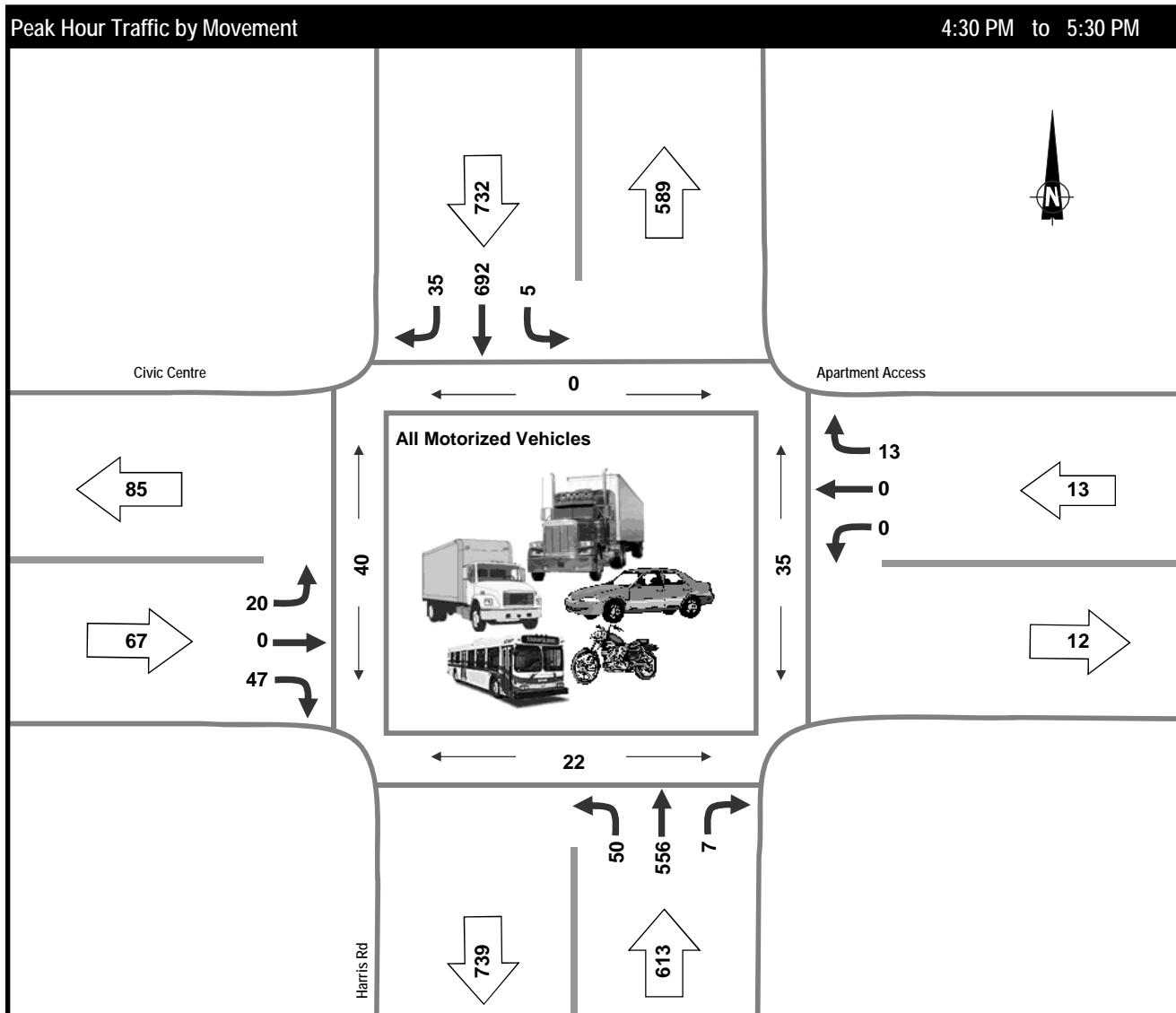
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	33	625	174	120	463	9	207	24	111	3	12	15	27	15	60	30	1,796
PH Factor	0.69	0.86	0.74	0.86	0.93	0.45	0.82	0.50	0.77	0.38	0.75	0.63	0.61	0.63	0.75	0.38	0.96
Peak 15 X 4	48	728	236	140	500	20	252	48	144	8	16	24	44	24	80	80	1,864
Average Hour	21	478	152	90	378	7	160	16	82	3	13	15	28	23	53	26	1,415
Survey Total	77	1,793	571	339	1,419	27	600	61	309	11	48	57	104	88	197	96	5,312
14:30	7	83	33	19	66	2	43	4	13	2	2	1	6	17	15	14	275
14:45	5	98	35	22	78	0	33	2	17	0	0	4	4	6	21	0	294
15:00	3	116	38	14	102	2	46	2	10	2	3	3	8	27	9	23	341
15:15	4	113	48	18	97	2	37	2	23	0	3	7	7	6	10	7	354
15:30	4	108	41	20	123	2	45	5	25	0	1	8	7	7	19	3	382
15:45	5	128	52	26	86	2	36	3	23	2	4	2	2	3	7	3	369
16:00	4	139	38	28	117	1	31	4	24	0	4	3	7	1	17	0	393
16:15	2	113	30	26	105	3	43	5	27	2	5	4	6	1	9	1	365
16:30	11	150	59	31	103	1	55	8	26	0	2	3	8	3	20	20	449
16:45	6	148	31	35	112	5	63	12	36	0	4	5	2	2	12	4	457
17:00	4	145	44	30	125	2	40	1	22	1	4	6	6	4	17	1	424
17:15	12	182	40	24	123	1	49	3	27	2	2	1	11	6	11	5	466
17:30	7	149	39	18	106	2	40	8	13	0	8	3	17	3	19	9	393
17:45	3	121	43	28	76	2	39	2	23	0	6	7	13	2	11	6	350

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Sunny
Vehicle Class: All Motorized Vehicles

Morning Peak Period


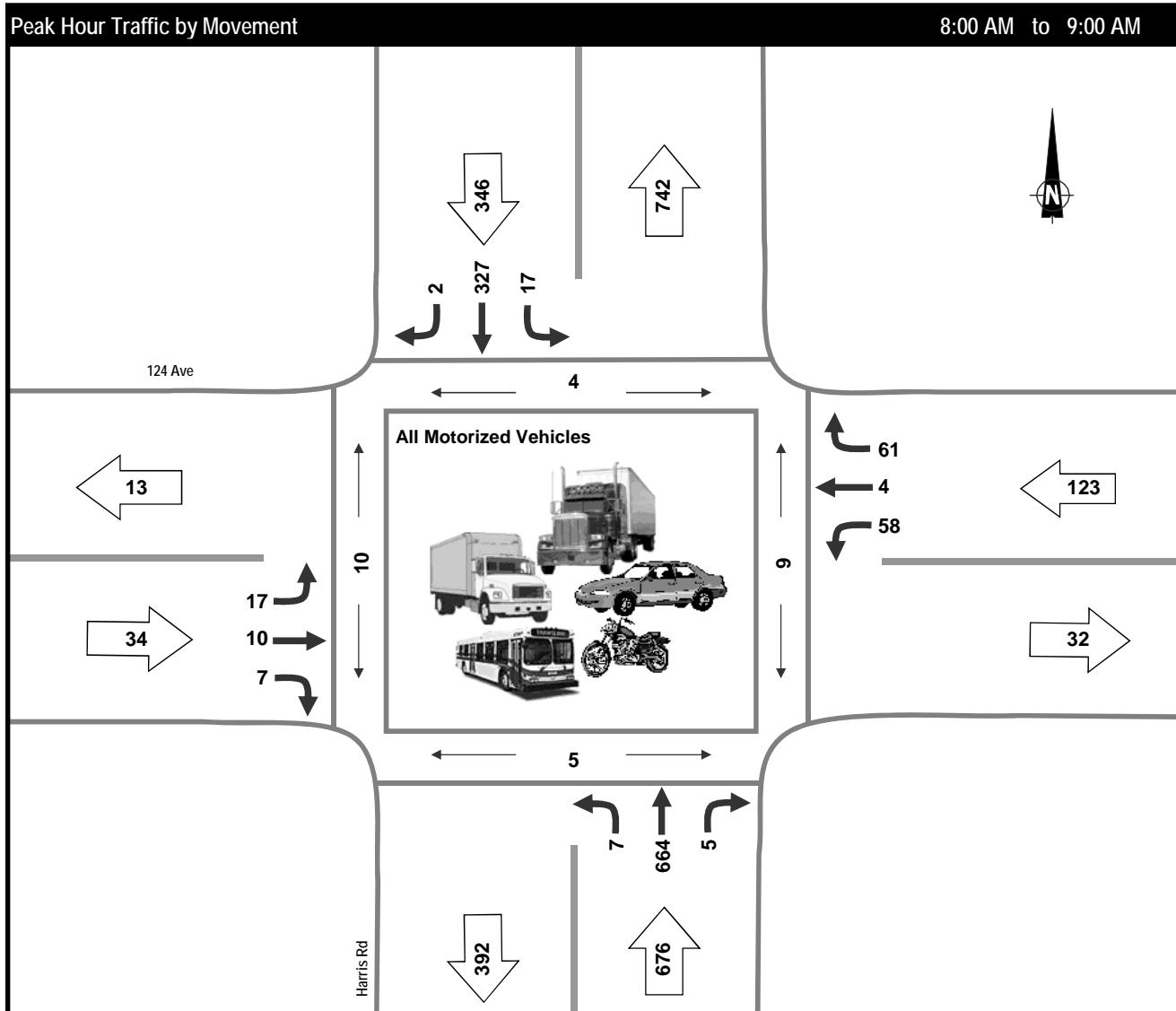
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	1	308	23	50	404	3	8	0	18	3	0	8	0	8	10	7	826
PH Factor	0.25	0.82	0.44	0.83	0.93	0.38	0.50	0.00	0.90	0.38	0.00	0.50	0.00	0.50	0.63	0.88	0.91
Peak 15 X 4	4	376	52	60	436	8	16	0	20	8	0	16	0	16	16	8	904
Average Hour	1	282	23	42	400	2	7	0	16	3	0	5	0	6	11	10	781
Survey Total	2	564	46	83	800	4	13	0	32	5	0	9	0	12	21	19	1,558
7:00	0	62	2	4	79	0	2	0	3	1	0	0	0	0	3	2	153
7:15	0	60	4	6	108	0	1	0	2	0	0	1	0	2	1	4	182
7:30	1	69	9	9	105	1	1	0	2	1	0	0	0	0	4	2	198
7:45	1	94	2	10	109	1	2	0	5	0	0	2	0	4	2	2	226
8:00	0	67	4	12	105	2	0	0	5	1	0	2	0	1	2	2	198
8:15	0	70	13	15	88	0	2	0	5	2	0	4	0	1	4	1	199
8:30	0	77	4	13	102	0	4	0	3	0	0	0	0	2	2	2	203
8:45	0	65	8	14	104	0	1	0	7	0	0	0	0	2	3	4	199

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Sunny
Vehicle Class: All Motorized Vehicles

Afternoon Peak Period


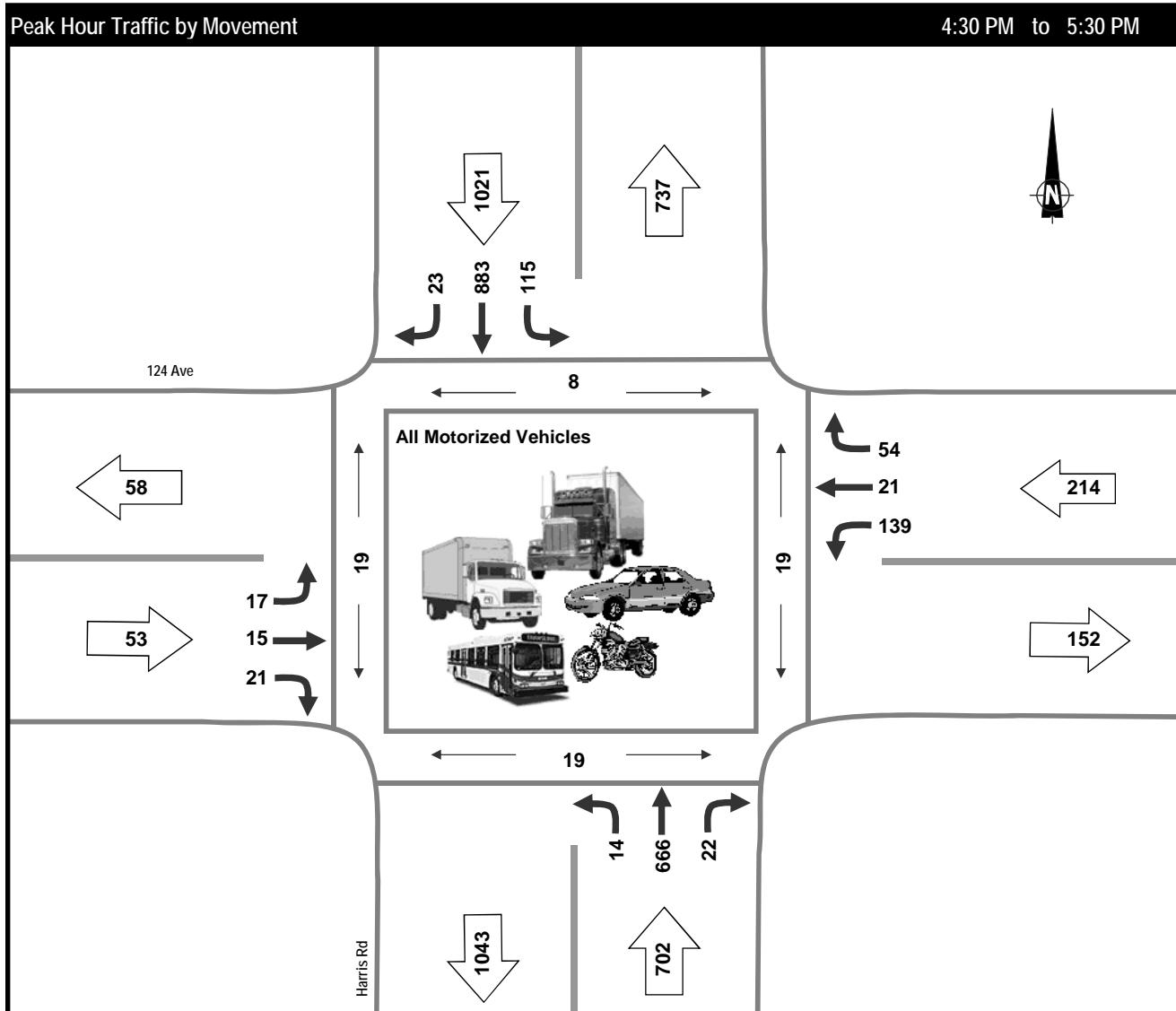
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	5	692	35	50	556	7	20	0	47	0	0	13	0	22	40	35	1,425
PH Factor	0.42	0.90	0.67	0.57	0.94	0.44	0.56	0.00	0.84	0.00	0.00	0.54	0.00	0.61	0.53	0.42	0.98
Peak 15 X 4	12	768	52	88	592	16	36	0	56	0	0	24	0	36	76	84	1,460
Average Hour	5	524	27	31	449	6	14	0	28	1	0	9	0	18	31	20	1,094
Survey Total	19	1,966	100	117	1,682	22	51	0	105	4	0	32	1	69	117	74	4,098
14:30	0	79	4	6	83	0	2	0	4	1	0	1	1	0	4	4	180
14:45	0	107	7	3	104	0	2	0	7	0	0	1	0	0	1	0	231
15:00	2	98	15	8	110	0	6	0	1	0	0	1	0	10	5	3	241
15:15	1	113	6	12	75	2	5	0	7	0	0	0	0	4	10	1	221
15:30	0	130	4	6	149	4	4	0	5	0	0	2	0	4	4	12	304
15:45	2	158	4	3	107	3	2	0	6	1	0	5	0	3	19	4	291
16:00	3	160	3	4	143	1	3	0	4	0	0	2	0	6	7	2	323
16:15	4	133	7	10	130	2	1	0	4	2	0	5	0	7	11	2	298
16:30	1	172	4	11	131	3	2	0	13	0	0	6	0	6	8	21	343
16:45	1	171	10	22	144	0	5	0	7	0	0	3	0	5	11	2	363
17:00	3	157	8	8	148	4	9	0	13	0	0	4	0	2	2	5	354
17:15	0	192	13	9	133	0	4	0	14	0	0	0	0	9	19	7	365
17:30	2	152	9	9	123	2	3	0	14	0	0	1	0	4	9	10	315
17:45	0	144	6	6	102	1	3	0	6	0	0	1	0	9	7	1	269

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Cloudy
Vehicle Class: All Motorized Vehicles

Morning Peak Period


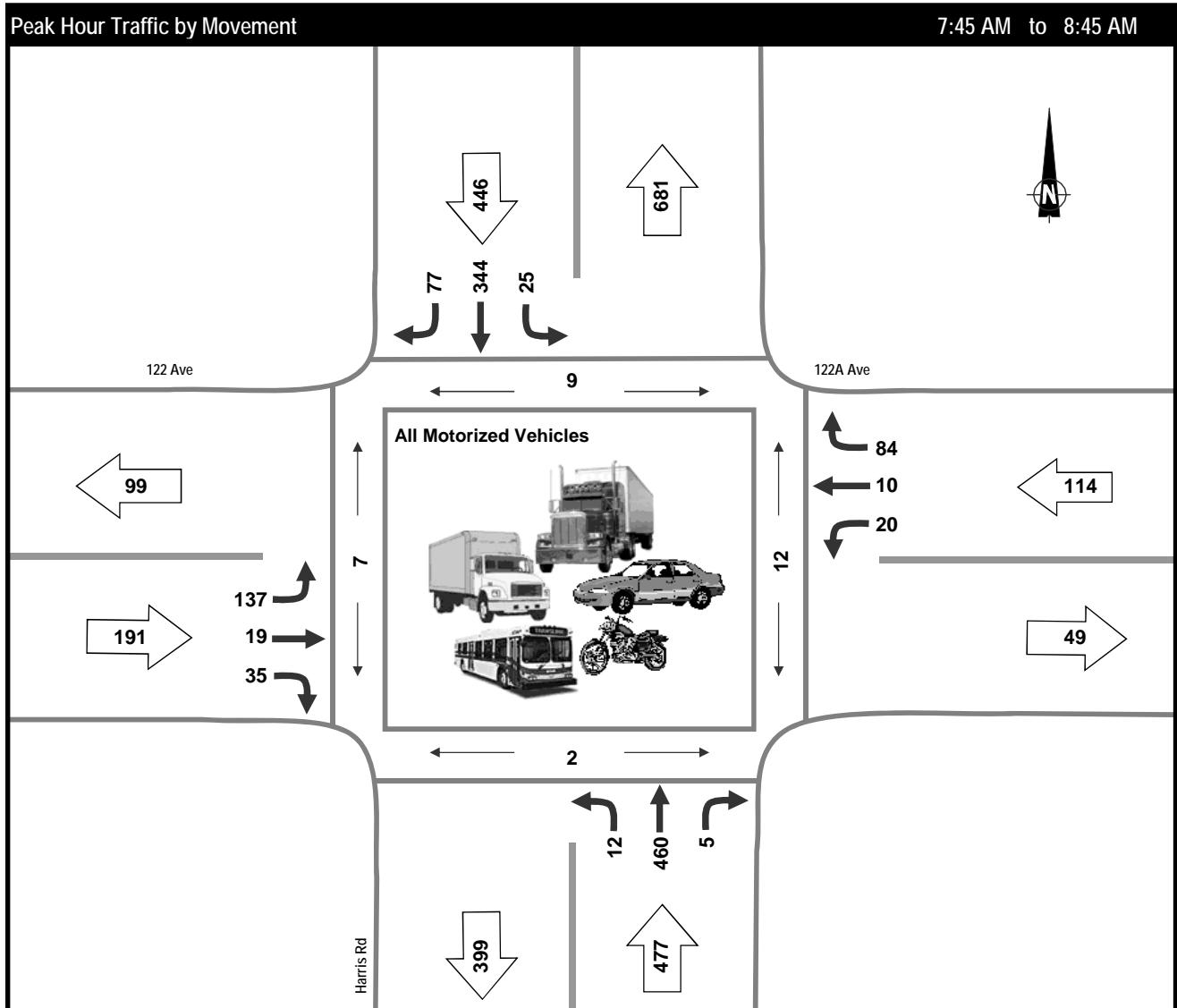
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	17	327	2	7	664	5	17	10	7	58	4	61	4	5	10	9	1,179
PH Factor	0.85	0.92	0.50	0.58	0.91	0.25	0.53	0.36	0.44	0.76	0.50	0.85	0.33	0.63	0.42	0.45	0.91
Peak 15 X 4	20	356	4	12	732	20	32	28	16	76	8	72	12	8	24	20	1,300
Average Hour	17	320	2	8	649	3	17	8	9	46	3	57	6	9	8	6	1,139
Survey Total	33	639	3	15	1,297	5	33	16	18	91	6	113	11	17	16	12	2,269
7:00	5	56	0	3	134	0	6	1	3	4	0	14	2	3	0	0	226
7:15	5	61	0	1	167	0	4	1	3	9	0	13	2	4	2	2	264
7:30	4	85	1	2	171	0	3	1	2	5	1	13	0	3	2	0	288
7:45	2	110	0	2	161	0	3	3	3	15	1	12	3	2	2	1	312
8:00	2	72	1	2	172	0	3	1	1	12	0	17	0	2	6	1	283
8:15	5	86	0	2	147	0	8	0	4	11	0	11	3	2	2	5	274
8:30	5	89	1	0	162	0	2	2	0	19	2	15	0	1	0	2	297
8:45	5	80	0	3	183	5	4	7	2	16	2	18	1	0	2	1	325

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Cloudy
Vehicle Class: All Motorized Vehicles

Afternoon Peak Period


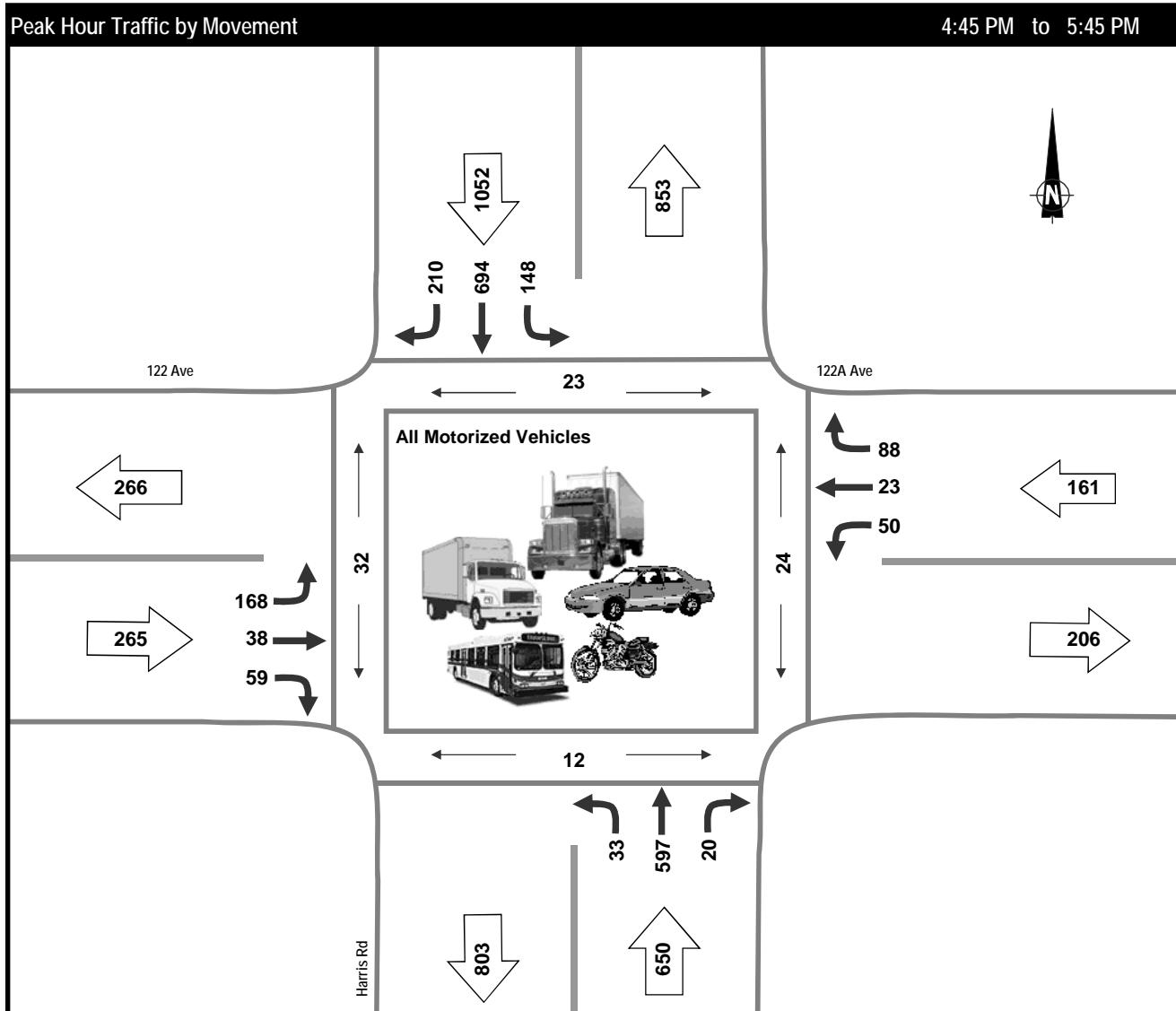
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	115	883	23	14	666	22	17	15	21	139	21	54	8	19	19	19	1,990
PH Factor	0.76	0.92	0.72	0.70	0.91	0.69	0.61	0.63	0.53	0.94	0.58	0.61	0.67	0.48	0.68	0.59	0.95
Peak 15 X 4	152	956	32	20	732	32	28	24	40	148	36	88	12	40	28	32	2,084
Average Hour	83	731	15	16	578	19	18	13	18	105	19	52	13	11	19	16	1,667
Survey Total	312	2,743	57	59	2,169	71	66	47	68	395	70	196	50	40	72	59	6,253
14:30	15	155	5	4	144	2	4	1	5	22	4	21	0	0	5	0	382
14:45	16	170	2	1	142	5	5	1	3	29	4	14	1	4	8	4	392
15:00	15	128	2	4	133	9	5	4	9	28	3	7	1	0	2	1	347
15:15	12	154	2	3	132	4	4	5	2	24	5	16	4	1	6	8	363
15:30	25	183	3	5	170	3	6	3	6	22	5	17	4	2	9	6	448
15:45	24	200	3	3	164	13	5	3	3	28	5	19	3	2	4	3	470
16:00	25	216	3	7	155	4	4	6	2	31	7	13	11	0	7	4	473
16:15	16	215	5	7	160	2	3	4	5	22	7	10	9	4	7	6	456
16:30	21	217	4	3	183	5	7	2	10	37	4	9	3	2	5	6	502
16:45	36	216	6	5	149	5	4	3	1	34	1	13	3	6	7	8	473
17:00	38	211	8	5	170	8	4	4	5	37	9	22	1	10	6	3	521
17:15	20	239	5	1	164	4	2	6	5	31	7	10	1	1	1	2	494
17:30	26	241	2	3	155	3	6	1	8	22	2	12	4	7	1	7	481
17:45	23	198	7	8	148	4	7	4	4	28	7	13	5	1	4	1	451

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Sunny
Vehicle Class: All Motorized Vehicles
Note: Train crossing at 7:26, 7:39, 7:56, 14:40, 15:51, 16:27, 17:21, 17:36

Morning Peak Period


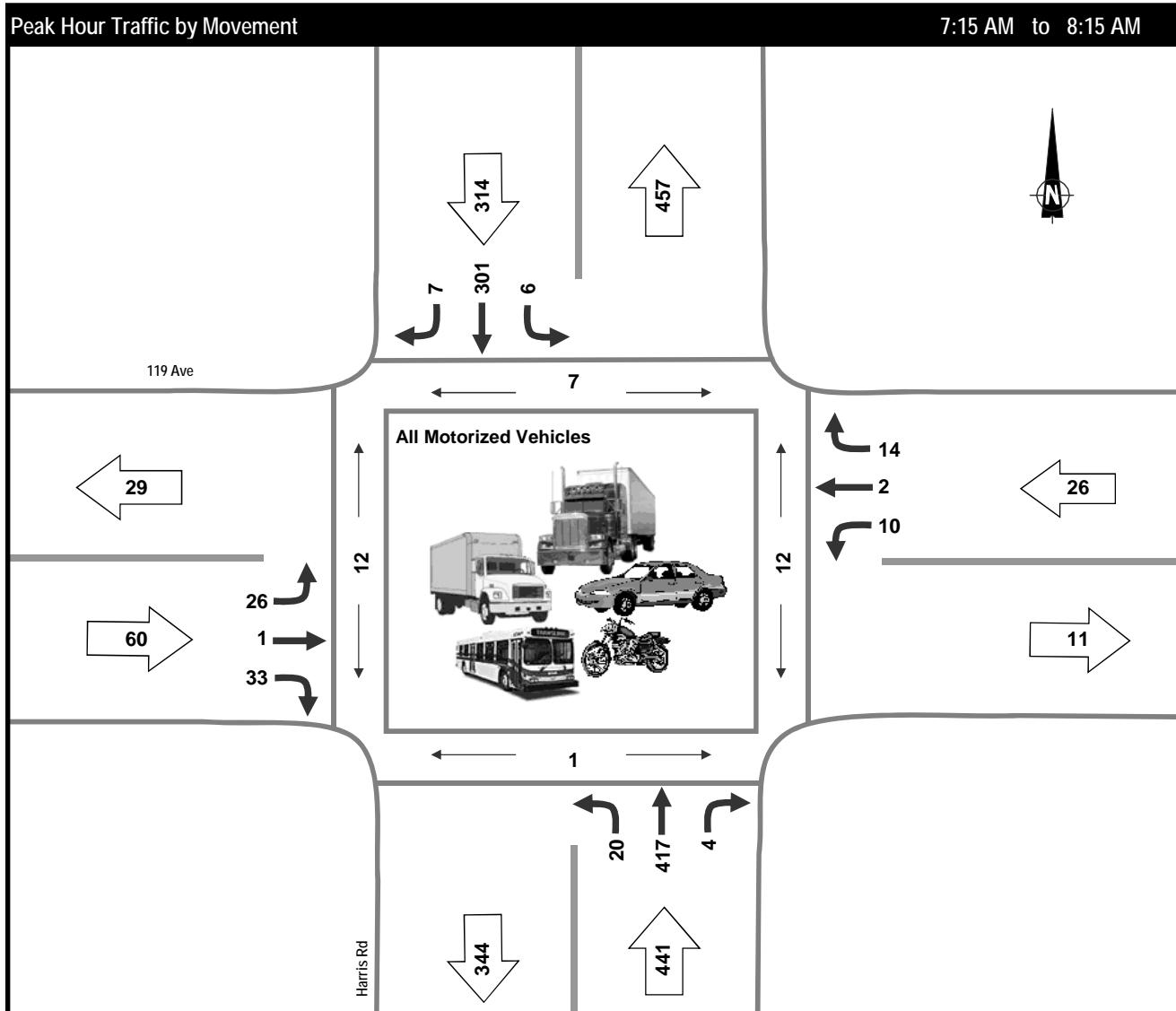
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	25	344	77	12	460	5	137	19	35	20	10	84	9	2	7	12	1,228
PH Factor	0.78	0.75	0.88	0.75	0.93	0.31	0.93	0.68	0.88	0.50	0.63	0.91	0.75	0.50	0.44	0.33	0.90
Peak 15 X 4	32	456	88	16	496	16	148	28	40	40	16	92	12	4	16	36	1,372
Average Hour	25	303	67	16	430	8	134	19	27	21	9	87	13	3	5	13	1,146
Survey Total	50	606	133	31	859	15	267	37	53	41	18	173	25	6	9	26	2,283
7:00	1	60	11	4	87	2	23	6	6	4	1	22	4	0	0	2	227
7:15	9	71	13	6	111	6	36	4	2	7	3	22	10	3	1	8	290
7:30	6	45	9	3	90	1	31	4	6	4	1	18	2	1	0	4	218
7:45	7	114	20	3	117	4	34	6	10	10	2	16	3	1	2	9	343
8:00	4	71	17	3	106	0	31	7	9	2	2	22	2	0	4	1	274
8:15	8	85	18	2	113	1	35	5	8	3	4	23	1	1	1	2	305
8:30	6	74	22	4	124	0	37	1	8	5	2	23	3	0	0	0	306
8:45	9	86	23	6	111	1	40	4	4	6	3	27	0	0	1	0	320

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Sunny
Vehicle Class: All Motorized Vehicles
Note: Train crossing at 7:26, 7:39, 7:56, 14:40, 15:51, 16:27, 17:21, 17:36

Afternoon Peak Period


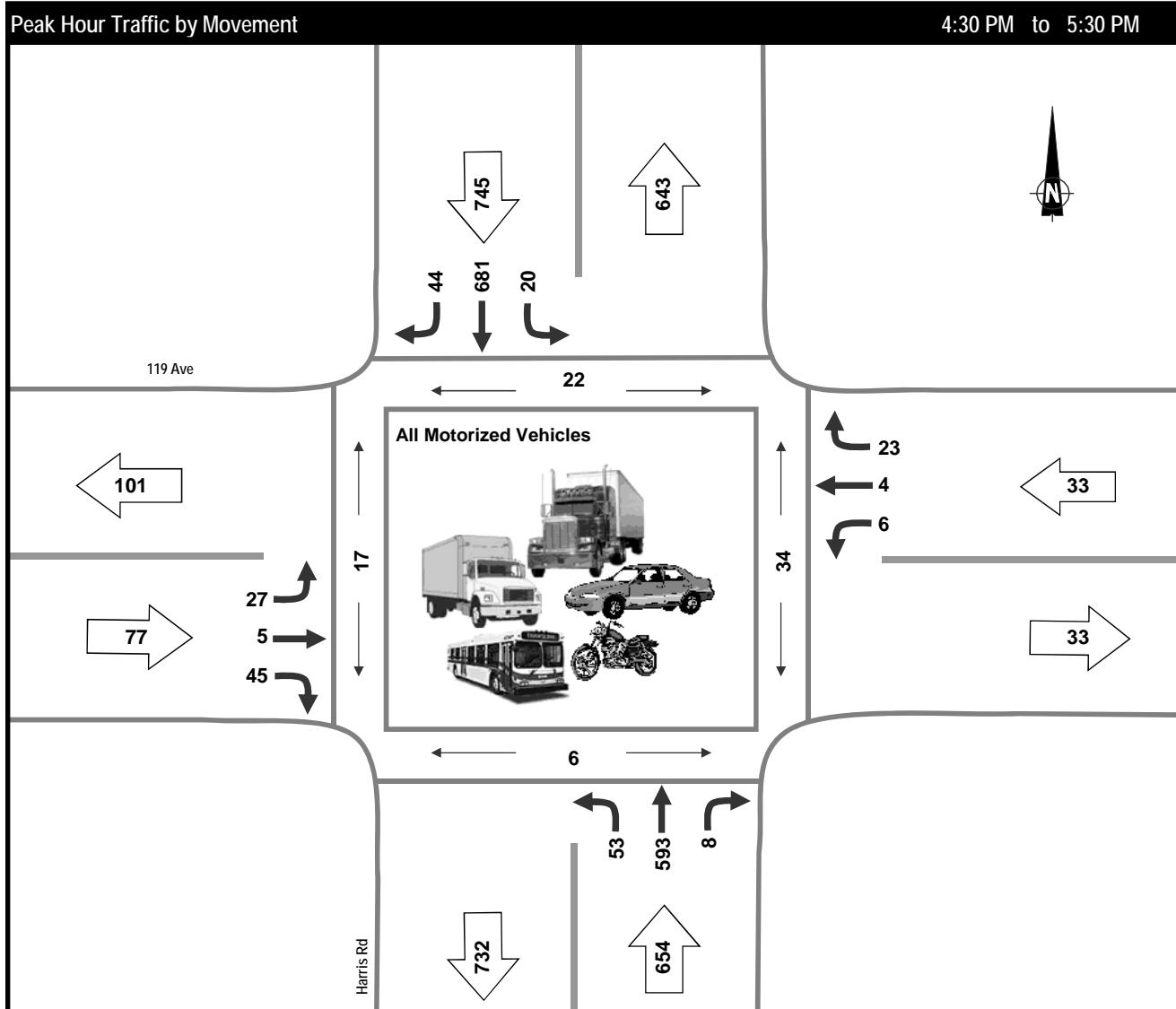
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	148	694	210	33	597	20	168	38	59	50	23	88	23	12	32	24	2,128
PH Factor	0.84	0.80	0.85	0.83	0.88	0.71	0.88	0.86	0.78	0.57	0.52	0.69	0.58	0.60	0.50	0.50	0.92
Peak 15 X 4	176	864	248	40	676	28	192	44	76	88	44	128	40	20	64	48	2,312
Average Hour	108	579	156	27	485	15	126	24	41	27	17	82	14	13	31	28	1,687
Survey Total	404	2,171	586	101	1,819	55	473	89	153	101	64	306	54	48	116	105	6,322
14:30	17	107	21	8	96	1	27	3	12	2	0	20	0	2	4	9	314
14:45	24	134	42	4	103	2	32	2	8	2	4	24	4	3	19	7	381
15:00	28	151	41	8	133	2	32	3	8	7	2	24	3	4	1	26	439
15:15	23	146	43	1	128	3	30	4	8	7	3	22	0	0	5	5	418
15:30	18	141	31	10	157	5	32	5	6	4	7	22	1	0	5	0	438
15:45	26	166	36	9	107	2	26	6	6	8	9	13	2	3	9	4	414
16:00	24	170	35	6	135	6	19	8	7	6	5	29	5	7	11	7	450
16:15	27	126	36	8	113	4	25	8	11	3	5	26	6	0	6	5	392
16:30	37	188	45	9	140	8	47	6	15	9	5	25	3	9	12	11	534
16:45	34	159	62	7	169	3	40	8	13	2	2	17	3	3	5	12	516
17:00	26	148	38	9	138	5	48	11	19	14	11	32	10	2	16	2	499
17:15	44	216	54	7	154	7	40	9	14	12	5	16	1	2	3	3	578
17:30	44	171	56	10	136	5	40	10	13	22	5	23	9	5	8	7	535
17:45	32	148	46	5	110	2	35	6	13	3	1	13	7	8	12	7	414

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Sunny
Vehicle Class: All Motorized Vehicles

Morning Peak Period


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	6	301	7	20	417	4	26	1	33	10	2	14	7	1	12	12	841
PH Factor	0.50	0.78	0.58	0.63	0.93	0.33	0.46	0.25	0.52	0.50	0.25	0.70	0.44	0.25	0.75	0.75	0.90
Peak 15 X 4	12	388	12	32	448	12	56	4	64	20	8	20	16	4	16	16	932
Average Hour	9	287	9	17	389	4	27	1	28	8	2	15	7	3	24	10	796
Survey Total	18	574	18	34	777	7	54	2	56	15	4	30	14	6	48	20	1,589
7:00	4	63	0	1	70	1	6	0	6	0	1	6	1	3	2	1	158
7:15	1	61	3	4	100	1	14	0	1	5	0	5	1	0	2	3	195
7:30	1	74	1	3	96	0	4	1	12	3	2	5	4	0	4	4	202
7:45	1	97	3	5	112	3	4	0	4	2	0	2	0	1	3	2	233
8:00	3	69	0	8	109	0	4	0	16	0	0	2	2	0	3	3	211
8:15	3	72	4	7	84	1	10	1	3	1	1	2	2	0	8	2	189
8:30	2	75	2	3	95	1	8	0	7	2	0	6	2	2	21	1	201
8:45	3	63	5	3	111	0	4	0	7	2	0	2	2	0	5	4	200

Project: #5535: McElhanney - July 2016 Harris Rd TMC's
Municipality: Pitt Meadows
Weather: Sunny
Vehicle Class: All Motorized Vehicles

Afternoon Peak Period


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	20	681	44	53	593	8	27	5	45	6	4	23	22	6	17	34	1,509
PH Factor	1.00	0.90	0.69	0.83	0.98	0.67	0.68	0.63	0.66	0.50	0.50	0.72	0.55	0.50	0.61	0.47	0.96
Peak 15 X 4	20	756	64	64	604	12	40	8	68	12	8	32	40	12	28	72	1,576
Average Hour	17	513	33	37	461	6	23	3	29	5	3	17	13	5	17	17	1,147
Survey Total	63	1,923	125	140	1,727	24	86	11	108	18	11	65	50	20	62	64	4,301
14:30	4	85	4	2	73	1	6	0	7	2	1	3	3	3	3	5	188
14:45	2	100	4	6	98	4	7	0	7	0	0	6	1	0	4	0	234
15:00	6	102	9	6	122	0	6	1	6	2	2	3	0	1	8	0	265
15:15	6	122	8	9	122	0	3	2	2	1	0	2	0	1	2	2	277
15:30	4	139	4	11	138	0	11	1	7	1	0	8	4	0	2	8	324
15:45	8	143	10	7	104	1	6	1	7	2	0	3	8	0	7	1	292
16:00	1	138	13	16	137	4	1	1	4	0	2	5	6	2	5	7	322
16:15	2	130	10	14	134	3	5	0	10	0	1	3	0	1	5	1	312
16:30	5	154	16	16	149	0	6	1	17	0	1	3	6	3	3	18	368
16:45	5	171	8	11	151	3	5	2	11	0	1	7	2	1	5	3	375
17:00	5	167	12	13	148	3	6	0	5	3	2	8	4	2	2	10	372
17:15	5	189	8	13	145	2	10	2	12	3	0	5	10	0	7	3	394
17:30	4	166	7	8	94	1	10	0	3	4	1	4	2	5	9	2	302
17:45	6	117	12	8	112	2	4	0	10	0	0	5	4	1	0	4	276



APPENDIX B

Synchro Output

Existing Conditions

2016 AM Peak

1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	29	21	8	10	255	2	146	11	138	209	8
Future Volume (vph)	29	21	8	10	255	2	146	11	138	209	8
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases				4		8		2		6	
Permitted Phases				4		8		2		6	
Detector Phase				4		8		2		6	
Switch Phase											
Minimum Initial (s)	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0		0.0		0.0	
Total Lost Time (s)				5.0		5.0		5.0		5.0	
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)		10.3			10.3	10.3	29.9	29.9	29.9	29.9	29.9
Actuated g/C Ratio		0.20			0.20	0.20	0.59	0.59	0.59	0.59	0.59
v/c Ratio		0.23			0.06	0.51	0.00	0.14	0.01	0.21	0.01
Control Delay		13.9			15.7	6.4	4.5	5.1	0.7	5.8	5.5
Queue Delay				0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		13.9			15.7	6.4	4.5	5.1	0.7	5.8	5.5
LOS		B			B	A	A	A	A	A	A
Approach Delay		13.9				7.1		4.8		5.5	
Approach LOS		B				A		A		A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 50.3

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 6.6

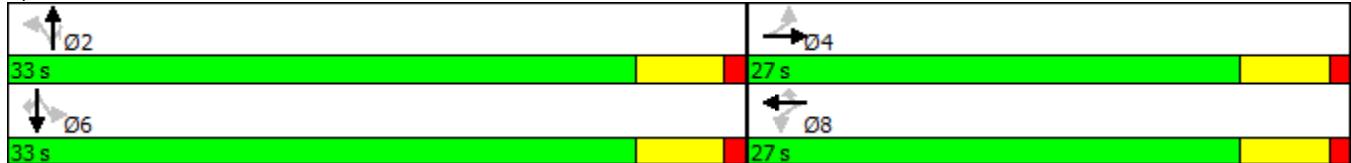
Intersection LOS: A

Intersection Capacity Utilization 44.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Harris Road & Mitchell Road/Hammond Road



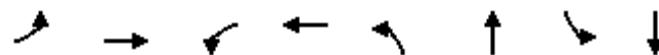
1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	79	20	277	2	159	12	150	227	9
v/c Ratio	0.23	0.06	0.51	0.00	0.14	0.01	0.21	0.21	0.01
Control Delay	13.9	15.7	6.4	4.5	5.1	0.7	5.8	5.5	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.9	15.7	6.4	4.5	5.1	0.7	5.8	5.5	0.4
Queue Length 50th (m)	4.1	1.4	0.0	0.1	5.4	0.0	5.3	8.0	0.0
Queue Length 95th (m)	12.7	5.6	14.7	0.7	12.3	0.7	13.0	17.1	0.3
Internal Link Dist (m)	437.0	716.4			589.6			178.2	
Turn Bay Length (m)			35.0	35.0		35.0	55.0		
Base Capacity (vph)	701	715	851	683	1107	955	726	1107	955
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.03	0.33	0.00	0.14	0.01	0.21	0.21	0.01

Intersection Summary

2: Harris Road & 119 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	26	1	10	2	20	417	6	301
Future Volume (vph)	26	1	10	2	20	417	6	301
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				8		2		6
Permitted Phases	4				2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)			0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)			4.0		4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.6		6.6	36.3	36.3	36.3	36.3
Actuated g/C Ratio	0.15		0.15	0.80	0.80	0.80	0.80	0.80
v/c Ratio	0.27		0.13	0.03	0.16	0.01	0.12	
Control Delay	12.6		12.3	3.0	2.5	3.0	2.4	
Queue Delay		0.0		0.0	0.0	0.0	0.0	
Total Delay	12.6		12.3	3.0	2.5	3.0	2.4	
LOS	B		B	A	A	A	A	
Approach Delay	12.6		12.3		2.5		2.4	
Approach LOS	B		B		A		A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 45.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.27

Intersection Signal Delay: 3.5

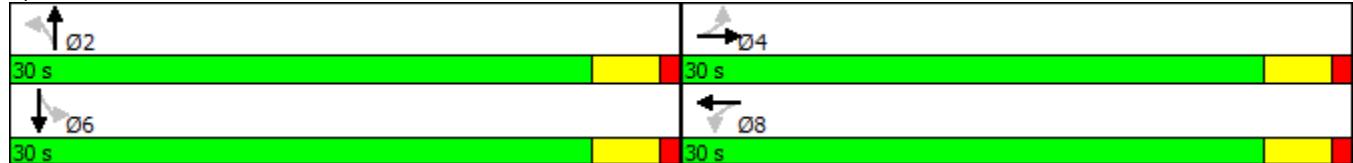
Intersection LOS: A

Intersection Capacity Utilization 28.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Harris Road & 119 Ave



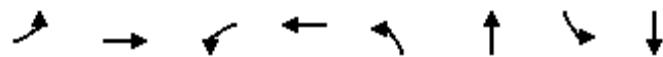
2: Harris Road & 119 Ave



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	28	22	457	7	335
v/c Ratio	0.27	0.13	0.03	0.16	0.01	0.12
Control Delay	12.6	12.3	3.0	2.5	3.0	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	12.3	3.0	2.5	3.0	2.4
Queue Length 50th (m)	2.6	1.2	0.4	5.0	0.1	3.5
Queue Length 95th (m)	9.0	5.4	2.1	10.4	1.0	7.7
Internal Link Dist (m)	236.1	105.9		178.2		173.0
Turn Bay Length (m)			30.0		30.0	
Base Capacity (vph)	854	843	818	2824	727	2816
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.03	0.03	0.16	0.01	0.12

Intersection Summary

3: Harris Road & Civic Centre Access



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	8	1	3	1	50	404	1	308
Future Volume (vph)	8	1	3	1	50	404	1	308
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				8		2		6
Permitted Phases	4			8		2		6
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	28.0	28.0	27.5	27.5	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0	4.5	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.1		6.1	44.4	44.4		44.4
Actuated g/C Ratio	0.13			0.13	0.93	0.93		0.93
v/c Ratio	0.13			0.06	0.06	0.13		0.12
Control Delay	13.1			13.6	1.7	1.2		1.2
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay	13.1			13.6	1.7	1.2		1.2
LOS	B			B	A	A		A
Approach Delay	13.1			13.6		1.3		1.2
Approach LOS	B			B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 47.7

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.13

Intersection Signal Delay: 1.8

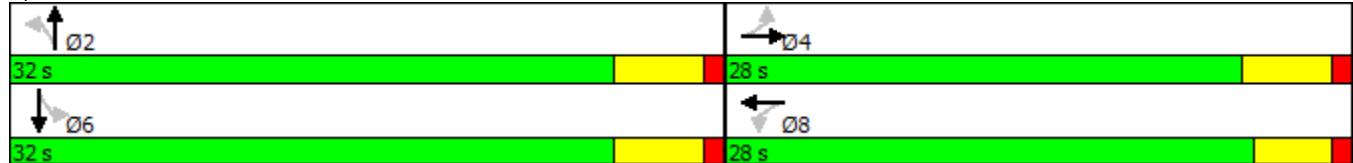
Intersection LOS: A

Intersection Capacity Utilization 37.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Harris Road & Civic Centre Access



3: Harris Road & Civic Centre Access



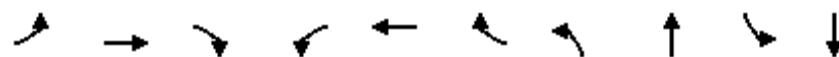
Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	30	13	54	442	361
v/c Ratio	0.13	0.06	0.06	0.13	0.12
Control Delay	13.1	13.6	1.7	1.2	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	13.6	1.7	1.2	1.2
Queue Length 50th (m)	0.8	0.4	0.0	0.0	0.0
Queue Length 95th (m)	6.5	4.0	4.1	10.8	8.7
Internal Link Dist (m)	164.5	142.8		173.0	159.1
Turn Bay Length (m)					
Base Capacity (vph)	828	837	929	3292	3114
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.02	0.06	0.13	0.12

Intersection Summary

Existing Conditions

2016 AM Peak

4: Harris Road & Ford Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	118	3	58	5	10	16	60	359	8	277
Future Volume (vph)	118	3	58	5	10	16	60	359	8	277
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases					4	8	5	2	1	6
Permitted Phases				4	4	8	8	2	6	
Detector Phase				4	4	8	8	5	2	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	10.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	24.0	10.0	24.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	25.0	10.0	25.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	46.2%	46.2%	15.4%	38.5%	15.4%	38.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max						
Act Effect Green (s)	10.1	10.1			10.1	10.1	29.6	29.9	27.7	26.2
Actuated g/C Ratio	0.21	0.21			0.21	0.21	0.62	0.62	0.58	0.55
v/c Ratio	0.46	0.15			0.05	0.04	0.10	0.18	0.01	0.22
Control Delay	22.9	2.0			15.7	0.2	5.6	7.1	5.4	8.0
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.9	2.0			15.7	0.2	5.6	7.1	5.4	8.0
LOS	C	A			B	A	A	A	A	A
Approach Delay		16.1				7.7		6.9		7.9
Approach LOS		B				A		A		A

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 47.9

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 8.9

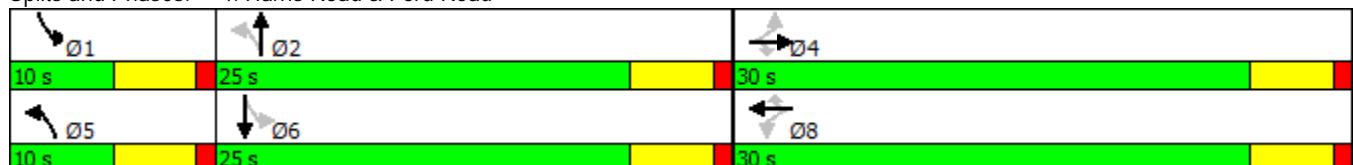
Intersection LOS: A

Intersection Capacity Utilization 41.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Harris Road & Ford Road



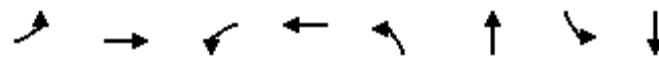
4: Harris Road & Ford Road



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	131	63	16	17	65	395	9	422
v/c Ratio	0.46	0.15	0.05	0.04	0.10	0.18	0.01	0.22
Control Delay	22.9	2.0	15.7	0.2	5.6	7.1	5.4	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.9	2.0	15.7	0.2	5.6	7.1	5.4	8.0
Queue Length 50th (m)	11.0	0.0	1.2	0.0	2.1	7.3	0.3	10.1
Queue Length 95th (m)	23.9	2.7	4.9	0.0	7.1	23.7	1.9	21.0
Internal Link Dist (m)	237.6		56.4			159.1		220.2
Turn Bay Length (m)		30.0		20.0	30.0		30.0	
Base Capacity (vph)	710	893	873	893	638	2209	645	1894
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.07	0.02	0.02	0.10	0.18	0.01	0.22

Intersection Summary

5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑ ↘	→ ↗	↑ ↘	→ ↗	↑ ↘	→ ↗	↑ ↘	→ ↗
Traffic Volume (vph)	137	19	20	10	12	460	25	344
Future Volume (vph)	137	19	20	10	12	460	25	344
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases				4	8	5	2	1
Permitted Phases	4				2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.0	32.0	32.0	32.0	10.0	27.0	10.0	27.0
Total Split (s)	32.0	32.0	32.0	32.0	10.0	28.0	10.0	28.0
Total Split (%)	45.7%	45.7%	45.7%	45.7%	14.3%	40.0%	14.3%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	10.9	10.9	10.7	10.7	27.4	27.8	27.4	27.8
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.59	0.59	0.59	0.59
v/c Ratio	0.50	0.14	0.07	0.23	0.02	0.24	0.04	0.22
Control Delay	21.9	8.8	14.8	6.6	6.2	8.1	6.2	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	8.8	14.8	6.6	6.2	8.1	6.2	7.4
LOS	C	A	B	A	A	A	A	A
Approach Delay		18.1			8.0		8.0	7.4
Approach LOS		B			A		A	

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 46.8

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 9.4

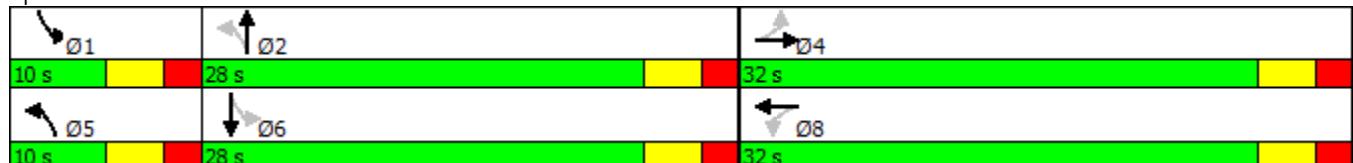
Intersection LOS: A

Intersection Capacity Utilization 43.4%

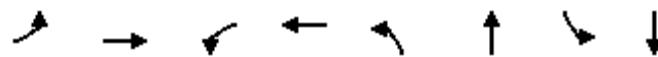
ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: Harris Road & 122 Ave/122a Ave



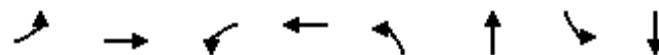
5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	149	60	22	102	13	505	27	458
v/c Ratio	0.50	0.14	0.07	0.23	0.02	0.24	0.04	0.22
Control Delay	21.9	8.8	14.8	6.6	6.2	8.1	6.2	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	8.8	14.8	6.6	6.2	8.1	6.2	7.4
Queue Length 50th (m)	10.1	1.3	1.3	0.7	0.4	9.6	0.9	7.8
Queue Length 95th (m)	28.8	9.1	6.5	10.4	2.6	32.3	4.1	27.3
Internal Link Dist (m)		58.8		123.0		220.2		356.6
Turn Bay Length (m)	30.0		30.0		30.0		30.0	
Base Capacity (vph)	755	1002	784	984	626	2097	606	2056
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.06	0.03	0.10	0.02	0.24	0.04	0.22

Intersection Summary

6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘	
Traffic Volume (vph)	17	10	58	4	7	664	17	327	
Future Volume (vph)	17	10	58	4	7	664	17	327	
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	
Protected Phases				4		8		2	
Permitted Phases						2		6	
Detector Phase				4		8		2	
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	28.0	28.0	28.0	28.0	23.0	23.0	23.0	23.0	
Total Split (s)	29.0	29.0	29.0	29.0	31.0	31.0	31.0	31.0	
Total Split (%)	48.3%	48.3%	48.3%	48.3%	51.7%	51.7%	51.7%	51.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	Max	Max	Max	Max	
Act Effect Green (s)	7.6	7.6	7.6	7.6	33.3	33.3	33.3	33.3	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.70	0.70	0.70	0.70	
v/c Ratio	0.09	0.07	0.29	0.23	0.01	0.29	0.04	0.14	
Control Delay	15.9	12.4	19.9	7.5	4.1	4.5	4.4	3.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.9	12.4	19.9	7.5	4.1	4.5	4.4	3.9	
LOS	B	B	B	A	A	A	A	A	
Approach Delay			14.1		13.4		4.5		4.0
Approach LOS			B		B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 47.8

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.29

Intersection Signal Delay: 5.5

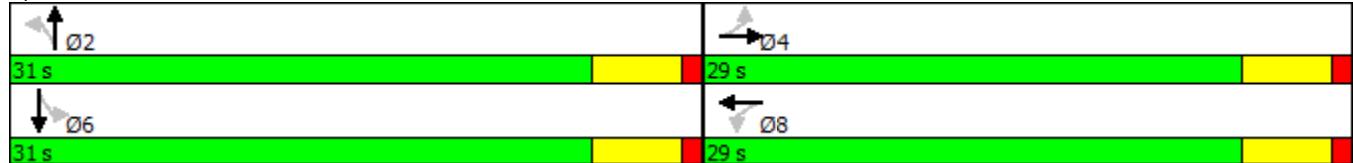
Intersection LOS: A

Intersection Capacity Utilization 36.7%

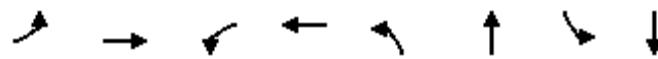
ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Harris Road & 124 Ave



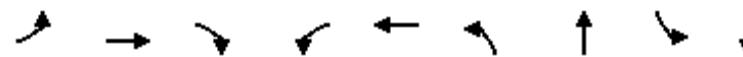
6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	18	19	63	70	8	727	18	357
v/c Ratio	0.09	0.07	0.29	0.23	0.01	0.29	0.04	0.14
Control Delay	15.9	12.4	19.9	7.5	4.1	4.5	4.4	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	12.4	19.9	7.5	4.1	4.5	4.4	3.9
Queue Length 50th (m)	1.3	0.8	4.7	0.3	0.2	12.2	0.5	5.3
Queue Length 95th (m)	5.1	4.7	12.2	7.6	1.4	22.6	2.5	10.9
Internal Link Dist (m)	231.3		173.7		356.6		154.2	
Turn Bay Length (m)	30.0		20.0		30.0		25.0	
Base Capacity (vph)	670	888	703	843	698	2466	487	2466
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.02	0.09	0.08	0.01	0.29	0.04	0.14

Intersection Summary

7: Harris Road & McMyn Road



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	175	1	47	1	1	114	613	12	305
Future Volume (vph)	175	1	47	1	1	114	613	12	305
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases					8	5	2	1	6
Permitted Phases	4			4	8		2		6
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0	10.0	23.0	10.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	28.0	10.0	27.0	10.0	27.0
Total Split (%)	43.1%	43.1%	43.1%	43.1%	43.1%	15.4%	41.5%	15.4%	41.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	13.0	13.0			13.0	32.2	31.3	29.2	25.2
Actuated g/C Ratio	0.23	0.23			0.23	0.57	0.56	0.52	0.45
v/c Ratio	0.61	0.11			0.02	0.21	0.34	0.03	0.23
Control Delay	27.6	0.7			11.5	7.3	9.2	6.8	11.5
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay	27.6	0.7			11.5	7.3	9.2	6.8	11.5
LOS	C	A			B	A	A	A	B
Approach Delay	21.9				11.5		8.9		11.3
Approach LOS	C				B		A		B

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 56.2

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 11.8

Intersection LOS: B

Intersection Capacity Utilization 50.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Harris Road & McMyn Road



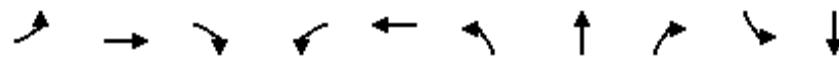
7: Harris Road & McMyn Road



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	191	51	6	124	675	13	361
v/c Ratio	0.61	0.11	0.02	0.21	0.34	0.03	0.23
Control Delay	27.6	0.7	11.5	7.3	9.2	6.8	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.6	0.7	11.5	7.3	9.2	6.8	11.5
Queue Length 50th (m)	17.8	0.0	0.2	5.0	16.3	0.5	12.0
Queue Length 95th (m)	34.8	0.8	2.4	14.4	47.4	2.8	24.2
Internal Link Dist (m)	191.0		105.3		154.2		110.7
Turn Bay Length (m)		20.0		50.0		20.0	
Base Capacity (vph)	554	719	666	593	1968	474	1573
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	0.34	0.07	0.01	0.21	0.34	0.03	0.23

Intersection Summary

8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↑ ↗	↑↑↑ ↗	↗	↖ ↗	↑↑↑ ↗	↖ ↗	↑ ↗	↗	↖ ↗	↑↑↑ ↗
Traffic Volume (vph)	15	1506	201	88	2447	619	54	102	32	26
Future Volume (vph)	15	1506	201	88	2447	619	54	102	32	26
Turn Type	Prot	NA	Perm	Prot	NA	Split	NA	Perm	Split	NA
Protected Phases	7	4		3	8	2	2		6	6
Permitted Phases				4				2		
Detector Phase	7	4	4	3	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.0	22.4	22.4	11.9	25.4	32.8	32.8	32.8	23.8	23.8
Total Split (s)	12.0	70.0	70.0	13.0	70.0	25.0	25.0	25.0	15.0	15.0
Total Split (%)	9.8%	56.9%	56.9%	10.6%	56.9%	20.3%	20.3%	20.3%	12.2%	12.2%
Yellow Time (s)	5.0	4.9	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	2.8	2.8	2.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.4	6.4	5.9	6.4	7.8	7.8	7.8	6.8	6.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	6.0	63.6	63.6	7.1	71.8	17.2	17.2	17.2	8.2	8.2
Actuated g/C Ratio	0.05	0.52	0.52	0.06	0.58	0.14	0.14	0.14	0.07	0.07
v/c Ratio	0.19	0.62	0.24	0.94	0.92	1.40	0.23	0.32	0.30	0.19
Control Delay	61.4	22.5	2.6	132.2	30.1	232.3	49.6	5.8	61.6	39.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	22.5	2.6	132.2	30.1	232.3	49.6	5.8	61.6	39.9
LOS	E	C	A	F	C	F	D	A	E	D
Approach Delay		20.5			33.6		189.7		49.4	
Approach LOS		C			C		F		D	

Intersection Summary

Cycle Length: 123

Actuated Cycle Length: 123

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.40

Intersection Signal Delay: 52.9

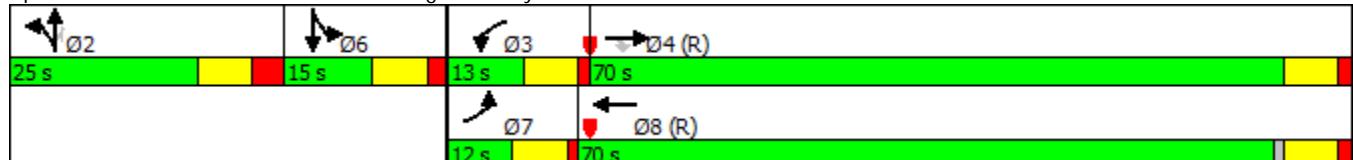
Intersection LOS: D

Intersection Capacity Utilization 94.7%

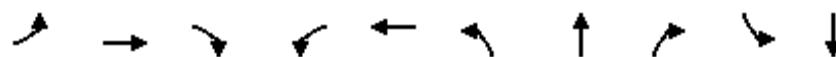
ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 8: Harris Road & Lougheed Hwy



8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	16	1637	218	96	2723	673	59	111	35	45
V/c Ratio	0.19	0.62	0.24	0.94	0.92	1.40	0.23	0.32	0.30	0.19
Control Delay	61.4	22.5	2.6	132.2	30.1	232.3	49.6	5.8	61.6	39.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	22.5	2.6	132.2	30.1	232.3	49.6	5.8	61.6	39.9
Queue Length 50th (m)	4.0	105.0	0.0	24.8	193.2	~118.0	13.5	0.0	8.6	3.5
Queue Length 95th (m)	11.9	120.7	12.1	#60.3	#298.0	#156.5	26.9	9.4	20.0	10.1
Internal Link Dist (m)		1271.3			1741.4		110.7			94.1
Turn Bay Length (m)	120.0		275.0	170.0		65.0		60.0	40.0	
Base Capacity (vph)	86	2629	923	102	2960	480	260	345	118	238
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.62	0.24	0.94	0.92	1.40	0.23	0.32	0.30	0.19

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Existing Conditions

2016 PM Peak

1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	25	37	14	33	346	23	283	12	426	240	53
Future Volume (vph)	25	37	14	33	346	23	283	12	426	240	53
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases				4		8		2		6	
Permitted Phases	4				8		8	2		2	6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	36.7%	36.7%	36.7%	36.7%	36.7%	63.3%	63.3%	63.3%	63.3%	63.3%	63.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	11.0		11.0	11.0	33.3	33.3	33.3	33.3	33.3	33.3	33.3
Actuated g/C Ratio	0.20		0.20	0.20	0.61	0.61	0.61	0.61	0.61	0.61	0.61
v/c Ratio	0.22		0.15	0.61	0.04	0.27	0.01	0.71	0.23	0.06	
Control Delay	18.2		18.6	7.2	5.0	6.0	0.8	16.2	5.7	1.9	
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2		18.6	7.2	5.0	6.0	0.8	16.2	5.7	1.9	
LOS	B		B	A	A	A	A	B	A	A	
Approach Delay	18.2			8.6			5.7			11.6	
Approach LOS	B			A			A			B	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 54.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 9.9

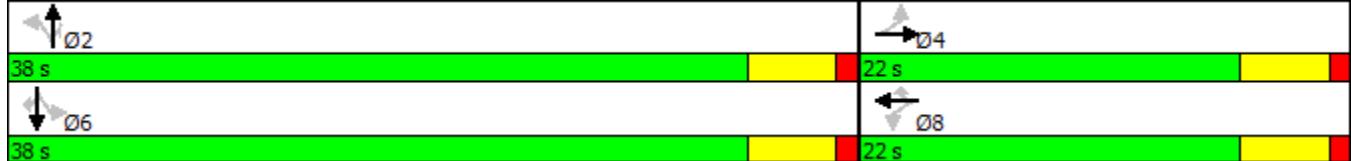
Intersection LOS: A

Intersection Capacity Utilization 61.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Harris Road & Mitchell Road/Hammond Road



1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	74	51	376	25	308	13	463	261	58
V/c Ratio	0.22	0.15	0.61	0.04	0.27	0.01	0.71	0.23	0.06
Control Delay	18.2	18.6	7.2	5.0	6.0	0.8	16.2	5.7	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	18.6	7.2	5.0	6.0	0.8	16.2	5.7	1.9
Queue Length 50th (m)	5.7	4.3	0.0	0.8	11.5	0.0	25.6	9.4	0.0
Queue Length 95th (m)	14.6	11.5	17.6	3.7	27.6	0.8	#87.8	23.3	3.7
Internal Link Dist (m)	437.0	786.3			405.5			178.2	
Turn Bay Length (m)			35.0	35.0		35.0	55.0		
Base Capacity (vph)	512	530	754	683	1143	985	654	1143	993
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.10	0.50	0.04	0.27	0.01	0.71	0.23	0.06

Intersection Summary

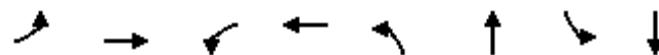
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Existing Conditions

2016 PM Peak

2: Harris Road & 119 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	27	5	6	4	53	593	20	681
Future Volume (vph)	27	5	6	4	53	593	20	681
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases					2		6	
Detector Phase				4	8	8	2	2
Switch Phase							6	6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0		0.0
Total Lost Time (s)				4.0		4.0		4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.7		6.7	34.7	34.7	34.7	34.7
Actuated g/C Ratio	0.15		0.15	0.79	0.79	0.79	0.79	0.79
v/c Ratio	0.31		0.14	0.11	0.24	0.04	0.29	
Control Delay	11.8		10.0	3.8	2.9	3.4	3.0	
Queue Delay		0.0		0.0	0.0	0.0	0.0	
Total Delay	11.8		10.0	3.8	2.9	3.4	3.0	
LOS	B		B	A	A	A	A	
Approach Delay	11.8		10.0		3.0		3.0	
Approach LOS	B		B		A		A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 44.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.31

Intersection Signal Delay: 3.6

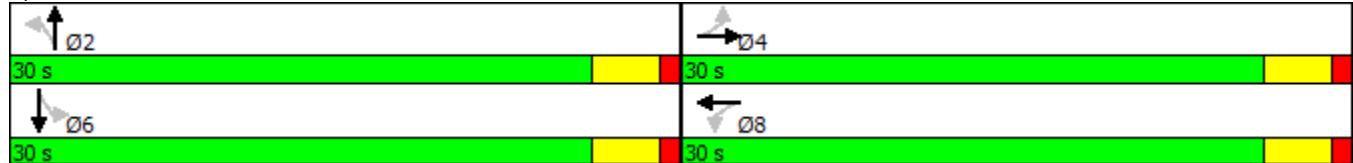
Intersection LOS: A

Intersection Capacity Utilization 42.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Harris Road & 119 Ave



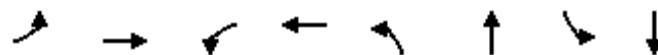
2: Harris Road & 119 Ave



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	36	58	654	22	788
v/c Ratio	0.31	0.14	0.11	0.24	0.04	0.29
Control Delay	11.8	10.0	3.8	2.9	3.4	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	10.0	3.8	2.9	3.4	3.0
Queue Length 50th (m)	2.6	0.8	1.2	7.8	0.4	9.7
Queue Length 95th (m)	10.4	5.9	4.9	15.8	2.3	19.4
Internal Link Dist (m)	236.1	105.9		178.2		173.0
Turn Bay Length (m)			30.0		30.0	
Base Capacity (vph)	901	948	518	2777	590	2759
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.04	0.11	0.24	0.04	0.29

Intersection Summary

3: Harris Road & Civic Centre Access



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	20	1	1	1	50	556	5	692
Future Volume (vph)	20	1	1	1	50	556	5	692
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases					2		6	
Detector Phase				4	8	8	2	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	28.0	28.0	27.5	27.5	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0		0.0
Total Lost Time (s)				5.0		4.5		5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.7		6.9	39.2	39.2		39.2
Actuated g/C Ratio		0.14		0.14	0.79	0.79		0.79
v/c Ratio		0.30		0.07	0.10	0.22		0.30
Control Delay		12.5		10.6	4.0	3.1		3.4
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay		12.5		10.6	4.0	3.1		3.4
LOS	B		B	A	A		A	
Approach Delay		12.5		10.6		3.1		3.4
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 49.4

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.30

Intersection Signal Delay: 3.8

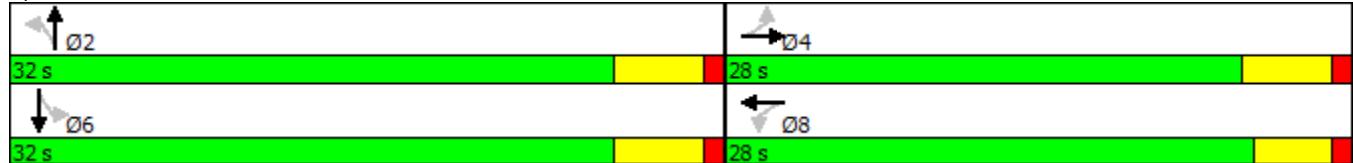
Intersection LOS: A

Intersection Capacity Utilization 59.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Harris Road & Civic Centre Access



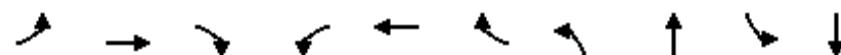
3: Harris Road & Civic Centre Access



Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	74	16	54	612	795
v/c Ratio	0.30	0.07	0.10	0.22	0.30
Control Delay	12.5	10.6	4.0	3.1	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	10.6	4.0	3.1	3.4
Queue Length 50th (m)	2.4	0.2	1.4	8.8	12.3
Queue Length 95th (m)	9.7	3.8	5.2	16.9	23.0
Internal Link Dist (m)	164.5	142.8		173.0	159.1
Turn Bay Length (m)					
Base Capacity (vph)	736	772	518	2801	2655
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.02	0.10	0.22	0.30

Intersection Summary

4: Harris Road & Ford Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	207	24	111	3	12	15	120	463	33	625
Future Volume (vph)	207	24	111	3	12	15	120	463	33	625
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases					8		5	2	1	6
Permitted Phases	4			4	8		8	2		6
Detector Phase	4	4	4	8	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	10.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	24.0	10.0	24.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	25.0	10.0	25.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	46.2%	46.2%	15.4%	38.5%	15.4%	38.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max						
Act Effect Green (s)	15.0	15.0			15.0	15.0	27.7	25.9	25.6	21.8
Actuated g/C Ratio	0.27	0.27			0.27	0.27	0.51	0.47	0.47	0.40
v/c Ratio	0.67	0.23			0.03	0.03	0.39	0.31	0.07	0.62
Control Delay	26.8	4.6			13.7	0.1	11.6	12.0	8.2	16.9
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	4.6			13.7	0.1	11.6	12.0	8.2	16.9
LOS	C	A			B	A	B	B	A	B
Approach Delay	19.6				6.9			12.0		16.5
Approach LOS	B				A			B		B

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 54.6

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 15.4

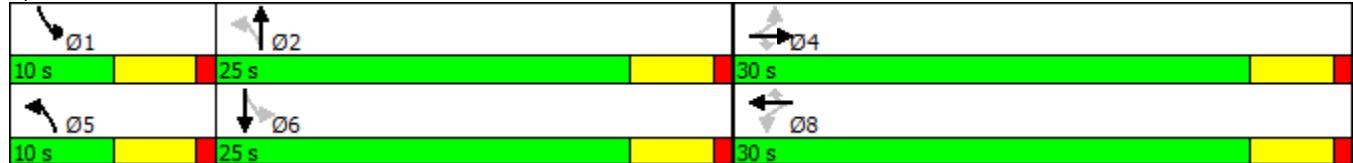
Intersection LOS: B

Intersection Capacity Utilization 61.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Harris Road & Ford Road



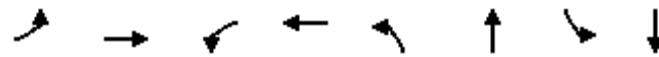
4: Harris Road & Ford Road



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	251	121	16	16	130	513	36	868
v/c Ratio	0.67	0.23	0.03	0.03	0.39	0.31	0.07	0.62
Control Delay	26.8	4.6	13.7	0.1	11.6	12.0	8.2	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	4.6	13.7	0.1	11.6	12.0	8.2	16.9
Queue Length 50th (m)	23.3	0.0	1.2	0.0	5.9	13.2	1.6	36.4
Queue Length 95th (m)	43.1	9.0	4.6	0.0	17.1	38.6	6.4	67.0
Internal Link Dist (m)	237.6		56.4			159.1		220.2
Turn Bay Length (m)		30.0		20.0	30.0		30.0	
Base Capacity (vph)	636	799	814	797	333	1673	489	1399
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.15	0.02	0.02	0.39	0.31	0.07	0.62

Intersection Summary

5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑	↑	↑	↑	↑	↑↑	↑	↑↑
Traffic Volume (vph)	168	38	50	23	33	597	148	694
Future Volume (vph)	168	38	50	23	33	597	148	694
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases				4	8	5	2	1
Permitted Phases	4				2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.0	32.0	32.0	32.0	10.0	27.0	10.0	27.0
Total Split (s)	32.0	32.0	32.0	32.0	10.0	27.0	11.0	28.0
Total Split (%)	45.7%	45.7%	45.7%	45.7%	14.3%	38.6%	15.7%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	13.2	13.2	13.2	13.2	27.9	24.1	31.1	28.9
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.50	0.43	0.56	0.52
v/c Ratio	0.61	0.23	0.18	0.26	0.10	0.44	0.35	0.55
Control Delay	28.4	9.6	18.0	7.6	7.3	14.2	8.9	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	9.6	18.0	7.6	7.3	14.2	8.9	12.2
LOS	C	A	B	A	A	B	A	B
Approach Delay		21.5		10.8		13.9		11.8
Approach LOS		C		B		B		B

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 55.9

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 13.6

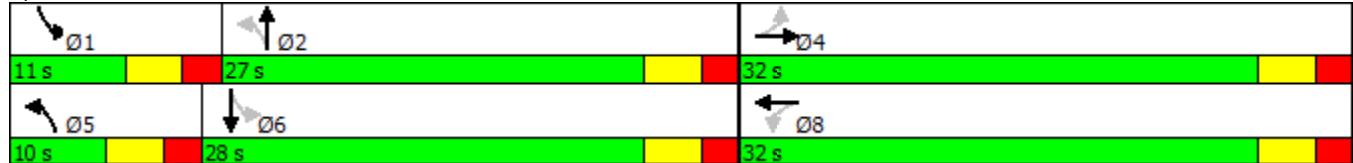
Intersection LOS: B

Intersection Capacity Utilization 58.5%

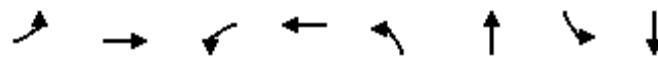
ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Harris Road & 122 Ave/122a Ave



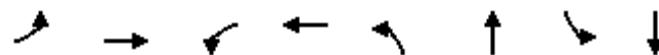
5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	183	105	54	121	36	671	161	982
v/c Ratio	0.61	0.23	0.18	0.26	0.10	0.44	0.35	0.55
Control Delay	28.4	9.6	18.0	7.6	7.3	14.2	8.9	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	9.6	18.0	7.6	7.3	14.2	8.9	12.2
Queue Length 50th (m)	17.6	3.5	4.6	2.1	1.4	27.0	6.8	25.3
Queue Length 95th (m)	34.7	13.1	12.0	12.2	5.7	48.7	18.3	72.6
Internal Link Dist (m)		58.8		123.0		220.2		356.6
Turn Bay Length (m)	30.0		30.0		30.0		30.0	
Base Capacity (vph)	616	858	625	849	346	1519	456	1795
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.12	0.09	0.14	0.10	0.44	0.35	0.55

Intersection Summary

6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘
Traffic Volume (vph)	17	15	139	21	14	666	115	883
Future Volume (vph)	17	15	139	21	14	666	115	883
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases					2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0	7.0	7.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	10.4	10.4	10.6	10.6	31.8	31.8	31.8	31.8
Actuated g/C Ratio	0.21	0.21	0.22	0.22	0.65	0.65	0.65	0.65
v/c Ratio	0.06	0.10	0.51	0.20	0.05	0.33	0.28	0.43
Control Delay	14.5	9.5	22.8	8.1	6.4	6.2	8.9	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	9.5	22.8	8.1	6.4	6.2	8.9	6.9
LOS	B	A	C	A	A	A	A	A
Approach Delay		11.1		17.6		6.2		7.1
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 49

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 8.0

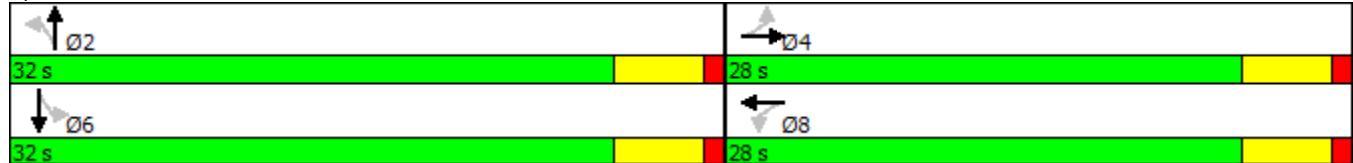
Intersection LOS: A

Intersection Capacity Utilization 57.8%

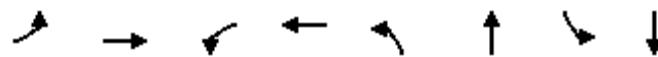
ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 6: Harris Road & 124 Ave



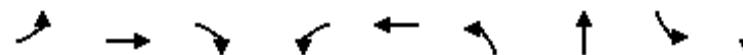
6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	18	39	151	82	15	748	125	985
v/c Ratio	0.06	0.10	0.51	0.20	0.05	0.33	0.28	0.43
Control Delay	14.5	9.5	22.8	8.1	6.4	6.2	8.9	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	9.5	22.8	8.1	6.4	6.2	8.9	6.9
Queue Length 50th (m)	1.3	1.1	11.7	1.6	0.5	15.8	4.9	22.8
Queue Length 95th (m)	5.0	6.5	25.0	9.4	3.0	31.5	17.0	44.8
Internal Link Dist (m)	231.3		173.7		356.6		154.2	
Turn Bay Length (m)	30.0	20.0		30.0		25.0		
Base Capacity (vph)	616	810	641	812	321	2290	439	2291
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.05	0.24	0.10	0.05	0.33	0.28	0.43

Intersection Summary

7: Harris Road & McMyn Road



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	198	8	204	12	2	169	549	43	857
Future Volume (vph)	198	8	204	12	2	169	549	43	857
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases					8	5	2	1	6
Permitted Phases	4			4	8		2		6
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0	10.0	23.0	10.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	28.0	12.0	27.0	10.0	25.0
Total Split (%)	43.1%	43.1%	43.1%	43.1%	43.1%	18.5%	41.5%	15.4%	38.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	14.6	14.6			14.6	31.0	28.5	25.2	20.2
Actuated g/C Ratio	0.26	0.26			0.26	0.55	0.50	0.44	0.36
v/c Ratio	0.65	0.39			0.05	0.56	0.34	0.11	0.79
Control Delay	27.9	4.8			13.1	17.7	11.7	8.2	23.9
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	4.8			13.1	17.7	11.7	8.2	23.9
LOS	C	A			B	B	B	A	C
Approach Delay	16.4				13.1		13.1		23.1
Approach LOS	B				B		B		C

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 56.8

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 18.3

Intersection LOS: B

Intersection Capacity Utilization 63.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 7: Harris Road & McMyn Road



7: Harris Road & McMyn Road



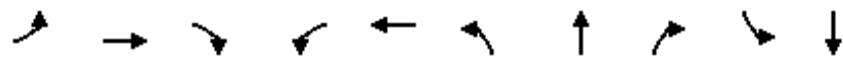
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	224	222	20	184	605	47	986
v/c Ratio	0.65	0.39	0.05	0.56	0.34	0.11	0.79
Control Delay	27.9	4.8	13.1	17.7	11.7	8.2	23.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	4.8	13.1	17.7	11.7	8.2	23.9
Queue Length 50th (m)	21.5	0.0	1.2	8.4	15.6	2.0	48.2
Queue Length 95th (m)	40.3	12.5	5.3	#35.0	45.6	7.6	#98.6
Internal Link Dist (m)	191.0		105.3		154.2		110.7
Turn Bay Length (m)		20.0		50.0		20.0	
Base Capacity (vph)	547	777	589	330	1770	436	1251
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	0.41	0.29	0.03	0.56	0.34	0.11	0.79

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↑ ↗	↑↑↑ ↗	↗	↗	↑↑↑ ↗	↗	↑	↗	↗	↑↑
Traffic Volume (vph)	96	2971	662	190	1899	376	99	268	55	113
Future Volume (vph)	96	2971	662	190	1899	376	99	268	55	113
Turn Type	Prot	NA	Perm	Prot	NA	Split	NA	Perm	Split	NA
Protected Phases	7	4		3	8	2	2		6	6
Permitted Phases				4				2		
Detector Phase	7	4	4	3	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.0	22.4	22.4	11.9	25.4	32.8	32.8	32.8	23.8	23.8
Total Split (s)	16.0	66.0	66.0	22.0	71.0	20.0	20.0	20.0	15.0	15.0
Total Split (%)	13.0%	53.7%	53.7%	17.9%	57.7%	16.3%	16.3%	16.3%	12.2%	12.2%
Yellow Time (s)	5.0	4.9	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	2.8	2.8	2.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.4	6.4	5.9	6.4	7.8	7.8	7.8	6.8	6.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	9.6	59.8	59.8	15.9	66.0	12.2	12.2	12.2	8.2	8.2
Actuated g/C Ratio	0.08	0.49	0.49	0.13	0.54	0.10	0.10	0.10	0.07	0.07
v/c Ratio	0.75	1.31	0.70	0.91	0.80	1.20	0.59	0.87	0.51	0.58
Control Delay	87.0	170.3	10.7	92.7	26.0	162.7	66.7	44.7	71.0	62.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.0	170.3	10.7	92.7	26.0	162.7	66.7	44.7	71.0	62.2
LOS	F	F	B	F	C	F	E	D	E	E
Approach Delay		139.8			31.8		107.4			64.9
Approach LOS		F			C		F			E

Intersection Summary

Cycle Length: 123

Actuated Cycle Length: 123

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.31

Intersection Signal Delay: 99.7

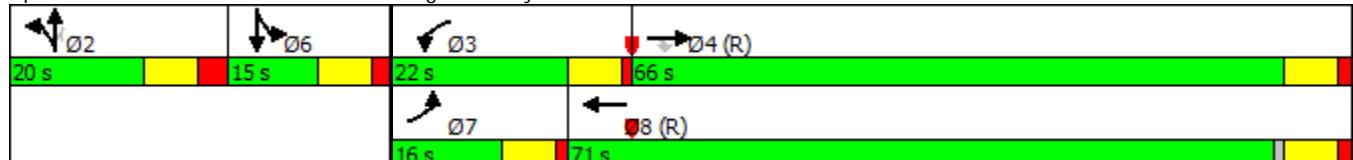
Intersection LOS: F

Intersection Capacity Utilization 106.9%

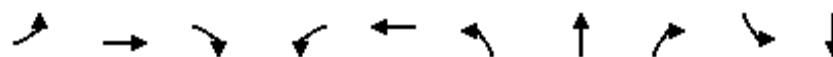
ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 8: Harris Road & Lougheed Hwy



8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	104	3229	720	207	2169	409	108	291	60	139
V/c Ratio	0.75	1.31	0.70	0.91	0.80	1.20	0.59	0.87	0.51	0.58
Control Delay	87.0	170.3	10.7	92.7	26.0	162.7	66.7	44.7	71.0	62.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.0	170.3	10.7	92.7	26.0	162.7	66.7	44.7	71.0	62.2
Queue Length 50th (m)	26.3	~387.0	37.8	52.6	158.3	~65.1	26.7	24.0	15.0	17.2
Queue Length 95th (m)	#55.1	#412.8	85.5	#98.5	179.4	#98.0	46.4	#75.2	30.0	28.6
Internal Link Dist (m)		1271.3			1741.4		110.7			94.1
Turn Bay Length (m)	120.0		275.0	170.0		65.0		60.0	40.0	
Base Capacity (vph)	143	2471	1029	231	2713	340	184	333	118	240
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	1.31	0.70	0.90	0.80	1.20	0.59	0.87	0.51	0.58

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

Background Volumes

2021 AM Peak

1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	32	23	9	11	281	2	161	12	152	230	9
Future Volume (vph)	32	23	9	11	281	2	161	12	152	230	9
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases				4		8		2		6	
Permitted Phases	4				8		8	2		2	6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	10.4			10.4	10.4	29.3	29.3	29.3	29.3	29.3	29.3
Actuated g/C Ratio	0.21			0.21	0.21	0.59	0.59	0.59	0.59	0.59	0.59
v/c Ratio	0.25			0.07	0.53	0.00	0.16	0.01	0.23	0.23	0.01
Control Delay	14.0			15.6	6.5	4.5	5.3	0.8	6.2	5.7	0.6
Queue Delay				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0			15.6	6.5	4.5	5.3	0.8	6.2	5.7	0.6
LOS	B			B	A	A	A	A	A	A	A
Approach Delay	14.0				7.1		5.0			5.8	
Approach LOS	B				A		A			A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 49.7

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 6.7

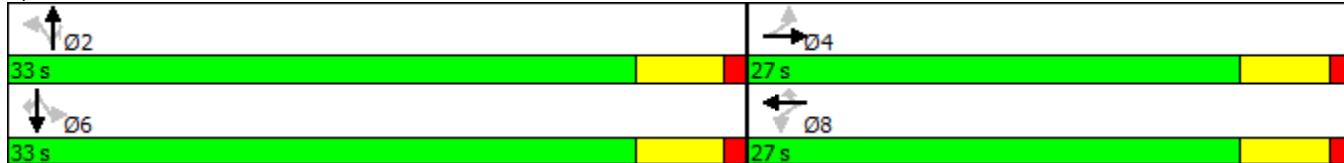
Intersection LOS: A

Intersection Capacity Utilization 46.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Harris Road & Mitchell Road/Hammond Road



Background Volumes

2021 AM Peak

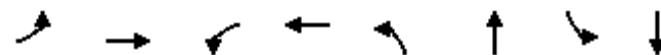
1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	86	22	305	2	175	13	165	250	10
V/c Ratio	0.25	0.07	0.53	0.00	0.16	0.01	0.23	0.23	0.01
Control Delay	14.0	15.6	6.5	4.5	5.3	0.8	6.2	5.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	15.6	6.5	4.5	5.3	0.8	6.2	5.7	0.6
Queue Length 50th (m)	4.4	1.6	0.0	0.1	6.0	0.0	6.0	9.0	0.0
Queue Length 95th (m)	13.4	5.9	15.3	0.7	13.8	0.8	14.7	19.4	0.5
Internal Link Dist (m)	437.0	716.4			589.6			178.2	
Turn Bay Length (m)			35.0	35.0		35.0	55.0		
Base Capacity (vph)	706	718	872	663	1097	947	709	1097	947
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.03	0.35	0.00	0.16	0.01	0.23	0.23	0.01

Intersection Summary

2: Harris Road & 119 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	29	1	11	2	22	459	7	331
Future Volume (vph)	29	1	11	2	22	459	7	331
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases					4	8	2	6
Permitted Phases					8	2	6	
Detector Phase					8	2	2	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)					0.0	0.0	0.0	0.0
Total Lost Time (s)					4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.7		6.7	35.6	35.6	35.6	35.6
Actuated g/C Ratio	0.15		0.15	0.79	0.79	0.79	0.79	0.79
v/c Ratio	0.29		0.13	0.03	0.18	0.01	0.13	
Control Delay	12.6		11.9	3.1	2.7	3.1	2.6	
Queue Delay		0.0		0.0	0.0	0.0	0.0	
Total Delay	12.6		11.9	3.1	2.7	3.1	2.6	
LOS	B		B	A	A	A	A	
Approach Delay	12.6		11.9		2.7		2.6	
Approach LOS	B		B		A		A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 44.9

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.29

Intersection Signal Delay: 3.6

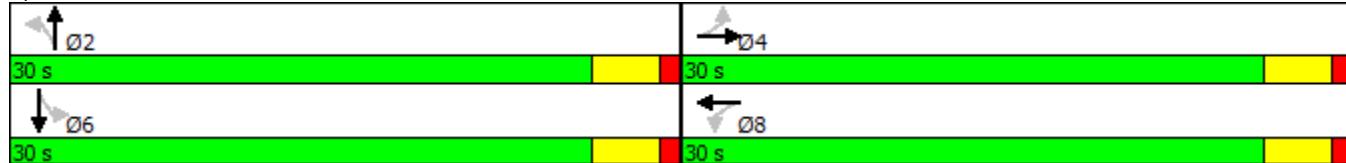
Intersection LOS: A

Intersection Capacity Utilization 30.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Harris Road & 119 Ave

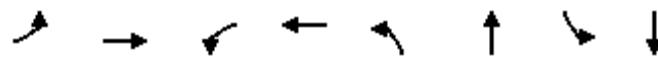


2: Harris Road & 119 Ave

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	72	30	24	503	8	369
v/c Ratio	0.29	0.13	0.03	0.18	0.01	0.13
Control Delay	12.6	11.9	3.1	2.7	3.1	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	11.9	3.1	2.7	3.1	2.6
Queue Length 50th (m)	2.8	1.2	0.5	5.8	0.2	4.0
Queue Length 95th (m)	9.7	5.7	2.3	11.8	1.2	8.7
Internal Link Dist (m)	236.1	105.9		178.2		173.0
Turn Bay Length (m)			30.0		30.0	
Base Capacity (vph)	861	877	785	2802	689	2794
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.03	0.03	0.18	0.01	0.13

Intersection Summary

3: Harris Road & Civic Centre Access



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	9	1	3	1	55	444	1	339
Future Volume (vph)	9	1	3	1	55	444	1	339
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				8		2		6
Permitted Phases	4			8		2		6
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	28.0	28.0	27.5	27.5	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			5.0	4.5	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.1		6.1	44.2	44.2		44.2
Actuated g/C Ratio	0.13			0.13	0.93	0.93		0.93
v/c Ratio	0.14			0.06	0.07	0.15		0.13
Control Delay	12.7			13.2	1.7	1.2		1.2
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay	12.7			13.2	1.7	1.2		1.2
LOS	B			B	A	A		A
Approach Delay	12.7			13.2		1.3		1.2
Approach LOS	B			B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 47.5

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.15

Intersection Signal Delay: 1.8

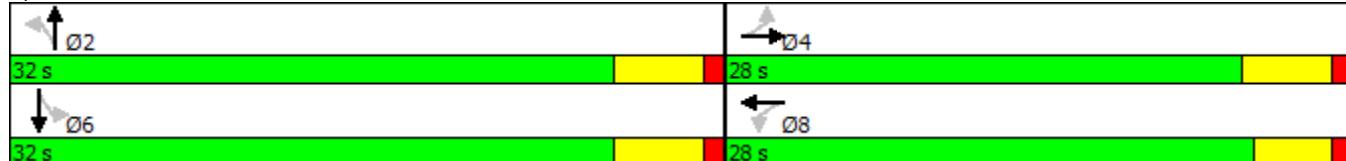
Intersection LOS: A

Intersection Capacity Utilization 39.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Harris Road & Civic Centre Access



3: Harris Road & Civic Centre Access



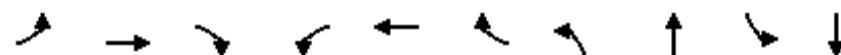
Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	33	14	60	486	396
v/c Ratio	0.14	0.06	0.07	0.15	0.13
Control Delay	12.7	13.2	1.7	1.2	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	13.2	1.7	1.2	1.2
Queue Length 50th (m)	0.9	0.4	0.0	0.0	0.0
Queue Length 95th (m)	6.8	4.1	4.6	12.0	9.5
Internal Link Dist (m)	164.5	142.8		173.0	159.1
Turn Bay Length (m)					
Base Capacity (vph)	832	839	897	3287	3109
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.02	0.07	0.15	0.13

Intersection Summary

Background Volumes

2021 AM Peak

4: Harris Road & Ford Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	130	3	64	6	11	18	66	395	9	305
Future Volume (vph)	130	3	64	6	11	18	66	395	9	305
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases					8		5	2	1	6
Permitted Phases	4			4	8		8	2		6
Detector Phase	4	4	4	8	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	10.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	24.0	10.0	24.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	25.0	10.0	25.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	46.2%	46.2%	15.4%	38.5%	15.4%	38.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max						
Act Effect Green (s)	10.6	10.6			10.6	10.6	29.2	29.5	27.3	25.8
Actuated g/C Ratio	0.22	0.22			0.22	0.22	0.61	0.62	0.57	0.54
v/c Ratio	0.49	0.16			0.05	0.05	0.12	0.20	0.02	0.25
Control Delay	23.1	2.4			15.6	0.2	6.0	7.5	5.8	8.5
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	2.4			15.6	0.2	6.0	7.5	5.8	8.5
LOS	C	A			B	A	A	A	A	A
Approach Delay	16.3				7.7			7.3		8.5
Approach LOS	B				A			A		A

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 47.9

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 9.3

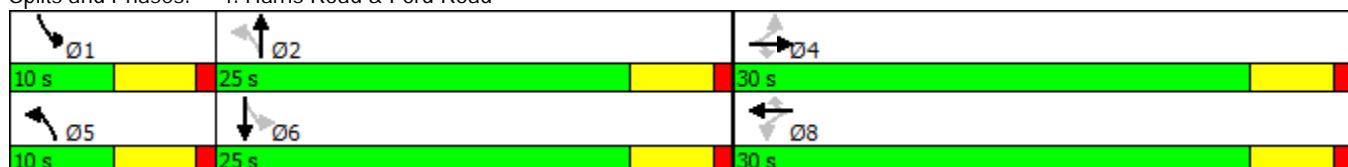
Intersection LOS: A

Intersection Capacity Utilization 43.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Harris Road & Ford Road



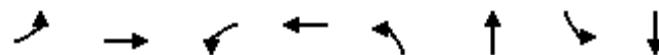
4: Harris Road & Ford Road



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	144	70	19	20	72	436	10	465
v/c Ratio	0.49	0.16	0.05	0.05	0.12	0.20	0.02	0.25
Control Delay	23.1	2.4	15.6	0.2	6.0	7.5	5.8	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	2.4	15.6	0.2	6.0	7.5	5.8	8.5
Queue Length 50th (m)	12.2	0.0	1.5	0.0	2.4	8.4	0.3	12.0
Queue Length 95th (m)	25.9	3.6	5.4	0.0	8.0	27.0	2.1	24.2
Internal Link Dist (m)	237.6		56.4			159.1		220.2
Turn Bay Length (m)		30.0		20.0	30.0		30.0	
Base Capacity (vph)	710	896	855	896	612	2175	619	1866
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.08	0.02	0.02	0.12	0.20	0.02	0.25

Intersection Summary

5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘
Traffic Volume (vph)	151	21	22	11	13	506	28	378
Future Volume (vph)	151	21	22	11	13	506	28	378
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases				4	8	5	2	1
Permitted Phases	4				2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.0	32.0	32.0	32.0	10.0	27.0	10.0	27.0
Total Split (s)	32.0	32.0	32.0	32.0	10.0	28.0	10.0	28.0
Total Split (%)	45.7%	45.7%	45.7%	45.7%	14.3%	40.0%	14.3%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	11.6	11.6	11.3	11.3	28.7	28.2	29.6	29.9
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.58	0.57	0.60	0.60
v/c Ratio	0.55	0.15	0.08	0.25	0.02	0.28	0.05	0.24
Control Delay	24.7	9.3	16.1	6.8	6.3	9.8	6.3	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	9.3	16.1	6.8	6.3	9.8	6.3	7.6
LOS	C	A	B	A	A	A	A	A
Approach Delay		20.3			8.5		9.7	7.5
Approach LOS		C			A		A	A

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 49.5

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 10.5

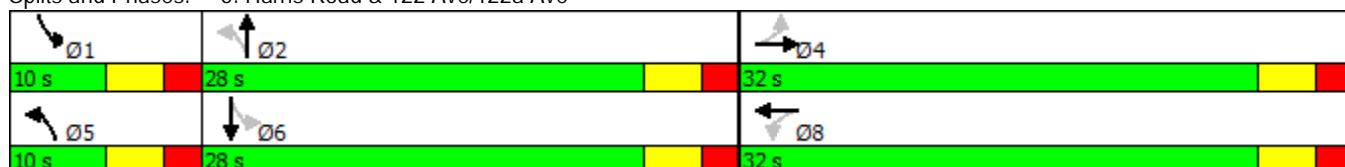
Intersection LOS: B

Intersection Capacity Utilization 45.9%

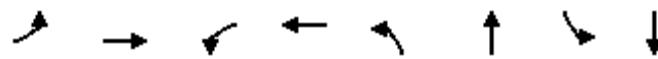
ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: Harris Road & 122 Ave/122a Ave



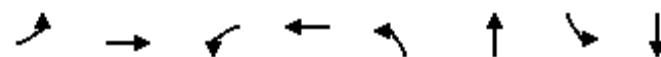
5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	164	66	24	112	14	557	30	503
v/c Ratio	0.55	0.15	0.08	0.25	0.02	0.28	0.05	0.24
Control Delay	24.7	9.3	16.1	6.8	6.3	9.8	6.3	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	9.3	16.1	6.8	6.3	9.8	6.3	7.6
Queue Length 50th (m)	11.3	1.4	1.5	0.7	0.5	11.3	1.0	9.2
Queue Length 95th (m)	31.3	9.5	6.7	10.8	2.8	37.2	4.7	31.4
Internal Link Dist (m)		58.8		123.0		220.2		356.6
Turn Bay Length (m)	30.0		30.0		30.0		30.0	
Base Capacity (vph)	714	958	744	946	597	2013	575	2098
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.07	0.03	0.12	0.02	0.28	0.05	0.24

Intersection Summary

6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘
Traffic Volume (vph)	19	11	64	4	8	730	19	360
Future Volume (vph)	19	11	64	4	8	730	19	360
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases					2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0	7.0	7.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	7.9	7.9	7.9	7.9	34.1	34.1	34.1	34.1
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.70	0.70	0.70	0.70
v/c Ratio	0.10	0.07	0.31	0.24	0.01	0.32	0.05	0.16
Control Delay	16.5	12.4	20.6	7.5	4.2	4.7	4.6	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	12.4	20.6	7.5	4.2	4.7	4.6	4.0
LOS	B	B	C	A	A	A	A	A
Approach Delay		14.4		13.7		4.7		4.1
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 48.9

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 5.7

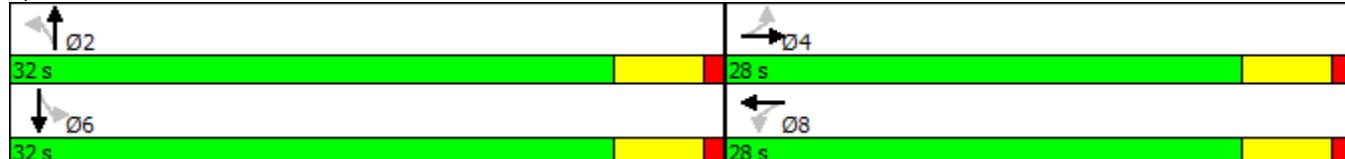
Intersection LOS: A

Intersection Capacity Utilization 38.9%

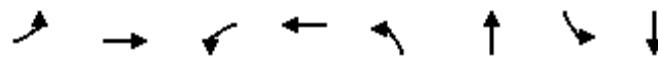
ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Harris Road & 124 Ave



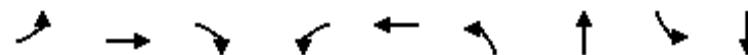
6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	21	21	70	77	9	800	21	393
v/c Ratio	0.10	0.07	0.31	0.24	0.01	0.32	0.05	0.16
Control Delay	16.5	12.4	20.6	7.5	4.2	4.7	4.6	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	12.4	20.6	7.5	4.2	4.7	4.6	4.0
Queue Length 50th (m)	1.5	0.9	5.2	0.3	0.2	14.0	0.6	6.0
Queue Length 95th (m)	5.7	5.0	13.5	8.1	1.6	26.4	2.8	12.4
Internal Link Dist (m)	231.3		173.7		356.6		154.2	
Turn Bay Length (m)	30.0	20.0		30.0		25.0		
Base Capacity (vph)	625	833	658	797	675	2465	451	2464
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.11	0.10	0.01	0.32	0.05	0.16

Intersection Summary

7: Harris Road & McMyn Road



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	193	1	52	1	1	125	674	13	336
Future Volume (vph)	193	1	52	1	1	125	674	13	336
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases					8	5	2	1	6
Permitted Phases	4			4	8		2		6
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0	10.0	23.0	10.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	28.0	11.0	27.0	10.0	26.0
Total Split (%)	43.1%	43.1%	43.1%	43.1%	43.1%	16.9%	41.5%	15.4%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	13.9	13.9			13.9	32.3	31.2	28.3	24.3
Actuated g/C Ratio	0.24	0.24			0.24	0.57	0.55	0.50	0.43
v/c Ratio	0.64	0.12			0.02	0.24	0.38	0.03	0.27
Control Delay	28.1	1.1			11.3	7.9	10.1	7.3	12.8
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay	28.1	1.1			11.3	7.9	10.1	7.3	12.8
LOS	C	A			B	A	B	A	B
Approach Delay	22.4				11.3		9.7		12.7
Approach LOS	C				B		A		B

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 57

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 12.7

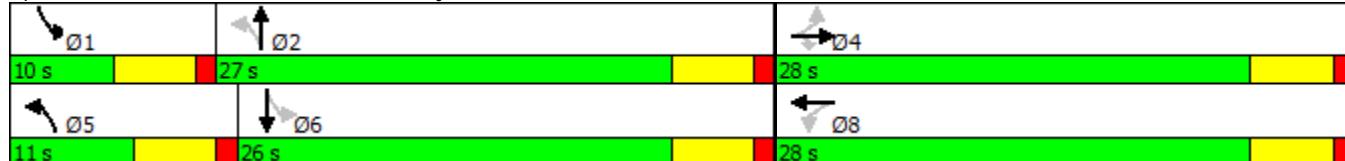
Intersection LOS: B

Intersection Capacity Utilization 53.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Harris Road & McMyn Road



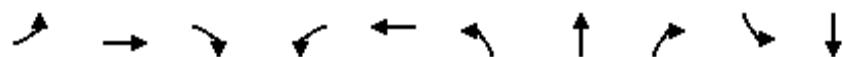
7: Harris Road & McMyn Road



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	211	57	6	136	743	14	398
V/c Ratio	0.64	0.12	0.02	0.24	0.38	0.03	0.27
Control Delay	28.1	1.1	11.3	7.9	10.1	7.3	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.1	1.1	11.3	7.9	10.1	7.3	12.8
Queue Length 50th (m)	20.0	0.0	0.2	5.8	19.3	0.6	14.4
Queue Length 95th (m)	38.2	1.5	2.3	16.4	54.8	3.2	28.4
Internal Link Dist (m)	191.0		105.3		154.2		110.7
Turn Bay Length (m)		20.0		50.0		20.0	
Base Capacity (vph)	546	710	658	576	1935	436	1498
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	0.39	0.08	0.01	0.24	0.38	0.03	0.27

Intersection Summary

8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↑	↑↑↑	↑	↑	↑↑↑	↑↑	↑	↑	↑	↑↑
Traffic Volume (vph)	17	1657	221	97	2692	681	59	112	35	29
Future Volume (vph)	17	1657	221	97	2692	681	59	112	35	29
Turn Type	Prot	NA	Perm	Prot	NA	Split	NA	Perm	Split	NA
Protected Phases	7	4		3	8	2	2		6	6
Permitted Phases				4				2		
Detector Phase	7	4	4	3	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.0	22.4	22.4	11.9	25.4	32.8	32.8	32.8	23.8	23.8
Total Split (s)	12.0	70.0	70.0	13.0	70.0	25.0	25.0	25.0	15.0	15.0
Total Split (%)	9.8%	56.9%	56.9%	10.6%	56.9%	20.3%	20.3%	20.3%	12.2%	12.2%
Yellow Time (s)	5.0	4.9	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	2.8	2.8	2.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.4	6.4	5.9	6.4	7.8	7.8	7.8	6.8	6.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	6.0	63.6	63.6	7.1	71.8	17.2	17.2	17.2	8.2	8.2
Actuated g/C Ratio	0.05	0.52	0.52	0.06	0.58	0.14	0.14	0.14	0.07	0.07
v/c Ratio	0.21	0.69	0.26	1.03	1.01	1.54	0.25	0.35	0.32	0.22
Control Delay	62.2	23.9	2.6	153.7	45.8	289.9	49.9	7.8	62.5	39.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.2	23.9	2.6	153.7	45.8	289.9	49.9	7.8	62.5	39.4
LOS	E	C	A	F	D	F	D	A	E	D
Approach Delay		21.8			49.5		236.1		49.2	
Approach LOS		C			D		F		D	

Intersection Summary

Cycle Length: 123

Actuated Cycle Length: 123

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.54

Intersection Signal Delay: 68.2

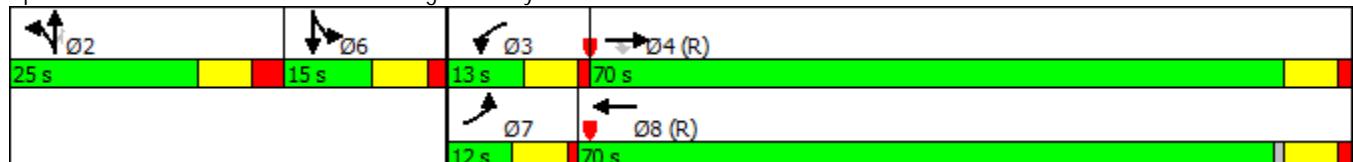
Intersection LOS: E

Intersection Capacity Utilization 101.4%

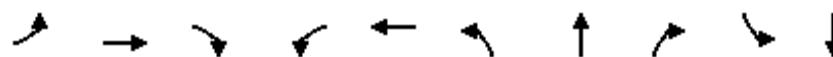
ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 8: Harris Road & Lougheed Hwy



8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	1801	240	105	2996	740	64	122	38	52
V/c Ratio	0.21	0.69	0.26	1.03	1.01	1.54	0.25	0.35	0.32	0.22
Control Delay	62.2	23.9	2.6	153.7	45.8	289.9	49.9	7.8	62.5	39.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.2	23.9	2.6	153.7	45.8	289.9	49.9	7.8	62.5	39.4
Queue Length 50th (m)	4.5	121.1	0.0	~28.5	240.9	~136.3	14.7	0.0	9.4	4.1
Queue Length 95th (m)	12.7	138.7	12.7	#66.1	#350.9	#175.6	29.0	12.4	21.3	10.9
Internal Link Dist (m)	1271.3			1741.4			110.7			94.1
Turn Bay Length (m)	120.0	275.0		170.0	65.0		60.0	40.0		
Base Capacity (vph)	86	2629	934	102	2958	480	260	345	118	240
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.69	0.26	1.03	1.01	1.54	0.25	0.35	0.32	0.22

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Background Volumes

2021 PM Peak

1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	28	41	15	36	381	25	311	13	469	264	58
Future Volume (vph)	28	41	15	36	381	25	311	13	469	264	58
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases				4		8		2		6	
Permitted Phases	4				8		8	2		2	6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	36.7%	36.7%	36.7%	36.7%	36.7%	63.3%	63.3%	63.3%	63.3%	63.3%	63.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	11.1		11.1	11.1	33.1	33.1	33.1	33.1	33.1	33.1	33.1
Actuated g/C Ratio	0.20		0.20	0.20	0.61	0.61	0.61	0.61	0.61	0.61	0.61
v/c Ratio	0.25		0.16	0.63	0.04	0.30	0.01	0.81	0.25	0.06	
Control Delay	18.4		18.6	7.3	5.1	6.3	0.9	22.4	6.0	2.0	
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4		18.6	7.3	5.1	6.3	0.9	22.4	6.0	2.0	
LOS	B		B	A	A	A	A	C	A	A	
Approach Delay	18.4			8.6			6.0			15.4	
Approach LOS	B			A			A			B	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 54.2

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 11.8

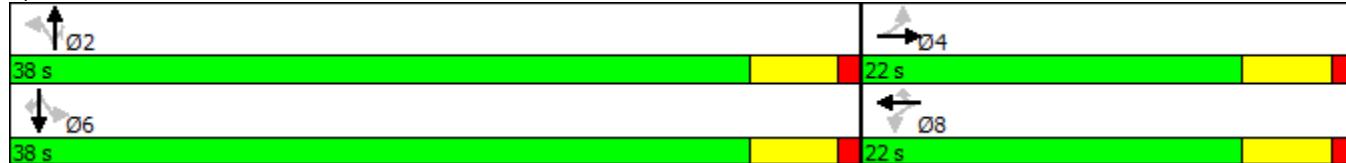
Intersection LOS: B

Intersection Capacity Utilization 65.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Harris Road & Mitchell Road/Hammond Road



1: Harris Road & Mitchell Road/Hammond Road



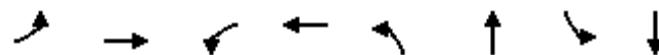
Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	83	55	414	27	338	14	510	287	63
V/c Ratio	0.25	0.16	0.63	0.04	0.30	0.01	0.81	0.25	0.06
Control Delay	18.4	18.6	7.3	5.1	6.3	0.9	22.4	6.0	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	18.6	7.3	5.1	6.3	0.9	22.4	6.0	2.0
Queue Length 50th (m)	6.5	4.7	0.0	0.9	12.9	0.0	31.3	10.6	0.0
Queue Length 95th (m)	15.9	12.1	18.2	4.1	31.8	0.9	#105.1	26.8	4.0
Internal Link Dist (m)	437.0	381.2			233.5			178.2	
Turn Bay Length (m)			35.0	35.0		35.0	55.0		
Base Capacity (vph)	512	529	780	663	1136	979	633	1136	990
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.10	0.53	0.04	0.30	0.01	0.81	0.25	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

2: Harris Road & 119 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	6	7	4	58	652	22	749
Future Volume (vph)	30	6	7	4	58	652	22	749
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases					2		6	
Detector Phase				4	4	8	8	2
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0
Total Lost Time (s)				4.0		4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.8		6.8	34.2	34.2	34.2	34.2
Actuated g/C Ratio		0.16		0.16	0.78	0.78	0.78	0.78
v/c Ratio		0.34		0.14	0.13	0.26	0.04	0.32
Control Delay		12.0		9.8	4.1	3.1	3.5	3.2
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		12.0		9.8	4.1	3.1	3.5	3.2
LOS	B		A	A	A	A	A	A
Approach Delay		12.0		9.8		3.1		3.2
Approach LOS		B		A		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 43.8

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay: 3.8

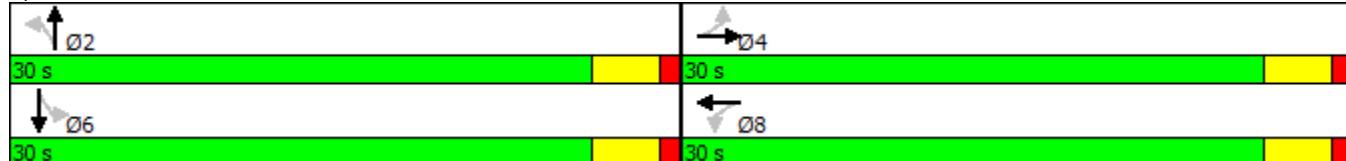
Intersection LOS: A

Intersection Capacity Utilization 45.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Harris Road & 119 Ave

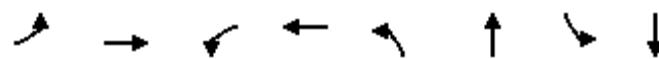


2: Harris Road & 119 Ave

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	94	39	63	719	24	866
v/c Ratio	0.34	0.14	0.13	0.26	0.04	0.32
Control Delay	12.0	9.8	4.1	3.1	3.5	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.0	9.8	4.1	3.1	3.5	3.2
Queue Length 50th (m)	2.9	0.9	1.3	8.9	0.5	11.2
Queue Length 95th (m)	11.3	6.2	5.5	18.1	2.5	22.4
Internal Link Dist (m)	236.1	105.9		178.2		173.0
Turn Bay Length (m)			30.0		30.0	
Base Capacity (vph)	908	961	472	2760	550	2743
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.04	0.13	0.26	0.04	0.32

Intersection Summary

3: Harris Road & Civic Centre Access



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	22	1	1	1	55	612	6	761
Future Volume (vph)	22	1	1	1	55	612	6	761
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases					2		6	
Detector Phase				4	8	8	2	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	28.0	28.0	27.5	27.5	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)			0.0		0.0	0.0	0.0	
Total Lost Time (s)			5.0		4.5	5.0	5.0	
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.7		7.0	38.3	38.3		38.3
Actuated g/C Ratio		0.14		0.14	0.79	0.79		0.79
v/c Ratio		0.32		0.07	0.13	0.24		0.33
Control Delay		12.2		10.2	4.4	3.2		3.6
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay		12.2		10.2	4.4	3.2		3.6
LOS	B		B	A	A		A	
Approach Delay		12.2		10.3		3.3		3.6
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 48.7

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.33

Intersection Signal Delay: 4.0

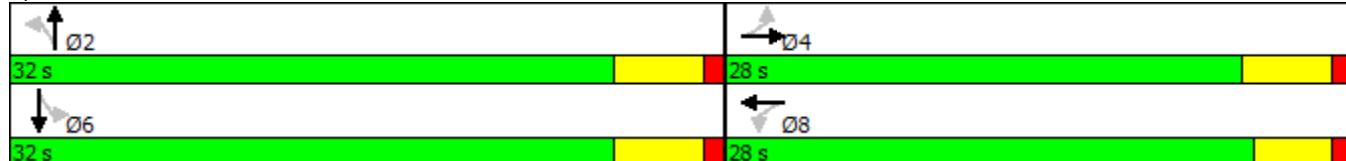
Intersection LOS: A

Intersection Capacity Utilization 63.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Harris Road & Civic Centre Access



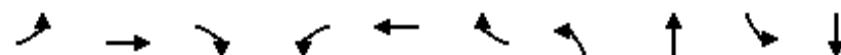
3: Harris Road & Civic Centre Access



Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	82	17	60	674	876
v/c Ratio	0.32	0.07	0.13	0.24	0.33
Control Delay	12.2	10.2	4.4	3.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	10.2	4.4	3.2	3.6
Queue Length 50th (m)	2.5	0.2	1.5	10.0	14.1
Queue Length 95th (m)	10.3	3.8	6.0	19.1	26.6
Internal Link Dist (m)	164.5	142.8		173.0	159.1
Turn Bay Length (m)					
Base Capacity (vph)	747	782	475	2781	2633
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.11	0.02	0.13	0.24	0.33

Intersection Summary

4: Harris Road & Ford Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	228	26	122	3	13	17	132	509	36	688
Future Volume (vph)	228	26	122	3	13	17	132	509	36	688
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases					4	8	5	2	1	6
Permitted Phases				4	4	8	8	2	6	
Detector Phase				4	4	8	8	5	2	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	10.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	24.0	10.0	24.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	25.0	10.0	25.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	46.2%	46.2%	15.4%	38.5%	15.4%	38.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max						
Act Effect Green (s)	16.1	16.1			16.1	16.1	27.0	25.3	25.0	21.2
Actuated g/C Ratio	0.29	0.29			0.29	0.29	0.49	0.46	0.45	0.38
v/c Ratio	0.69	0.24			0.03	0.03	0.49	0.35	0.08	0.71
Control Delay	27.1	4.3			13.4	0.1	16.3	13.1	8.9	20.0
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	4.3			13.4	0.1	16.3	13.1	8.9	20.0
LOS	C	A			B	A	B	B	A	C
Approach Delay		19.7				6.6		13.7		19.6
Approach LOS		B				A		B		B

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 55.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 17.5

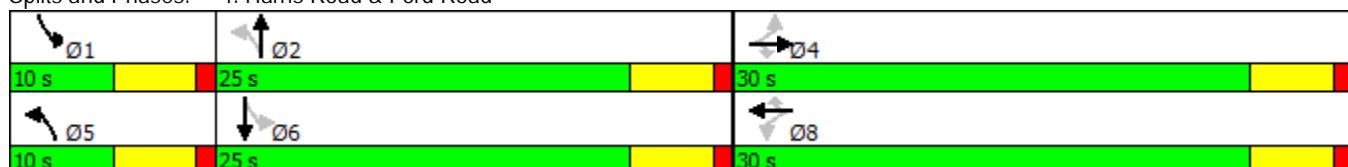
Intersection LOS: B

Intersection Capacity Utilization 65.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Harris Road & Ford Road



4: Harris Road & Ford Road



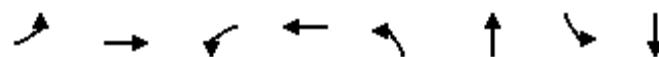
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	276	133	17	18	143	564	39	956
V/c Ratio	0.69	0.24	0.03	0.03	0.49	0.35	0.08	0.71
Control Delay	27.1	4.3	13.4	0.1	16.3	13.1	8.9	20.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	4.3	13.4	0.1	16.3	13.1	8.9	20.0
Queue Length 50th (m)	26.2	0.0	1.3	0.0	7.0	15.7	1.8	43.6
Queue Length 95th (m)	47.6	9.3	4.7	0.0	#23.9	44.7	7.1	#91.2
Internal Link Dist (m)	237.6		56.4			159.1		220.2
Turn Bay Length (m)		30.0		20.0	30.0		30.0	
Base Capacity (vph)	634	805	815	796	293	1619	460	1352
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.17	0.02	0.02	0.49	0.35	0.08	0.71

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	1	2	1	2	1	2	1	2
Traffic Volume (vph)	185	42	55	25	36	657	163	763
Future Volume (vph)	185	42	55	25	36	657	163	763
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases				4	8	5	2	1
Permitted Phases	4				2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.0	32.0	32.0	32.0	10.0	27.0	10.0	27.0
Total Split (s)	32.0	32.0	32.0	32.0	10.0	27.0	11.0	28.0
Total Split (%)	45.7%	45.7%	45.7%	45.7%	14.3%	38.6%	15.7%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	14.2	14.2	14.2	14.2	27.2	22.1	31.7	29.5
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.47	0.38	0.55	0.51
v/c Ratio	0.65	0.25	0.19	0.27	0.13	0.54	0.44	0.61
Control Delay	29.4	9.3	17.8	7.3	8.1	16.4	11.0	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	9.3	17.8	7.3	8.1	16.4	11.0	14.4
LOS	C	A	B	A	A	B	B	B
Approach Delay		22.0		10.6		16.0		13.9
Approach LOS		C		B		B		B

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 57.5

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 15.3

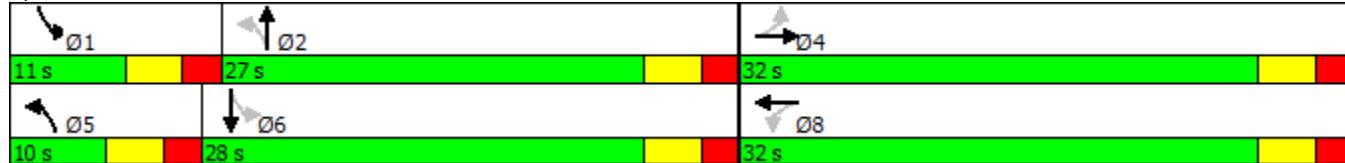
Intersection LOS: B

Intersection Capacity Utilization 66.8%

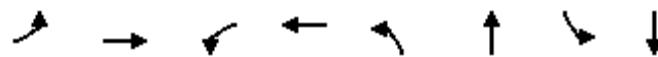
ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: Harris Road & 122 Ave/122a Ave



5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	201	117	60	132	39	738	177	1080
V/c Ratio	0.65	0.25	0.19	0.27	0.13	0.54	0.44	0.61
Control Delay	29.4	9.3	17.8	7.3	8.1	16.4	11.0	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	9.3	17.8	7.3	8.1	16.4	11.0	14.4
Queue Length 50th (m)	19.7	3.9	5.2	2.3	1.6	31.5	7.9	31.0
Queue Length 95th (m)	38.1	14.0	13.0	12.7	6.3	56.8	21.3	#98.3
Internal Link Dist (m)		58.8		123.0		220.2		356.6
Turn Bay Length (m)	30.0		30.0		30.0		30.0	
Base Capacity (vph)	592	837	600	830	306	1359	400	1782
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.14	0.10	0.16	0.13	0.54	0.44	0.61

Intersection Summary

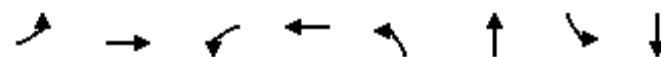
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Background Volumes

2021 PM Peak

6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘
Traffic Volume (vph)	19	17	153	23	15	733	127	971
Future Volume (vph)	19	17	153	23	15	733	127	971
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases		4				2		6
Detector Phase		4		8		8		2
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0	7.0	7.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	10.9	10.9	11.1	11.1	31.5	31.5	31.5	31.5
Actuated g/C Ratio	0.22	0.22	0.23	0.23	0.64	0.64	0.64	0.64
v/c Ratio	0.07	0.11	0.54	0.21	0.06	0.36	0.35	0.48
Control Delay	14.4	9.3	23.1	7.8	7.0	6.7	10.8	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	9.3	23.1	7.8	7.0	6.7	10.8	7.7
LOS	B	A	C	A	A	A	B	A
Approach Delay		10.9		17.8		6.7		8.0
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 49.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 8.7

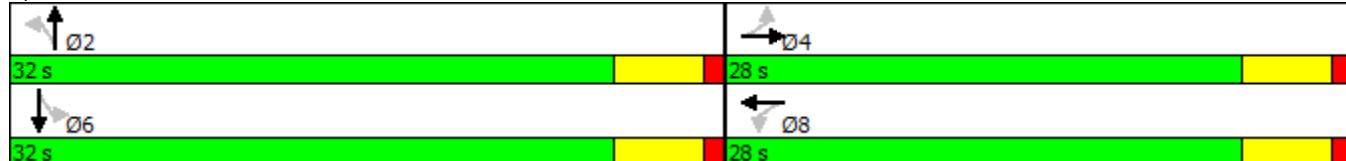
Intersection LOS: A

Intersection Capacity Utilization 61.1%

ICU Level of Service B

Analysis Period (min) 15

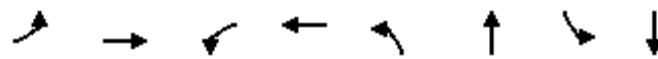
Splits and Phases: 6: Harris Road & 124 Ave



Background Volumes

2021 PM Peak

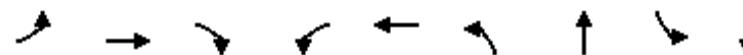
6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	21	43	166	89	16	823	138	1082
v/c Ratio	0.07	0.11	0.54	0.21	0.06	0.36	0.35	0.48
Control Delay	14.4	9.3	23.1	7.8	7.0	6.7	10.8	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	9.3	23.1	7.8	7.0	6.7	10.8	7.7
Queue Length 50th (m)	1.5	1.3	13.0	1.8	0.6	18.6	6.0	27.2
Queue Length 95th (m)	5.5	6.9	27.2	9.7	3.4	37.3	21.5	53.5
Internal Link Dist (m)	231.3		173.7		356.6		154.2	
Turn Bay Length (m)	30.0	20.0		30.0		25.0		
Base Capacity (vph)	610	810	636	813	272	2259	391	2260
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.05	0.26	0.11	0.06	0.36	0.35	0.48

Intersection Summary

7: Harris Road & McMyn Road



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	218	9	224	13	2	186	604	47	943
Future Volume (vph)	218	9	224	13	2	186	604	47	943
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases					8	5	2	1	6
Permitted Phases	4			4	8		2		6
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0	10.0	23.0	10.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	28.0	10.0	27.0	10.0	27.0
Total Split (%)	43.1%	43.1%	43.1%	43.1%	43.1%	15.4%	41.5%	15.4%	41.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	15.5	15.5			15.5	29.4	26.6	27.2	22.2
Actuated g/C Ratio	0.27	0.27			0.27	0.51	0.46	0.47	0.38
v/c Ratio	0.69	0.42			0.06	0.74	0.41	0.12	0.80
Control Delay	29.4	6.0			12.3	31.3	13.9	8.3	23.2
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	6.0			12.3	31.3	13.9	8.3	23.2
LOS	C	A			B	C	B	A	C
Approach Delay	17.8				12.3		17.9		22.5
Approach LOS	B				B		B		C

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 57.8

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 19.9

Intersection LOS: B

Intersection Capacity Utilization 68.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 7: Harris Road & McMyn Road



7: Harris Road & McMyn Road



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	247	243	23	202	666	51	1085
V/c Ratio	0.69	0.42	0.06	0.74	0.41	0.12	0.80
Control Delay	29.4	6.0	12.3	31.3	13.9	8.3	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	6.0	12.3	31.3	13.9	8.3	23.2
Queue Length 50th (m)	24.3	2.2	1.3	9.9	28.2	2.3	53.7
Queue Length 95th (m)	44.9	15.7	5.6	#47.5	50.9	8.0	#106.0
Internal Link Dist (m)	191.0		105.3		154.2		110.7
Turn Bay Length (m)		20.0		50.0		20.0	
Base Capacity (vph)	536	764	578	272	1624	429	1352
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	0.46	0.32	0.04	0.74	0.41	0.12	0.80

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Background Volumes

2021 PM Peak

8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↑ ↗	↑↑↑ ↗	↗	↗	↑↑↑ ↗	↗	↗	↗	↗	↑↑ ↗
Traffic Volume (vph)	106	3268	728	209	2089	414	109	295	61	124
Future Volume (vph)	106	3268	728	209	2089	414	109	295	61	124
Turn Type	Prot	NA	Perm	Prot	NA	Split	NA	Perm	Split	NA
Protected Phases	7	4		3	8	2	2		6	6
Permitted Phases				4				2		
Detector Phase	7	4	4	3	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.0	22.4	22.4	11.9	25.4	32.8	32.8	32.8	23.8	23.8
Total Split (s)	16.0	66.0	66.0	22.0	71.0	20.0	20.0	20.0	15.0	15.0
Total Split (%)	13.0%	53.7%	53.7%	17.9%	57.7%	16.3%	16.3%	16.3%	12.2%	12.2%
Yellow Time (s)	5.0	4.9	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	2.8	2.8	2.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.4	6.4	5.9	6.4	7.8	7.8	7.8	6.8	6.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	9.9	59.6	59.6	16.1	65.7	12.2	12.2	12.2	8.2	8.2
Actuated g/C Ratio	0.08	0.48	0.48	0.13	0.53	0.10	0.10	0.10	0.07	0.07
v/c Ratio	0.82	1.44	0.78	0.98	0.88	1.32	0.64	0.96	0.56	0.64
Control Delay	94.6	229.3	15.2	108.5	30.2	207.4	69.9	62.8	74.1	65.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.6	229.3	15.2	108.5	30.2	207.4	69.9	62.8	74.1	65.2
LOS	F	F	B	F	C	F	E	E	E	E
Approach Delay		187.8			37.0		136.9		67.9	
Approach LOS		F			D		F		E	

Intersection Summary

Cycle Length: 123

Actuated Cycle Length: 123

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.44

Intersection Signal Delay: 130.9

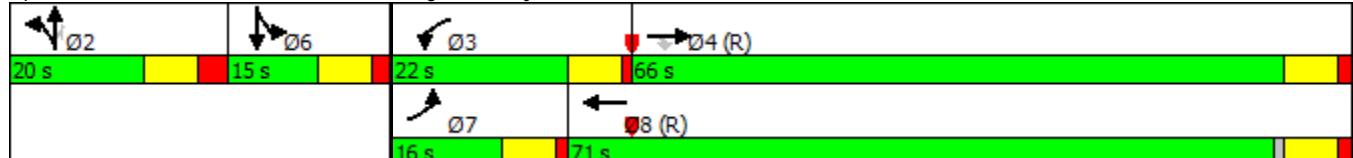
Intersection LOS: F

Intersection Capacity Utilization 114.8%

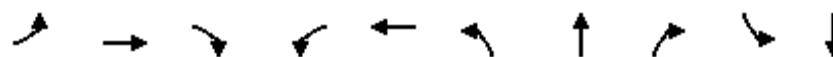
ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 8: Harris Road & Lougheed Hwy



8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	115	3552	791	227	2387	450	118	321	66	153
V/c Ratio	0.82	1.44	0.78	0.98	0.88	1.32	0.64	0.96	0.56	0.64
Control Delay	94.6	229.3	15.2	108.5	30.2	207.4	69.9	62.8	74.1	65.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.6	229.3	15.2	108.5	30.2	207.4	69.9	62.8	74.1	65.2
Queue Length 50th (m)	29.2	~449.6	63.3	58.4	188.6	-76.2	29.3	33.2	16.6	19.1
Queue Length 95th (m)	#61.9	#473.2	123.2	#110.7	213.0	#110.4	#53.8	#92.9	#34.4	31.0
Internal Link Dist (m)		1271.3			1741.4		110.7			94.1
Turn Bay Length (m)	120.0		275.0	170.0		65.0		60.0	40.0	
Base Capacity (vph)	143	2463	1020	231	2704	340	184	333	118	240
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	1.44	0.78	0.98	0.88	1.32	0.64	0.96	0.56	0.64

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

Background Volumes

2031 AM Peak

1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	38	27	10	13	332	3	190	14	179	272	10
Future Volume (vph)	38	27	10	13	332	3	190	14	179	272	10
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases				4		8		2		6	
Permitted Phases	4				8		8	2		2	6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	10.6			10.6	10.6	28.4	28.4	28.4	28.4	28.4	28.4
Actuated g/C Ratio	0.22			0.22	0.22	0.58	0.58	0.58	0.58	0.58	0.58
v/c Ratio	0.28			0.07	0.58	0.00	0.19	0.02	0.29	0.27	0.01
Control Delay	14.0			15.5	6.6	4.7	5.7	1.1	6.9	6.2	0.7
Queue Delay				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0			15.5	6.6	4.7	5.7	1.1	6.9	6.2	0.7
LOS	B			B	A	A	A	A	A	A	A
Approach Delay	14.0				7.2			5.4			6.3
Approach LOS	B				A			A			A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 49

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 7.1

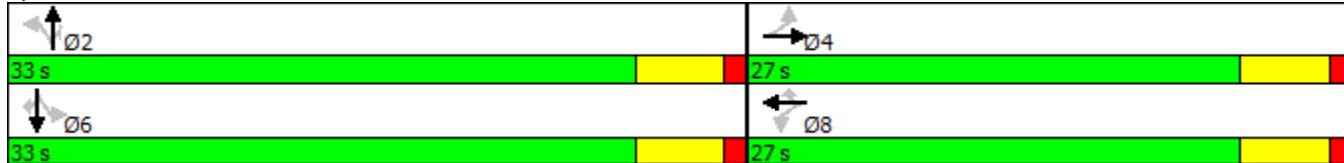
Intersection LOS: A

Intersection Capacity Utilization 51.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Harris Road & Mitchell Road/Hammond Road



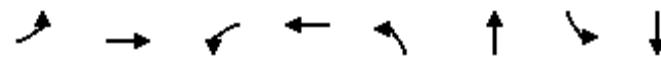
1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	102	25	361	3	207	15	195	296	11
v/c Ratio	0.28	0.07	0.58	0.00	0.19	0.02	0.29	0.27	0.01
Control Delay	14.0	15.5	6.6	4.7	5.7	1.1	6.9	6.2	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	15.5	6.6	4.7	5.7	1.1	6.9	6.2	0.7
Queue Length 50th (m)	5.2	1.8	0.0	0.1	7.3	0.0	7.3	11.0	0.0
Queue Length 95th (m)	15.1	6.4	16.4	0.9	17.1	1.0	18.7	24.3	0.6
Internal Link Dist (m)	437.0	716.4			589.6			178.2	
Turn Bay Length (m)			35.0	35.0		35.0	55.0		
Base Capacity (vph)	714	725	910	626	1080	933	678	1080	933
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.03	0.40	0.00	0.19	0.02	0.29	0.27	0.01

Intersection Summary

2: Harris Road & 119 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	34	1	13	3	26	542	8	391
Future Volume (vph)	34	1	13	3	26	542	8	391
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases								
Protected Phases	4			8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)			0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)			4.0		4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.8		6.8	34.6	34.6	34.6	34.6
Actuated g/C Ratio	0.15		0.15	0.78	0.78	0.78	0.78	
v/c Ratio	0.32		0.14	0.04	0.21	0.01	0.16	
Control Delay	12.3		11.3	3.3	2.9	3.2	2.7	
Queue Delay		0.0		0.0	0.0	0.0	0.0	
Total Delay	12.3		11.3	3.3	2.9	3.2	2.7	
LOS	B		B	A	A	A	A	
Approach Delay	12.3		11.3		2.9		2.7	
Approach LOS	B		B		A		A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 44.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 3.8

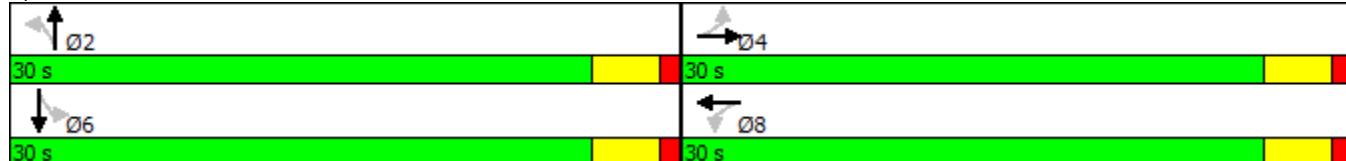
Intersection LOS: A

Intersection Capacity Utilization 34.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Harris Road & 119 Ave

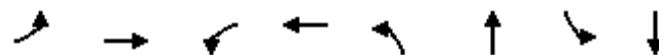


2: Harris Road & 119 Ave

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	37	28	594	9	435
v/c Ratio	0.32	0.14	0.04	0.21	0.01	0.16
Control Delay	12.3	11.3	3.3	2.9	3.2	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	11.3	3.3	2.9	3.2	2.7
Queue Length 50th (m)	2.9	1.3	0.5	7.1	0.2	4.8
Queue Length 95th (m)	10.8	6.4	2.6	14.5	1.3	10.5
Internal Link Dist (m)	236.1	105.9		178.2		173.0
Turn Bay Length (m)			30.0		30.0	
Base Capacity (vph)	876	932	729	2772	625	2767
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.04	0.04	0.21	0.01	0.16

Intersection Summary

3: Harris Road & Civic Centre Access



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	4	4	4	4	1	1	1	1
Traffic Volume (vph)	10	1	4	1	65	525	1	400
Future Volume (vph)	10	1	4	1	65	525	1	400
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases					4	8	2	6
Permitted Phases					8	2	6	
Detector Phase					8	2	2	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	28.0	28.0	27.5	27.5	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)					0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	4.5	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.2		6.3	42.9	42.9		42.9
Actuated g/C Ratio		0.13		0.13	0.87	0.87		0.87
v/c Ratio		0.16		0.08	0.09	0.19		0.16
Control Delay		13.4		13.9	2.7	2.0		2.0
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay		13.4		13.9	2.7	2.0		2.0
LOS	B		B	A	A		A	
Approach Delay		13.4		13.9		2.1		2.0
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 49.3

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.19

Intersection Signal Delay: 2.6

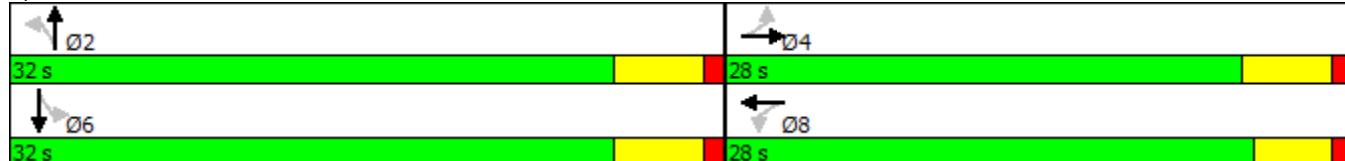
Intersection LOS: A

Intersection Capacity Utilization 43.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Harris Road & Civic Centre Access



3: Harris Road & Civic Centre Access



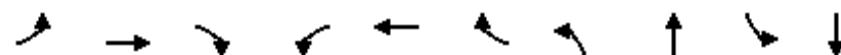
Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	37	16	71	575	469
v/c Ratio	0.16	0.08	0.09	0.19	0.16
Control Delay	13.4	13.9	2.7	2.0	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	13.9	2.7	2.0	2.0
Queue Length 50th (m)	1.0	0.4	0.0	0.0	0.0
Queue Length 95th (m)	7.0	4.4	5.5	14.4	11.5
Internal Link Dist (m)	164.5	142.8		173.0	159.1
Turn Bay Length (m)					
Base Capacity (vph)	776	737	783	3076	2906
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.02	0.09	0.19	0.16

Intersection Summary

Background Volumes

2031 AM Peak

4: Harris Road & Ford Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	153	4	75	7	13	21	78	467	10	360
Future Volume (vph)	153	4	75	7	13	21	78	467	10	360
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases					8		5	2	1	6
Permitted Phases	4			4	8		8	2		6
Detector Phase	4	4	4	8	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	10.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	9.5	24.0	9.5	24.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.2	25.5	9.5	24.8
Total Split (%)	46.2%	46.2%	46.2%	46.2%	46.2%	46.2%	15.7%	39.2%	14.6%	38.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5	4.0	3.5	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0	4.5	5.0	4.5	5.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max						
Act Effect Green (s)	11.7	11.7			11.7	11.7	29.5	29.3	27.4	25.4
Actuated g/C Ratio	0.24	0.24			0.24	0.24	0.61	0.60	0.56	0.52
v/c Ratio	0.53	0.18			0.06	0.05	0.15	0.24	0.02	0.30
Control Delay	23.4	3.5			15.2	0.2	6.5	8.2	6.1	9.7
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	3.5			15.2	0.2	6.5	8.2	6.1	9.7
LOS	C	A			B	A	A	A	A	A
Approach Delay		16.9				7.5		8.0		9.6
Approach LOS		B				A		A		A

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 48.7

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 10.1

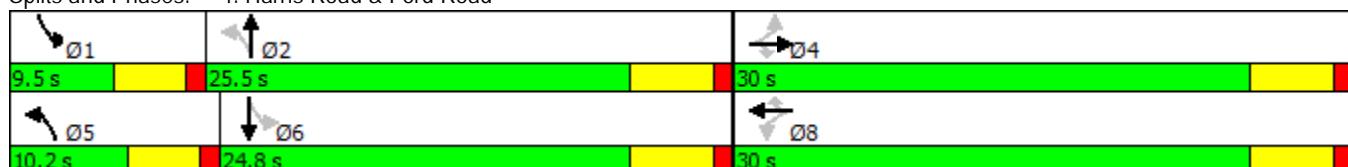
Intersection LOS: B

Intersection Capacity Utilization 46.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Harris Road & Ford Road



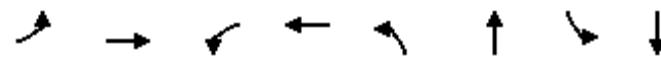
4: Harris Road & Ford Road



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	170	82	22	23	85	516	11	548
v/c Ratio	0.53	0.18	0.06	0.05	0.15	0.24	0.02	0.30
Control Delay	23.4	3.5	15.2	0.2	6.5	8.2	6.1	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	3.5	15.2	0.2	6.5	8.2	6.1	9.7
Queue Length 50th (m)	14.7	0.0	1.7	0.0	3.0	11.0	0.4	15.8
Queue Length 95th (m)	30.0	5.6	6.0	0.0	9.6	33.3	2.3	31.4
Internal Link Dist (m)	237.6		56.4			159.1		220.2
Turn Bay Length (m)		30.0		20.0	30.0		30.0	
Base Capacity (vph)	698	881	847	881	579	2123	578	1810
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.09	0.03	0.03	0.15	0.24	0.02	0.30

Intersection Summary

5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘
Traffic Volume (vph)	178	25	26	13	16	598	33	447
Future Volume (vph)	178	25	26	13	16	598	33	447
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases				4	8	5	2	1
Permitted Phases	4				2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.0	32.0	32.0	32.0	9.5	27.0	9.5	27.0
Total Split (s)	32.0	32.0	32.0	32.0	9.5	28.5	9.5	28.5
Total Split (%)	45.7%	45.7%	45.7%	45.7%	13.6%	40.7%	13.6%	40.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	5.0	4.0	5.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	13.4	13.4	13.4	13.4	29.7	26.8	30.4	28.5
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.55	0.50	0.57	0.53
v/c Ratio	0.62	0.17	0.09	0.27	0.03	0.37	0.07	0.32
Control Delay	26.7	8.7	15.6	6.2	6.6	11.2	6.7	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.7	8.7	15.6	6.2	6.6	11.2	6.7	8.9
LOS	C	A	B	A	A	B	A	A
Approach Delay		21.5			7.8		11.1	
Approach LOS		C			A		B	A

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 53.7

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 11.6

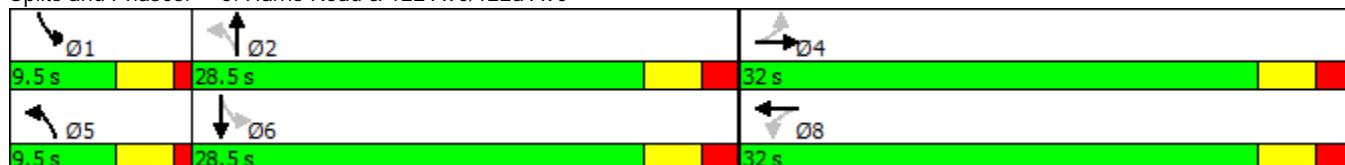
Intersection LOS: B

Intersection Capacity Utilization 54.0%

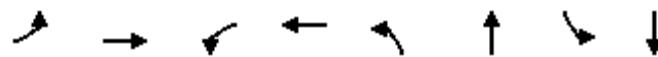
ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: Harris Road & 122 Ave/122a Ave



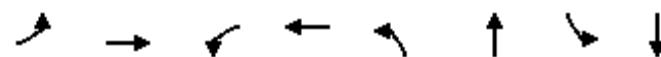
5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	193	78	28	132	17	658	36	595
v/c Ratio	0.62	0.17	0.09	0.27	0.03	0.37	0.07	0.32
Control Delay	26.7	8.7	15.6	6.2	6.6	11.2	6.7	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.7	8.7	15.6	6.2	6.6	11.2	6.7	8.9
Queue Length 50th (m)	13.9	1.7	1.8	0.9	0.6	15.0	1.2	12.3
Queue Length 95th (m)	36.6	10.4	7.4	11.5	3.4	47.1	5.6	40.0
Internal Link Dist (m)		58.8		123.0		220.2		356.6
Turn Bay Length (m)	30.0		30.0		30.0		30.0	
Base Capacity (vph)	645	889	676	887	541	1761	495	1845
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.09	0.04	0.15	0.03	0.37	0.07	0.32

Intersection Summary

6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑	→	↓ ↗	↓ ↘	↑ ↗	↑ ↘	↓ ↗	↓ ↘
Traffic Volume (vph)	22	13	75	5	9	863	22	425
Future Volume (vph)	22	13	75	5	9	863	22	425
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases					2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0	7.0	7.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	8.2	8.2	8.2	8.2	33.2	33.2	33.2	33.2
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.69	0.69	0.69	0.69
v/c Ratio	0.11	0.08	0.35	0.28	0.02	0.39	0.07	0.19
Control Delay	16.4	12.2	20.9	9.4	4.6	5.3	5.1	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	12.2	20.9	9.4	4.6	5.3	5.1	4.4
LOS	B	B	C	A	A	A	A	A
Approach Delay		14.3		14.8		5.3		4.4
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 48.3

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 6.3

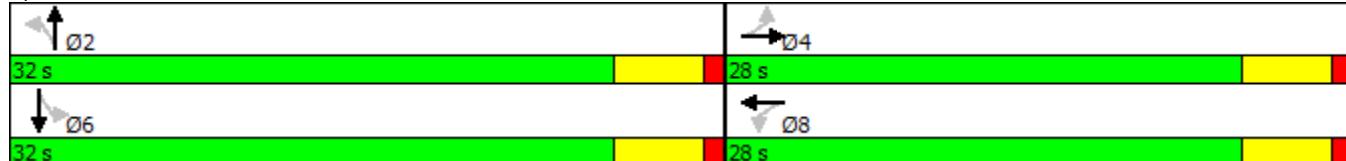
Intersection LOS: A

Intersection Capacity Utilization 43.2%

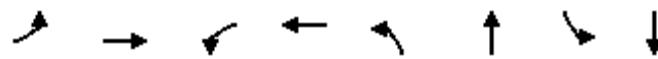
ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Harris Road & 124 Ave



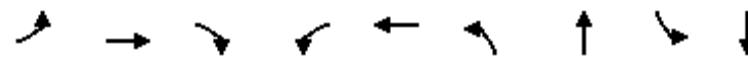
6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	24	24	82	91	10	946	24	465
v/c Ratio	0.11	0.08	0.35	0.28	0.02	0.39	0.07	0.19
Control Delay	16.4	12.2	20.9	9.4	4.6	5.3	5.1	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	12.2	20.9	9.4	4.6	5.3	5.1	4.4
Queue Length 50th (m)	1.7	1.0	6.0	1.7	0.3	17.9	0.7	7.4
Queue Length 95th (m)	6.3	5.4	15.2	10.3	1.8	34.0	3.4	15.3
Internal Link Dist (m)	231.3		173.7		356.6		154.2	
Turn Bay Length (m)	30.0	20.0		30.0		25.0		
Base Capacity (vph)	622	840	661	799	620	2431	368	2430
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.03	0.12	0.11	0.02	0.39	0.07	0.19

Intersection Summary

7: Harris Road & McMyn Road



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	228	1	61	1	1	148	797	16	397
Future Volume (vph)	228	1	61	1	1	148	797	16	397
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases					8	5	2	1	6
Permitted Phases	4			4	8		2		6
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0	10.0	23.0	10.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	28.0	11.0	27.0	10.0	26.0
Total Split (%)	43.1%	43.1%	43.1%	43.1%	43.1%	16.9%	41.5%	15.4%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	15.4	15.4			15.4	30.9	29.9	27.0	23.1
Actuated g/C Ratio	0.27	0.27			0.27	0.54	0.52	0.47	0.40
v/c Ratio	0.69	0.13			0.02	0.31	0.47	0.05	0.33
Control Delay	29.0	1.6			10.5	9.4	11.8	8.2	14.3
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	1.6			10.5	9.4	11.8	8.2	14.3
LOS	C	A			B	A	B	A	B
Approach Delay	23.3				10.5		11.4		14.1
Approach LOS	C				B		B		B

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 57.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 14.1

Intersection LOS: B

Intersection Capacity Utilization 58.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 7: Harris Road & McMyn Road



7: Harris Road & McMyn Road



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	249	66	7	161	877	17	470
v/c Ratio	0.69	0.13	0.02	0.31	0.47	0.05	0.33
Control Delay	29.0	1.6	10.5	9.4	11.8	8.2	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	1.6	10.5	9.4	11.8	8.2	14.3
Queue Length 50th (m)	24.5	0.0	0.2	7.7	26.5	0.7	18.6
Queue Length 95th (m)	45.2	2.6	2.5	20.4	70.5	3.7	35.3
Internal Link Dist (m)	191.0		105.3		154.2		110.7
Turn Bay Length (m)		20.0		50.0		20.0	
Base Capacity (vph)	548	714	662	522	1847	369	1425
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	0.45	0.09	0.01	0.31	0.47	0.05	0.33

Intersection Summary

Background Volumes

2031 AM Peak

8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↑ ↗	↑↑↑ ↗	↗	↗	↑↑↑ ↗	↗	↑	↗	↗	↑↑
Traffic Volume (vph)	20	1958	261	114	3181	805	70	133	42	34
Future Volume (vph)	20	1958	261	114	3181	805	70	133	42	34
Turn Type	Prot	NA	Perm	Prot	NA	Split	NA	Perm	Split	NA
Protected Phases	7	4		3	8	2	2		6	6
Permitted Phases				4				2		
Detector Phase	7	4	4	3	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.0	22.4	22.4	11.9	25.4	32.8	32.8	32.8	23.8	23.8
Total Split (s)	12.0	70.0	70.0	13.0	70.0	25.0	25.0	25.0	15.0	15.0
Total Split (%)	9.8%	56.9%	56.9%	10.6%	56.9%	20.3%	20.3%	20.3%	12.2%	12.2%
Yellow Time (s)	5.0	4.9	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	2.8	2.8	2.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.4	6.4	5.9	6.4	7.8	7.8	7.8	6.8	6.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	6.0	63.6	63.6	7.1	69.4	17.2	17.2	17.2	8.2	8.2
Actuated g/C Ratio	0.05	0.52	0.52	0.06	0.56	0.14	0.14	0.14	0.07	0.07
v/c Ratio	0.26	0.81	0.30	1.22	1.24	1.82	0.29	0.42	0.39	0.25
Control Delay	64.0	27.8	2.6	206.1	136.5	409.2	50.9	11.7	65.1	39.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	27.8	2.6	206.1	136.5	409.2	50.9	11.7	65.1	39.2
LOS	E	C	A	F	F	F	D	B	E	D
Approach Delay		25.2			138.8		331.8			50.4
Approach LOS		C			F		F			D

Intersection Summary

Cycle Length: 123

Actuated Cycle Length: 123

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.82

Intersection Signal Delay: 128.6

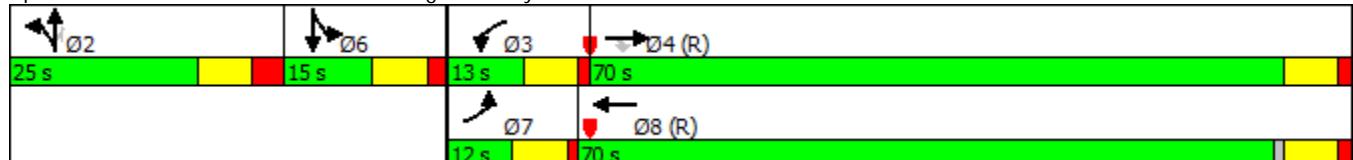
Intersection LOS: F

Intersection Capacity Utilization 114.6%

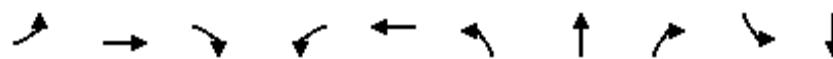
ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 8: Harris Road & Lougheed Hwy



8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	2128	284	124	3540	875	76	145	46	60
V/c Ratio	0.26	0.81	0.30	1.22	1.24	1.82	0.29	0.42	0.39	0.25
Control Delay	64.0	27.8	2.6	206.1	136.5	409.2	50.9	11.7	65.1	39.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	27.8	2.6	206.1	136.5	409.2	50.9	11.7	65.1	39.2
Queue Length 50th (m)	5.5	159.2	0.0	~38.6	~430.5	~173.1	17.6	0.2	11.4	4.7
Queue Length 95th (m)	14.8	180.5	13.6	#79.3	#454.7	#213.8	33.3	19.5	24.3	12.2
Internal Link Dist (m)	1271.3			1741.4			110.7			94.1
Turn Bay Length (m)	120.0	275.0		170.0	65.0		60.0	40.0		
Base Capacity (vph)	86	2629	955	102	2862	480	260	345	118	243
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.81	0.30	1.22	1.24	1.82	0.29	0.42	0.39	0.25

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

Background Volumes

2031 PM Peak

1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	33	48	18	43	450	30	368	16	554	312	69
Future Volume (vph)	33	48	18	43	450	30	368	16	554	312	69
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases				4		8		2		6	
Permitted Phases	4				8		8	2		2	6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	68.0	68.0	68.0	68.0	68.0	68.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	24.4%	75.6%	75.6%	75.6%	75.6%	75.6%	75.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	11.7		11.7	11.7	63.1	63.1	63.1	63.1	63.1	63.1	63.1
Actuated g/C Ratio	0.14		0.14	0.14	0.74	0.74	0.74	0.74	0.74	0.74	0.74
v/c Ratio	0.44		0.29	0.77	0.04	0.29	0.01	0.84	0.24	0.06	
Control Delay	38.1		35.8	12.1	3.6	4.5	1.2	22.2	4.2	1.1	
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.1		35.8	12.1	3.6	4.5	1.2	22.2	4.2	1.1	
LOS	D		D	B	A	A	A	C	A	A	
Approach Delay	38.1		15.0				4.3		14.6		
Approach LOS	D		B			A			B		

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 84.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 13.6

Intersection LOS: B

Intersection Capacity Utilization 74.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Harris Road & Mitchell Road/Hammond Road



1: Harris Road & Mitchell Road/Hammond Road



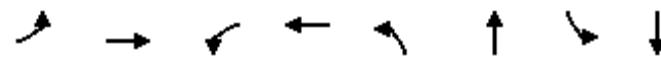
Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	97	67	489	33	400	17	602	339	75
V/c Ratio	0.44	0.29	0.77	0.04	0.29	0.01	0.84	0.24	0.06
Control Delay	38.1	35.8	12.1	3.6	4.5	1.2	22.2	4.2	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.1	35.8	12.1	3.6	4.5	1.2	22.2	4.2	1.1
Queue Length 50th (m)	14.6	10.4	0.0	1.1	16.0	0.0	50.6	13.0	0.0
Queue Length 95th (m)	29.2	22.2	28.9	4.3	36.2	1.4	#166.2	30.1	3.6
Internal Link Dist (m)	437.0	381.2			233.5			178.2	
Turn Bay Length (m)			35.0	35.0		35.0	55.0		
Base Capacity (vph)	319	340	708	770	1386	1183	714	1386	1196
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.20	0.69	0.04	0.29	0.01	0.84	0.24	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

2: Harris Road & 119 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	35	7	8	5	69	771	26	885
Future Volume (vph)	35	7	8	5	69	771	26	885
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases					2		6	
Detector Phase				4	8	8	2	2
Switch Phase							6	6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0		0.0
Total Lost Time (s)				4.0		4.0		4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		7.3		7.3	32.7	32.7	32.7	32.7
Actuated g/C Ratio	0.16		0.16	0.72	0.72	0.72	0.72	0.72
v/c Ratio	0.39		0.17	0.21	0.33	0.06	0.40	
Control Delay	13.1		9.3	5.7	3.9	3.9	4.2	
Queue Delay		0.0		0.0	0.0	0.0	0.0	
Total Delay	13.1		9.3	5.7	3.9	3.9	4.2	
LOS	B		A	A	A	A	A	
Approach Delay	13.1		9.3		4.0		4.2	
Approach LOS	B		A		A		A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 45.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.40

Intersection Signal Delay: 4.7

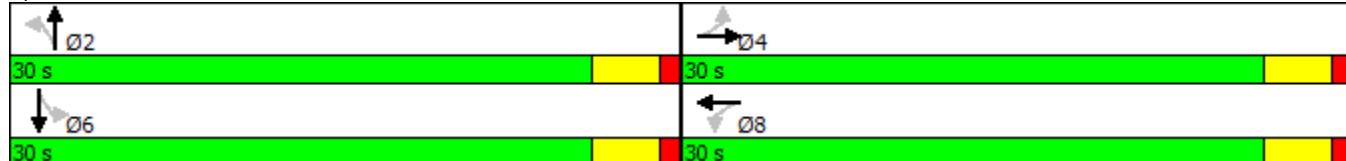
Intersection LOS: A

Intersection Capacity Utilization 50.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Harris Road & 119 Ave

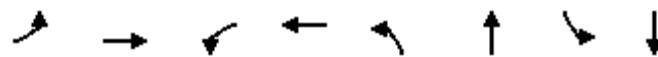


2: Harris Road & 119 Ave

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	110	47	75	849	28	1024
v/c Ratio	0.39	0.17	0.21	0.33	0.06	0.40
Control Delay	13.1	9.3	5.7	3.9	3.9	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	9.3	5.7	3.9	3.9	4.2
Queue Length 50th (m)	3.6	0.9	1.7	11.5	0.6	14.7
Queue Length 95th (m)	13.1	6.7	7.7	23.4	3.0	29.6
Internal Link Dist (m)	236.1	105.9		178.2		173.0
Turn Bay Length (m)			30.0		30.0	
Base Capacity (vph)	884	932	352	2548	437	2533
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.05	0.21	0.33	0.06	0.40

Intersection Summary

3: Harris Road & Civic Centre Access



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	26	1	1	1	65	723	7	900
Future Volume (vph)	26	1	1	1	65	723	7	900
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases					2		6	
Detector Phase				4	8	8	2	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	28.0	28.0	27.5	27.5	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0		0.0
Total Lost Time (s)				5.0		4.5		5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.9		7.2	37.2	37.2		37.2
Actuated g/C Ratio		0.14		0.15	0.78	0.78		0.78
v/c Ratio		0.35		0.08	0.18	0.29		0.40
Control Delay		12.7		9.7	5.5	3.6		4.2
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay		12.7		9.7	5.5	3.6		4.2
LOS	B		A	A	A		A	
Approach Delay		12.7		9.7		3.8		4.2
Approach LOS		B		A		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 47.8

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.40

Intersection Signal Delay: 4.5

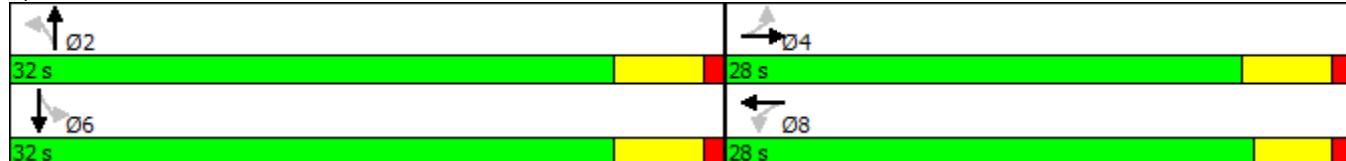
Intersection LOS: A

Intersection Capacity Utilization 71.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Harris Road & Civic Centre Access



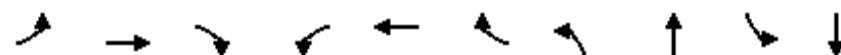
3: Harris Road & Civic Centre Access



Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	95	20	71	796	1036
v/c Ratio	0.35	0.08	0.18	0.29	0.40
Control Delay	12.7	9.7	5.5	3.6	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	9.7	5.5	3.6	4.2
Queue Length 50th (m)	3.2	0.2	2.0	12.7	18.4
Queue Length 95th (m)	11.7	4.2	7.9	24.1	34.7
Internal Link Dist (m)	164.5	142.8		173.0	159.1
Turn Bay Length (m)					
Base Capacity (vph)	757	797	385	2747	2598
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.13	0.03	0.18	0.29	0.40

Intersection Summary

4: Harris Road & Ford Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	269	31	144	4	16	20	156	602	43	813
Future Volume (vph)	269	31	144	4	16	20	156	602	43	813
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4				8		5	2	1
Permitted Phases	4			4	8		8	2		6
Detector Phase	4	4	4	8	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	10.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	9.0	24.0	9.0	24.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	9.0	26.0	9.0	26.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	46.2%	46.2%	13.8%	40.0%	13.8%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0	4.0	5.0	4.0	5.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max						
Act Effect Green (s)	18.3	18.3			18.3	18.3	29.0	25.2	27.2	21.2
Actuated g/C Ratio	0.31	0.31			0.31	0.31	0.49	0.43	0.46	0.36
v/c Ratio	0.77	0.26			0.04	0.04	0.62	0.44	0.11	0.89
Control Delay	30.8	4.0			13.2	0.1	22.8	15.3	9.0	29.3
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	4.0			13.2	0.1	22.8	15.3	9.0	29.3
LOS	C	A			B	A	C	B	A	C
Approach Delay	22.1				6.5			16.8		28.5
Approach LOS	C				A			B		C

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 58.6

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 23.1

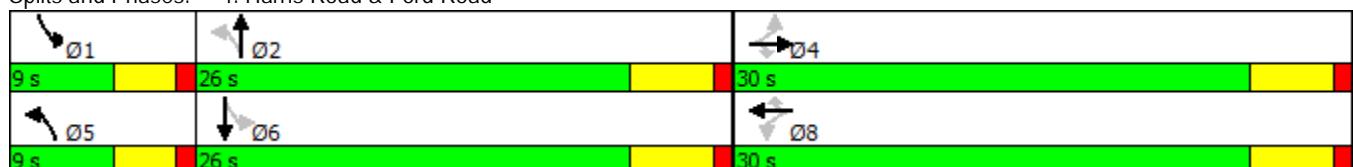
Intersection LOS: C

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: Harris Road & Ford Road



4: Harris Road & Ford Road



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	326	157	21	22	170	667	47	1130
V/c Ratio	0.77	0.26	0.04	0.04	0.62	0.44	0.11	0.89
Control Delay	30.8	4.0	13.2	0.1	22.8	15.3	9.0	29.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	4.0	13.2	0.1	22.8	15.3	9.0	29.3
Queue Length 50th (m)	32.4	0.0	1.6	0.0	9.1	30.4	2.4	58.9
Queue Length 95th (m)	58.1	10.0	5.4	0.0	#34.6	52.2	7.9	#114.6
Internal Link Dist (m)	237.6		56.4			159.1		220.2
Turn Bay Length (m)		30.0		20.0	30.0		30.0	
Base Capacity (vph)	587	770	750	738	273	1517	417	1273
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.20	0.03	0.03	0.62	0.44	0.11	0.89

Intersection Summary

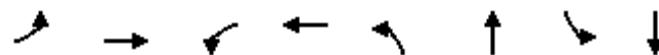
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Background Volumes

2031 PM Peak

5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘
Traffic Volume (vph)	218	49	65	30	43	776	192	902
Future Volume (vph)	218	49	65	30	43	776	192	902
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases				4	8	5	2	1
Permitted Phases				4	8	2	6	
Detector Phase				4	4	8	5	2
Switch Phase							1	6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.0	32.0	32.0	32.0	9.0	27.0	9.0	27.0
Total Split (s)	32.0	32.0	32.0	32.0	9.0	30.0	13.0	34.0
Total Split (%)	42.7%	42.7%	42.7%	42.7%	12.0%	40.0%	17.3%	45.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	5.0	4.0	5.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	17.6	17.6	17.6	17.6	31.4	25.3	38.6	32.6
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.48	0.39	0.59	0.50
v/c Ratio	0.72	0.27	0.21	0.30	0.19	0.64	0.53	0.74
Control Delay	34.5	9.5	19.4	7.2	9.8	20.1	12.8	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	9.5	19.4	7.2	9.8	20.1	12.8	18.9
LOS	C	A	B	A	A	C	B	B
Approach Delay		25.3			11.0		19.6	18.0
Approach LOS		C			B		B	

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 65.3

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 18.9

Intersection LOS: B

Intersection Capacity Utilization 74.3%

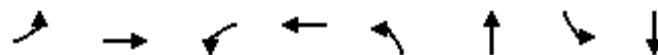
ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: Harris Road & 122 Ave/122a Ave



5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	237	137	71	157	47	871	209	1277
V/c Ratio	0.72	0.27	0.21	0.30	0.19	0.64	0.53	0.74
Control Delay	34.5	9.5	19.4	7.2	9.8	20.1	12.8	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	9.5	19.4	7.2	9.8	20.1	12.8	18.9
Queue Length 50th (m)	27.5	5.1	7.0	3.2	2.2	46.5	10.8	68.8
Queue Length 95th (m)	49.7	16.4	15.9	15.0	8.1	80.4	27.8	#136.4
Internal Link Dist (m)		58.8		123.0		220.2		356.6
Turn Bay Length (m)	30.0		30.0		30.0		30.0	
Base Capacity (vph)	511	756	521	759	248	1367	409	1733
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.18	0.14	0.21	0.19	0.64	0.51	0.74

Intersection Summary

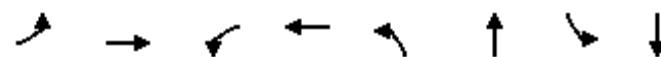
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Background Volumes

2031 PM Peak

6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘
Traffic Volume (vph)	22	20	181	27	18	866	150	1148
Future Volume (vph)	22	20	181	27	18	866	150	1148
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases						2		6
Detector Phase				4		8		2
Switch Phase						6		6
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0	7.0	7.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	37.0	37.0	37.0	37.0
Total Split (%)	43.1%	43.1%	43.1%	43.1%	56.9%	56.9%	56.9%	56.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	13.6	13.6	13.6	13.6	34.9	34.9	34.9	34.9
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.60	0.60	0.60	0.60
v/c Ratio	0.08	0.12	0.63	0.24	0.11	0.46	0.57	0.61
Control Delay	16.0	10.0	28.5	8.1	8.9	8.2	20.7	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	10.0	28.5	8.1	8.9	8.2	20.7	9.9
LOS	B	A	C	A	A	A	C	A
Approach Delay		11.9		21.4		8.2		11.1
Approach LOS		B		C		A		B

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 58.6

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 11.2

Intersection LOS: B

Intersection Capacity Utilization 67.7%

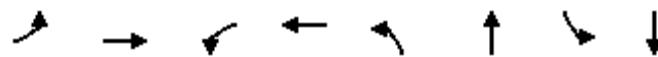
ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: Harris Road & 124 Ave



6: Harris Road & 124 Ave



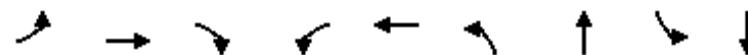
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	24	51	197	105	20	973	163	1281
V/c Ratio	0.08	0.12	0.63	0.24	0.11	0.46	0.57	0.61
Control Delay	16.0	10.0	28.5	8.1	8.9	8.2	20.7	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	10.0	28.5	8.1	8.9	8.2	20.7	9.9
Queue Length 50th (m)	2.0	1.8	18.5	2.4	0.8	26.6	9.5	40.0
Queue Length 95th (m)	6.6	8.3	35.8	11.8	4.7	52.4	#43.1	77.6
Internal Link Dist (m)		231.3		173.7		356.6		154.2
Turn Bay Length (m)	30.0		20.0		30.0		25.0	
Base Capacity (vph)	506	691	533	702	177	2100	285	2101
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.07	0.37	0.15	0.11	0.46	0.57	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

7: Harris Road & McMyn Road



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	257	10	265	16	3	220	714	56	1114
Future Volume (vph)	257	10	265	16	3	220	714	56	1114
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases					8	5	2	1	6
Permitted Phases	4			4	8		2		6
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0	10.0	23.0	10.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	28.0	12.0	37.0	10.0	35.0
Total Split (%)	37.3%	37.3%	37.3%	37.3%	37.3%	16.0%	49.3%	13.3%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	19.2	19.2			19.2	40.4	36.4	35.1	30.1
Actuated g/C Ratio	0.27	0.27			0.27	0.57	0.51	0.49	0.42
v/c Ratio	0.81	0.52			0.07	0.89	0.44	0.16	0.86
Control Delay	43.2	12.7			15.3	51.3	13.9	8.6	27.3
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	1.9
Total Delay	43.2	12.7			15.3	51.3	13.9	8.6	29.2
LOS	D	B			B	D	B	A	C
Approach Delay	28.0				15.3		22.6		28.3
Approach LOS	C				B		C		C

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 71.4

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 26.1

Intersection LOS: C

Intersection Capacity Utilization 78.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: Harris Road & McMyn Road



7: Harris Road & McMyn Road



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	290	288	28	239	786	61	1282
v/c Ratio	0.81	0.52	0.07	0.89	0.44	0.16	0.86
Control Delay	43.2	12.7	15.3	51.3	13.9	8.6	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.9
Total Delay	43.2	12.7	15.3	51.3	13.9	8.6	29.2
Queue Length 50th (m)	37.9	12.9	2.1	20.2	41.5	3.6	87.4
Queue Length 95th (m)	#73.3	33.8	7.7	#64.7	59.8	8.8	#135.6
Internal Link Dist (m)	191.0		105.3		154.2		110.7
Turn Bay Length (m)		20.0		50.0		20.0	
Base Capacity (vph)	429	627	461	270	1801	386	1485
Starvation Cap Reductn	0	0	0	0	0	0	94
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.46	0.06	0.89	0.44	0.16	0.92

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Background Volumes

2031 PM Peak

8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↑ ↗	↑↑↑ ↗	↗	↗	↑↑↑ ↗	↗	↗	↗	↗	↑↑ ↗
Traffic Volume (vph)	125	3862	861	247	2469	489	129	348	72	147
Future Volume (vph)	125	3862	861	247	2469	489	129	348	72	147
Turn Type	Prot	NA	Perm	Prot	NA	Split	NA	Perm	Split	NA
Protected Phases	7	4		3	8	2	2		6	6
Permitted Phases				4				2		
Detector Phase	7	4	4	3	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.0	22.4	22.4	11.9	25.4	32.8	32.8	32.8	23.8	23.8
Total Split (s)	16.0	66.0	66.0	22.0	71.0	20.0	20.0	20.0	15.0	15.0
Total Split (%)	13.0%	53.7%	53.7%	17.9%	57.7%	16.3%	16.3%	16.3%	12.2%	12.2%
Yellow Time (s)	5.0	4.9	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	2.8	2.8	2.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.4	6.4	5.9	6.4	7.8	7.8	7.8	6.8	6.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	10.0	59.6	59.6	16.1	65.6	12.2	12.2	12.2	8.2	8.2
Actuated g/C Ratio	0.08	0.48	0.48	0.13	0.53	0.10	0.10	0.10	0.07	0.07
v/c Ratio	0.95	1.70	0.93	1.16	1.05	1.56	0.76	1.14	0.66	0.76
Control Delay	119.7	344.2	30.7	156.2	59.5	304.5	79.8	115.2	82.2	73.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.7	344.2	30.7	156.2	59.5	304.5	79.8	115.2	82.2	73.8
LOS	F	F	C	F	E	F	E	F	F	E
Approach Delay		282.7			67.8		206.4			76.3
Approach LOS		F			E		F			E

Intersection Summary

Cycle Length: 123

Actuated Cycle Length: 123

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.70

Intersection Signal Delay: 200.2

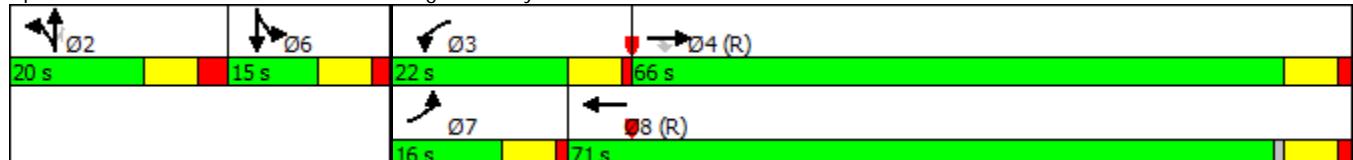
Intersection LOS: F

Intersection Capacity Utilization 130.5%

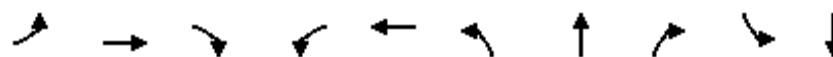
ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 8: Harris Road & Lougheed Hwy



8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	136	4198	936	268	2821	532	140	378	78	182
V/c Ratio	0.95	1.70	0.93	1.16	1.05	1.56	0.76	1.14	0.66	0.76
Control Delay	119.7	344.2	30.7	156.2	59.5	304.5	79.8	115.2	82.2	73.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.7	344.2	30.7	156.2	59.5	304.5	79.8	115.2	82.2	73.8
Queue Length 50th (m)	35.1	~574.8	129.9	~80.5	~285.2	~98.6	35.3	~63.9	19.7	23.1
Queue Length 95th (m)	#76.2	#594.2	#242.3	#136.1	#313.5	#134.3	#68.1	#127.4	#43.4	#41.2
Internal Link Dist (m)	1271.3			1741.4			110.7			94.1
Turn Bay Length (m)	120.0	275.0		170.0	65.0		60.0	40.0		
Base Capacity (vph)	143	2463	1009	231	2698	340	184	333	118	240
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	1.70	0.93	1.16	1.05	1.56	0.76	1.14	0.66	0.76

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Combined Volumes

2021 AM Peak

1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	32	23	9	11	281	2	258	12	152	553	9
Future Volume (vph)	32	23	9	11	281	2	258	12	152	553	9
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases				4		8		2		6	
Permitted Phases	4				8		8	2		2	6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	36.7%	36.7%	36.7%	36.7%	36.7%	63.3%	63.3%	63.3%	63.3%	63.3%	63.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	10.5			10.5	10.5	34.3	34.3	34.3	34.3	34.3	34.3
Actuated g/C Ratio	0.19			0.19	0.19	0.62	0.62	0.62	0.62	0.62	0.62
v/c Ratio	0.27			0.07	0.55	0.00	0.24	0.01	0.24	0.52	0.01
Control Delay	16.1			18.0	7.2	4.5	5.4	0.8	5.9	7.9	0.4
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1			18.0	7.2	4.5	5.4	0.8	5.9	7.9	0.4
LOS	B			B	A	A	A	A	A	A	A
Approach Delay	16.1				7.9		5.2			7.4	
Approach LOS	B				A		A			A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 54.9

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 7.6

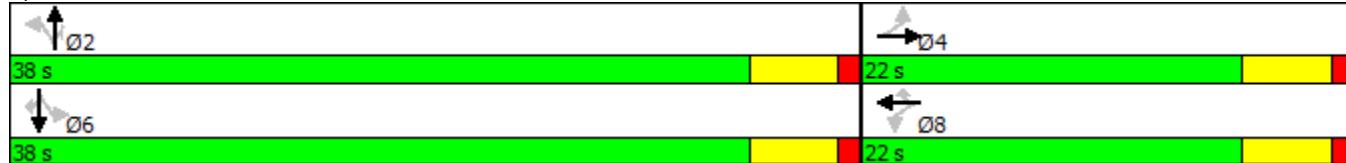
Intersection LOS: A

Intersection Capacity Utilization 58.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Harris Road & Mitchell Road/Hammond Road



1: Harris Road & Mitchell Road/Hammond Road



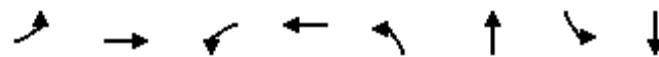
Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	86	22	305	2	280	13	165	601	10
v/c Ratio	0.27	0.07	0.55	0.00	0.24	0.01	0.24	0.52	0.01
Control Delay	16.1	18.0	7.2	4.5	5.4	0.8	5.9	7.9	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1	18.0	7.2	4.5	5.4	0.8	5.9	7.9	0.4
Queue Length 50th (m)	5.1	1.8	0.0	0.1	10.3	0.0	6.1	27.7	0.0
Queue Length 95th (m)	14.9	6.6	16.4	0.7	22.0	0.7	15.4	55.6	0.4
Internal Link Dist (m)	437.0	716.4			589.6			178.2	
Turn Bay Length (m)			35.0	35.0		35.0	55.0		
Base Capacity (vph)	500	501	701	431	1164	1003	684	1164	1003
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.04	0.44	0.00	0.24	0.01	0.24	0.52	0.01

Intersection Summary

Combined Volumes

2021 AM Peak

2: Harris Road & 119 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	29	1	11	2	22	556	7	654
Future Volume (vph)	29	1	11	2	22	556	7	654
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases								
Protected Phases	4			8		2		6
Permitted Phases	4			8		2		6
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0		0.0
Total Lost Time (s)				4.0		4.0		4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.7		6.7	35.6	35.6	35.6	35.6
Actuated g/C Ratio	0.15		0.15	0.79	0.79	0.79	0.79	0.79
v/c Ratio	0.29		0.13	0.04	0.22	0.01	0.26	
Control Delay	12.6		11.9	3.3	2.8	3.1	2.9	
Queue Delay		0.0		0.0	0.0	0.0	0.0	
Total Delay	12.6		11.9	3.3	2.8	3.1	2.9	
LOS	B		B	A	A	A	A	
Approach Delay	12.6		11.9		2.8		2.9	
Approach LOS	B		B		A		A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 44.9

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.29

Intersection Signal Delay: 3.5

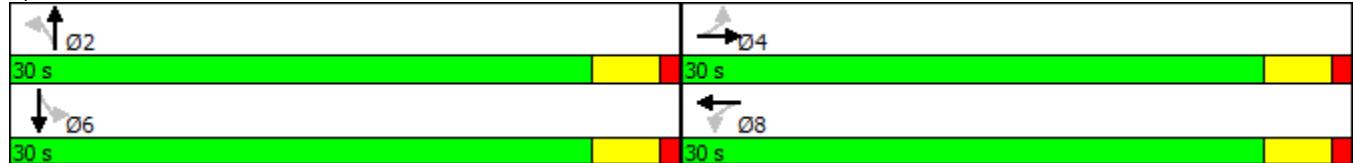
Intersection LOS: A

Intersection Capacity Utilization 30.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Harris Road & 119 Ave

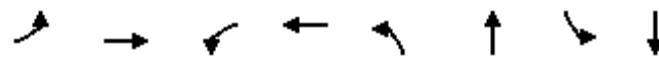


2: Harris Road & 119 Ave

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	72	30	24	608	8	720
v/c Ratio	0.29	0.13	0.04	0.22	0.01	0.26
Control Delay	12.6	11.9	3.3	2.8	3.1	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	11.9	3.3	2.8	3.1	2.9
Queue Length 50th (m)	2.8	1.2	0.5	7.3	0.2	8.9
Queue Length 95th (m)	9.7	5.7	2.4	14.4	1.1	17.4
Internal Link Dist (m)	236.1	105.9		178.2		173.0
Turn Bay Length (m)			30.0		30.0	
Base Capacity (vph)	861	877	557	2801	622	2798
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.03	0.04	0.22	0.01	0.26

Intersection Summary

3: Harris Road & Civic Centre Access



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	9	1	3	1	55	541	1	662
Future Volume (vph)	9	1	3	1	55	541	1	662
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				8		2		6
Permitted Phases	4			8		2		6
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	28.0	28.0	27.5	27.5	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0	4.5	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.1		6.1	44.2	44.2		44.2
Actuated g/C Ratio	0.13		0.13	0.93	0.93		0.93	
v/c Ratio	0.14		0.06	0.09	0.18		0.24	
Control Delay	12.7		13.2	2.0	1.3		1.4	
Queue Delay		0.0	0.0	0.0	0.0		0.0	
Total Delay	12.7		13.2	2.0	1.3		1.4	
LOS	B		B	A	A		A	
Approach Delay	12.7		13.2		1.4		1.4	
Approach LOS	B		B		A		A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 47.5

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.24

Intersection Signal Delay: 1.8

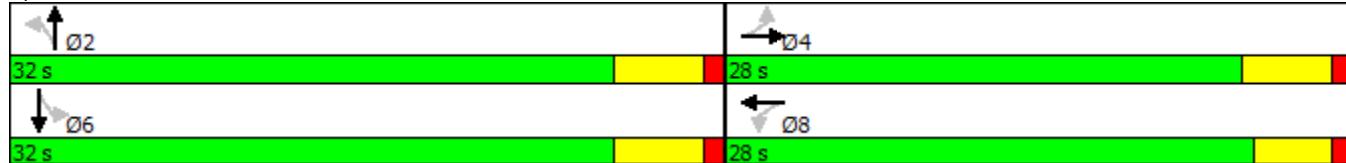
Intersection LOS: A

Intersection Capacity Utilization 50.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Harris Road & Civic Centre Access



3: Harris Road & Civic Centre Access



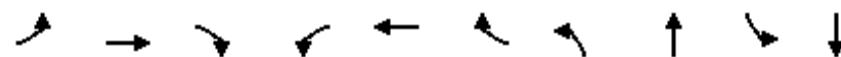
Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	33	14	60	591	748
v/c Ratio	0.14	0.06	0.09	0.18	0.24
Control Delay	12.7	13.2	2.0	1.3	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	13.2	2.0	1.3	1.4
Queue Length 50th (m)	0.9	0.4	0.0	0.0	0.0
Queue Length 95th (m)	6.8	4.1	5.0	14.7	19.3
Internal Link Dist (m)	164.5	142.8		173.0	159.1
Turn Bay Length (m)					
Base Capacity (vph)	832	839	637	3287	3127
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.02	0.09	0.18	0.24

Intersection Summary

Combined Volumes

2021 AM Peak

4: Harris Road & Ford Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	130	3	79	7	11	18	70	473	9	612
Future Volume (vph)	130	3	79	7	11	18	70	473	9	612
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases					8		5	2	1	6
Permitted Phases	4			4	8		8	2		6
Detector Phase	4	4	4	8	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	10.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	24.0	10.0	24.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	25.0	10.0	25.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	46.2%	46.2%	15.4%	38.5%	15.4%	38.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max						
Act Effect Green (s)	10.7	10.7			10.7	10.7	28.9	29.2	27.0	25.5
Actuated g/C Ratio	0.22	0.22			0.22	0.22	0.60	0.61	0.56	0.53
v/c Ratio	0.48	0.19			0.06	0.04	0.17	0.24	0.02	0.43
Control Delay	22.8	3.5			15.7	0.2	6.4	7.7	5.8	11.4
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	3.5			15.7	0.2	6.4	7.7	5.8	11.4
LOS	C	A			B	A	A	A	A	B
Approach Delay	15.6				7.9			7.6		11.3
Approach LOS	B				A			A		B

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 47.8

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 10.5

Intersection LOS: B

Intersection Capacity Utilization 51.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Harris Road & Ford Road



4: Harris Road & Ford Road



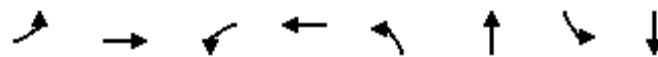
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	144	86	20	20	76	521	10	798
v/c Ratio	0.48	0.19	0.06	0.04	0.17	0.24	0.02	0.43
Control Delay	22.8	3.5	15.7	0.2	6.4	7.7	5.8	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	3.5	15.7	0.2	6.4	7.7	5.8	11.4
Queue Length 50th (m)	12.2	0.0	1.5	0.0	2.6	10.4	0.3	28.1
Queue Length 95th (m)	25.9	5.6	5.6	0.0	8.3	32.3	2.1	50.4
Internal Link Dist (m)	237.6		56.4			159.1		220.2
Turn Bay Length (m)		30.0		20.0	30.0		30.0	
Base Capacity (vph)	711	899	848	899	455	2159	580	1859
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.10	0.02	0.02	0.17	0.24	0.02	0.43

Intersection Summary

Combined Volumes

2021 AM Peak

5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘
Traffic Volume (vph)	151	21	28	11	16	588	28	669
Future Volume (vph)	151	21	28	11	16	588	28	669
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases				4	8	5	2	1
Permitted Phases	4				2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.0	32.0	32.0	32.0	10.0	27.0	10.0	27.0
Total Split (s)	32.0	32.0	32.0	32.0	10.0	28.0	10.0	28.0
Total Split (%)	45.7%	45.7%	45.7%	45.7%	14.3%	40.0%	14.3%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	11.6	11.6	11.3	11.3	28.7	28.2	29.6	29.9
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.58	0.57	0.60	0.60
v/c Ratio	0.55	0.18	0.10	0.25	0.04	0.32	0.06	0.39
Control Delay	24.7	8.7	16.3	6.8	6.4	10.1	6.4	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	8.7	16.3	6.8	6.4	10.1	6.4	9.0
LOS	C	A	B	A	A	B	A	A
Approach Delay		19.6			8.8		10.0	
Approach LOS		B			A		B	A

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 49.5

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 10.6

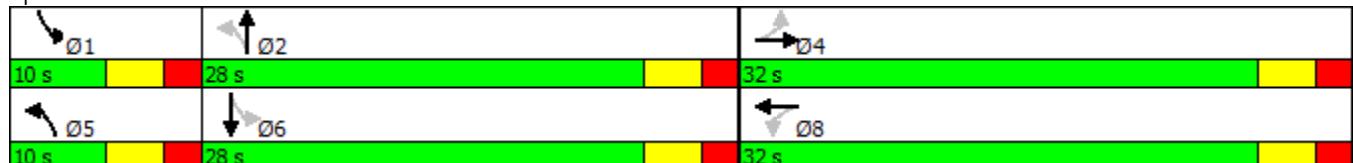
Intersection LOS: B

Intersection Capacity Utilization 46.6%

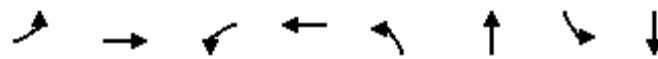
ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: Harris Road & 122 Ave/122a Ave



5: Harris Road & 122 Ave/122a Ave



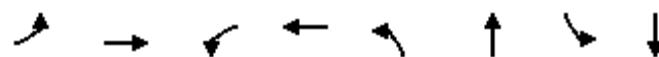
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	164	77	30	112	17	647	30	819
v/c Ratio	0.55	0.18	0.10	0.25	0.04	0.32	0.06	0.39
Control Delay	24.7	8.7	16.3	6.8	6.4	10.1	6.4	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	8.7	16.3	6.8	6.4	10.1	6.4	9.0
Queue Length 50th (m)	11.3	1.4	1.8	0.7	0.6	13.6	1.0	17.8
Queue Length 95th (m)	31.3	10.2	7.9	10.8	3.2	43.7	4.7	56.5
Internal Link Dist (m)		58.8		123.0		220.2		356.6
Turn Bay Length (m)	30.0		30.0		30.0		30.0	
Base Capacity (vph)	714	956	736	946	464	2013	529	2111
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.08	0.04	0.12	0.04	0.32	0.06	0.39

Intersection Summary

Combined Volumes

2021 AM Peak

6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑	↓	↑	↓	↑	↑↓	↑	↑↓
Traffic Volume (vph)	19	11	78	4	11	817	19	635
Future Volume (vph)	19	11	78	4	11	817	19	635
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases						2		6
Detector Phase				4		8	8	2
Switch Phase							2	6
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0	7.0	7.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	8.4	8.4	8.4	8.4	33.8	33.8	33.8	33.8
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.69	0.69	0.69	0.69
v/c Ratio	0.09	0.08	0.36	0.23	0.02	0.37	0.05	0.28
Control Delay	16.1	11.7	21.2	7.2	4.6	5.2	5.0	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1	11.7	21.2	7.2	4.6	5.2	5.0	4.8
LOS	B	B	C	A	A	A	A	A
Approach Delay			13.8		14.5		5.2	4.8
Approach LOS			B		B		A	A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 49

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 6.1

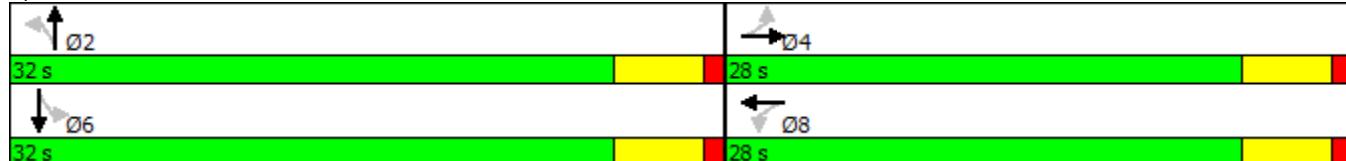
Intersection LOS: A

Intersection Capacity Utilization 42.2%

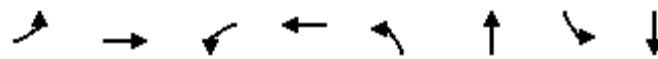
ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Harris Road & 124 Ave



6: Harris Road & 124 Ave



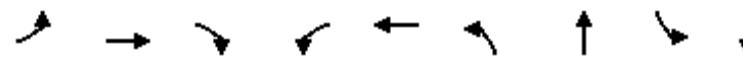
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	21	23	85	77	12	897	21	692
v/c Ratio	0.09	0.08	0.36	0.23	0.02	0.37	0.05	0.28
Control Delay	16.1	11.7	21.2	7.2	4.6	5.2	5.0	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1	11.7	21.2	7.2	4.6	5.2	5.0	4.8
Queue Length 50th (m)	1.5	0.8	6.3	0.3	0.3	16.8	0.6	12.1
Queue Length 95th (m)	5.6	5.1	15.6	8.1	2.0	32.1	3.1	23.5
Internal Link Dist (m)	231.3		173.7		356.6		154.2	
Turn Bay Length (m)	30.0	20.0		30.0		25.0		
Base Capacity (vph)	623	824	654	795	499	2433	394	2438
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.13	0.10	0.02	0.37	0.05	0.28

Intersection Summary

Combined Volumes

2021 AM Peak

7: Harris Road & McMyn Road



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	193	1	68	1	1	130	766	13	594
Future Volume (vph)	193	1	68	1	1	130	766	13	594
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases					8	5	2	1	6
Permitted Phases	4			4	8		2		6
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0	10.0	23.0	10.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	28.0	11.0	27.0	10.0	26.0
Total Split (%)	43.1%	43.1%	43.1%	43.1%	43.1%	16.9%	41.5%	15.4%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	13.9	13.9			13.9	32.2	31.1	28.2	24.2
Actuated g/C Ratio	0.24	0.24			0.24	0.57	0.55	0.50	0.43
v/c Ratio	0.64	0.16			0.02	0.32	0.44	0.03	0.45
Control Delay	28.1	2.2			11.3	8.8	10.5	7.4	14.7
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay	28.1	2.2			11.3	8.8	10.5	7.4	14.7
LOS	C	A			B	A	B	A	B
Approach Delay	21.4				11.3		10.3		14.6
Approach LOS	C				B		B		B

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 56.9

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 13.4

Intersection LOS: B

Intersection Capacity Utilization 55.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 7: Harris Road & McMyn Road



7: Harris Road & McMyn Road



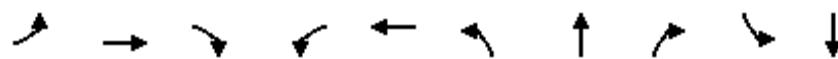
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	211	74	6	141	843	14	679
v/c Ratio	0.64	0.16	0.02	0.32	0.44	0.03	0.45
Control Delay	28.1	2.2	11.3	8.8	10.5	7.4	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.1	2.2	11.3	8.8	10.5	7.4	14.7
Queue Length 50th (m)	20.0	0.0	0.2	6.1	22.8	0.6	27.8
Queue Length 95th (m)	38.2	3.8	2.3	17.0	64.0	3.2	50.6
Internal Link Dist (m)	191.0		105.3		154.2		110.7
Turn Bay Length (m)		20.0		50.0		20.0	
Base Capacity (vph)	547	712	659	446	1932	401	1498
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	0.39	0.10	0.01	0.32	0.44	0.03	0.45

Intersection Summary

Combined Volumes

2021 AM Peak

8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↑ ↗	↑↑↑ ↗	↗	↖	↑↑↑ ↘	↖ ↗	↑	↗	↖	↑↑ ↘
Traffic Volume (vph)	17	1657	386	169	2692	743	64	122	35	50
Future Volume (vph)	17	1657	386	169	2692	743	64	122	35	50
Turn Type	Prot	NA	Perm	Prot	NA	Split	NA	Perm	Split	NA
Protected Phases	7	4		3	8	2	2		6	6
Permitted Phases				4				2		
Detector Phase	7	4	4	3	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.0	22.4	22.4	11.9	25.4	32.8	32.8	32.8	23.8	23.8
Total Split (s)	12.0	70.0	70.0	13.0	70.0	25.0	25.0	25.0	15.0	15.0
Total Split (%)	9.8%	56.9%	56.9%	10.6%	56.9%	20.3%	20.3%	20.3%	12.2%	12.2%
Yellow Time (s)	5.0	4.9	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	2.8	2.8	2.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.4	6.4	5.9	6.4	7.8	7.8	7.8	6.8	6.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	6.0	63.6	63.6	7.1	71.8	17.2	17.2	17.2	8.2	8.2
Actuated g/C Ratio	0.05	0.52	0.52	0.06	0.58	0.14	0.14	0.14	0.07	0.07
v/c Ratio	0.21	0.69	0.41	1.80	1.01	1.68	0.27	0.39	0.32	0.30
Control Delay	62.2	23.9	2.7	430.4	45.8	349.6	50.4	9.7	62.5	44.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.2	23.9	2.7	430.4	45.8	349.6	50.4	9.7	62.5	44.1
LOS	E	C	A	F	D	F	D	A	E	D
Approach Delay		20.2			68.1		284.2		50.4	
Approach LOS		C			E		F		D	

Intersection Summary

Cycle Length: 123

Actuated Cycle Length: 123

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.80

Intersection Signal Delay: 84.8

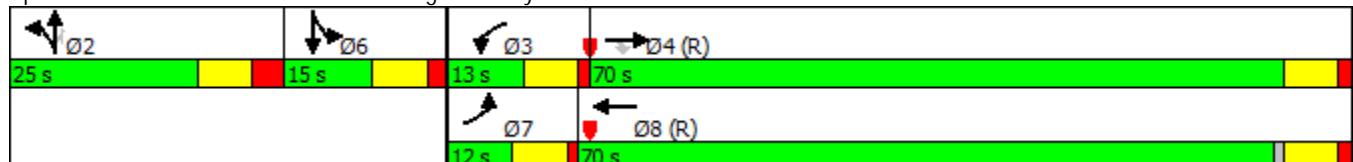
Intersection LOS: F

Intersection Capacity Utilization 103.1%

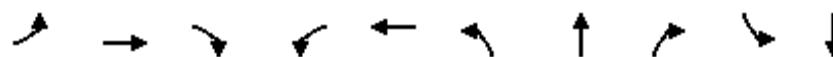
ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 8: Harris Road & Lougheed Hwy



8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	1801	420	184	2996	808	70	133	38	74
V/c Ratio	0.21	0.69	0.41	1.80	1.01	1.68	0.27	0.39	0.32	0.30
Control Delay	62.2	23.9	2.7	430.4	45.8	349.6	50.4	9.7	62.5	44.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.2	23.9	2.7	430.4	45.8	349.6	50.4	9.7	62.5	44.1
Queue Length 50th (m)	4.5	121.1	0.0	~70.3	240.9	~154.8	16.1	0.0	9.4	7.0
Queue Length 95th (m)	12.7	138.7	15.7	#118.5	#350.9	#195.0	31.0	15.8	21.3	15.2
Internal Link Dist (m)	1271.3			1741.4			110.7			94.1
Turn Bay Length (m)	120.0	275.0		170.0	65.0			60.0	40.0	
Base Capacity (vph)	86	2629	1021	102	2958	480	260	345	118	244
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.69	0.41	1.80	1.01	1.68	0.27	0.39	0.32	0.30

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

Combined Volumes

2021 PM Peak

1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	28	41	15	36	381	25	732	13	469	399	58
Future Volume (vph)	28	41	15	36	381	25	732	13	469	399	58
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases				4		8		2		6	
Permitted Phases	4				8		8	2		2	6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	98.0	98.0	98.0	98.0	98.0	98.0
Total Split (%)	18.3%	18.3%	18.3%	18.3%	18.3%	81.7%	81.7%	81.7%	81.7%	81.7%	81.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	15.0			15.0	15.0	93.0	93.0	93.0	93.0	93.0	93.0
Actuated g/C Ratio	0.13			0.13	0.13	0.79	0.79	0.79	0.79	0.79	0.79
v/c Ratio	0.40			0.25	0.92	0.04	0.54	0.01	1.13	0.30	0.05
Control Delay	50.9			49.3	42.5	3.2	6.5	1.1	101.2	4.2	0.9
Queue Delay				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.9			49.3	42.5	3.2	6.5	1.1	101.2	4.2	0.9
LOS	D			D	D	A	A	A	F	A	A
Approach Delay	50.9			43.3			6.3			53.1	
Approach LOS	D			D			A			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 118

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 34.8

Intersection LOS: C

Intersection Capacity Utilization 87.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Harris Road & Mitchell Road/Hammond Road



1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	83	55	414	27	796	14	510	434	63
V/c Ratio	0.40	0.25	0.92	0.04	0.54	0.01	1.13	0.30	0.05
Control Delay	50.9	49.3	42.5	3.2	6.5	1.1	101.2	4.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.9	49.3	42.5	3.2	6.5	1.1	101.2	4.2	0.9
Queue Length 50th (m)	17.9	12.3	31.9	1.3	65.0	0.0	~148.7	26.5	0.0
Queue Length 95th (m)	34.4	25.4	#90.5	3.4	89.6	1.2	#105.4	37.5	2.9
Internal Link Dist (m)	437.0	381.2			233.5			178.2	
Turn Bay Length (m)			35.0	35.0		35.0	55.0		
Base Capacity (vph)	234	246	473	725	1468	1251	450	1468	1261
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.22	0.88	0.04	0.54	0.01	1.13	0.30	0.05

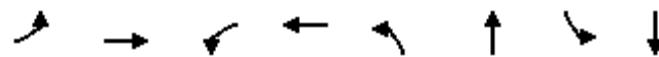
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

Combined Volumes

2021 PM Peak

2: Harris Road & 119 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	6	7	4	58	1073	22	884
Future Volume (vph)	30	6	7	4	58	1073	22	884
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases					4	8	2	6
Permitted Phases					4	8	2	6
Detector Phase					4	8	2	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)					0.0	0.0	0.0	0.0
Total Lost Time (s)					4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.8		6.8	34.2	34.2	34.2	34.2
Actuated g/C Ratio		0.16		0.16	0.78	0.78	0.78	0.78
v/c Ratio		0.34		0.14	0.16	0.43	0.07	0.37
Control Delay		12.0		9.8	4.6	3.9	4.0	3.5
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		12.0		9.8	4.6	3.9	4.0	3.5
LOS	B		A	A	A	A	A	A
Approach Delay		12.0		9.8		3.9		3.5
Approach LOS		B		A		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 43.8

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 4.1

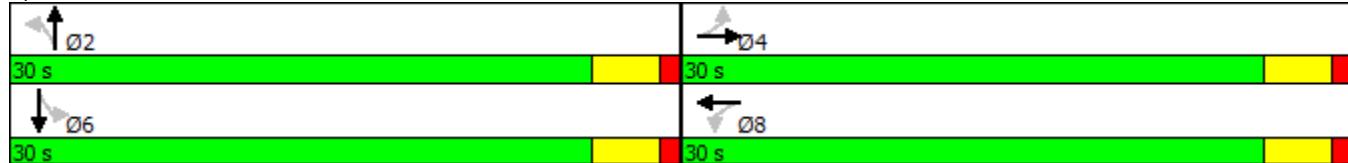
Intersection LOS: A

Intersection Capacity Utilization 52.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Harris Road & 119 Ave



2: Harris Road & 119 Ave



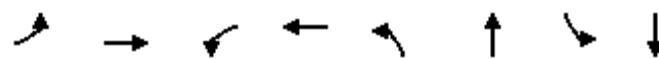
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	94	39	63	1176	24	1013
v/c Ratio	0.34	0.14	0.16	0.43	0.07	0.37
Control Delay	12.0	9.8	4.6	3.9	4.0	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.0	9.8	4.6	3.9	4.0	3.5
Queue Length 50th (m)	2.9	0.9	1.4	17.5	0.5	14.0
Queue Length 95th (m)	11.3	6.2	5.9	34.4	2.8	27.6
Internal Link Dist (m)	236.1	105.9		178.2		173.0
Turn Bay Length (m)			30.0		30.0	
Base Capacity (vph)	908	961	394	2762	322	2745
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.04	0.16	0.43	0.07	0.37

Intersection Summary

Combined Volumes

2021 PM Peak

3: Harris Road & Civic Centre Access



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	22	1	1	1	55	1033	6	896
Future Volume (vph)	22	1	1	1	55	1033	6	896
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases					4	8	2	6
Permitted Phases					8	2	6	
Detector Phase					8	2	2	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	28.0	28.0	27.5	27.5	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)					0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	4.5	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.7		7.0	38.3	38.3		38.3
Actuated g/C Ratio		0.14		0.14	0.79	0.79		0.79
v/c Ratio		0.32		0.07	0.15	0.41		0.39
Control Delay		12.2		10.2	4.9	4.0		4.0
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay		12.2		10.2	4.9	4.0		4.0
LOS	B		B	A	A		A	
Approach Delay		12.2		10.3		4.1		4.0
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 48.7

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.41

Intersection Signal Delay: 4.4

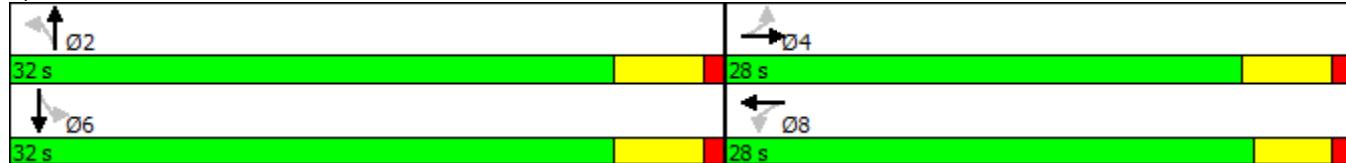
Intersection LOS: A

Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Harris Road & Civic Centre Access



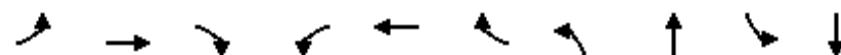
3: Harris Road & Civic Centre Access



Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	82	17	60	1132	1023
v/c Ratio	0.32	0.07	0.15	0.41	0.39
Control Delay	12.2	10.2	4.9	4.0	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	10.2	4.9	4.0	4.0
Queue Length 50th (m)	2.5	0.2	1.6	20.0	17.6
Queue Length 95th (m)	10.3	3.8	6.4	36.9	33.0
Internal Link Dist (m)	164.5	142.8		173.0	159.1
Turn Bay Length (m)					
Base Capacity (vph)	747	782	397	2784	2628
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.11	0.02	0.15	0.41	0.39

Intersection Summary

4: Harris Road & Ford Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	228	26	129	3	13	17	152	846	36	816
Future Volume (vph)	228	26	129	3	13	17	152	846	36	816
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases					4	8	5	2	1	6
Permitted Phases				4	4	8	8	2	6	
Detector Phase				4	4	8	8	5	2	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	10.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	24.0	10.0	24.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	25.0	10.0	25.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	46.2%	46.2%	15.4%	38.5%	15.4%	38.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max						
Act Effect Green (s)	16.3	16.3			16.3	16.3	28.5	26.6	25.2	20.2
Actuated g/C Ratio	0.29	0.29			0.29	0.29	0.50	0.47	0.44	0.36
v/c Ratio	0.70	0.25			0.03	0.03	0.61	0.56	0.12	0.87
Control Delay	27.9	4.3			13.4	0.1	22.5	16.1	9.3	28.2
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	4.3			13.4	0.1	22.5	16.1	9.3	28.2
LOS	C	A			B	A	C	B	A	C
Approach Delay	19.9				6.6			17.1		27.5
Approach LOS	B				A			B		C

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 56.7

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 21.8

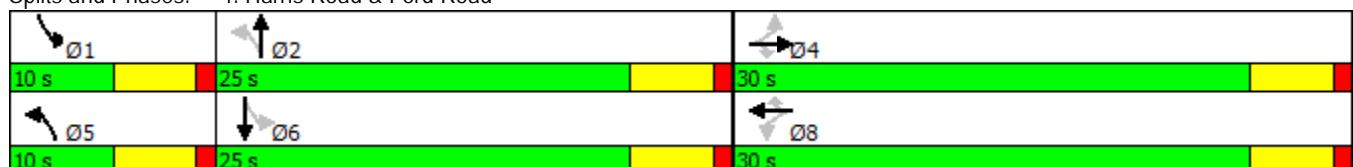
Intersection LOS: C

Intersection Capacity Utilization 70.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Harris Road & Ford Road



4: Harris Road & Ford Road



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	276	140	17	18	165	932	39	1095
V/c Ratio	0.70	0.25	0.03	0.03	0.61	0.56	0.12	0.87
Control Delay	27.9	4.3	13.4	0.1	22.5	16.1	9.3	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	4.3	13.4	0.1	22.5	16.1	9.3	28.2
Queue Length 50th (m)	26.2	0.0	1.3	0.0	8.2	29.8	1.8	54.0
Queue Length 95th (m)	47.6	9.6	4.7	0.0	#36.8	#90.4	7.1	#113.8
Internal Link Dist (m)	237.6		56.4			159.1		220.2
Turn Bay Length (m)		30.0		20.0	30.0		30.0	
Base Capacity (vph)	609	782	783	769	272	1660	324	1254
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.18	0.02	0.02	0.61	0.56	0.12	0.87

Intersection Summary

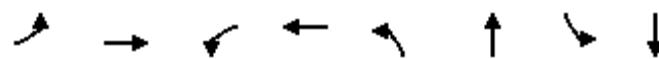
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Combined Volumes

2021 PM Peak

5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑ ↘	→ ↗	↑ ↘	→ ↗	↑ ↘	↑ ↗	↑ ↘	↑ ↗
Traffic Volume (vph)	185	42	58	25	49	1015	163	885
Future Volume (vph)	185	42	58	25	49	1015	163	885
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases				4	8	5	2	1
Permitted Phases	4				2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.0	32.0	32.0	32.0	10.0	27.0	10.0	27.0
Total Split (s)	32.0	32.0	32.0	32.0	10.0	32.0	11.0	33.0
Total Split (%)	42.7%	42.7%	42.7%	42.7%	13.3%	42.7%	14.7%	44.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	15.2	15.2	15.2	15.2	32.2	27.2	35.9	32.5
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.51	0.43	0.57	0.51
v/c Ratio	0.67	0.26	0.21	0.28	0.20	0.75	0.64	0.68
Control Delay	33.1	10.0	20.2	7.9	8.9	20.6	23.0	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	10.0	20.2	7.9	8.9	20.6	23.0	16.7
LOS	C	B	C	A	A	C	C	B
Approach Delay		24.4		11.9		20.1		17.5
Approach LOS		C		B		C		B

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 63.5

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 18.9

Intersection LOS: B

Intersection Capacity Utilization 72.2%

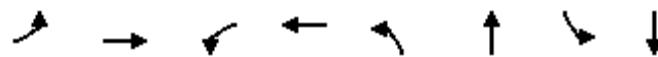
ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: Harris Road & 122 Ave/122a Ave



5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	201	121	63	132	53	1136	177	1213
v/c Ratio	0.67	0.26	0.21	0.28	0.20	0.75	0.64	0.68
Control Delay	33.1	10.0	20.2	7.9	8.9	20.6	23.0	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	10.0	20.2	7.9	8.9	20.6	23.0	16.7
Queue Length 50th (m)	22.4	4.4	6.2	2.6	2.3	58.8	8.4	60.7
Queue Length 95th (m)	41.9	15.4	14.7	13.6	8.1	#111.5	#39.6	#119.1
Internal Link Dist (m)		58.8		123.0		220.2		356.6
Turn Bay Length (m)	30.0		30.0		30.0		30.0	
Base Capacity (vph)	536	765	541	761	261	1509	278	1779
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.16	0.12	0.17	0.20	0.75	0.64	0.68

Intersection Summary

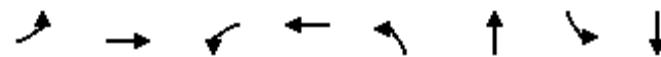
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Combined Volumes

2021 PM Peak

6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑	→	←	↑	↑	↑→	↑	↑↓
Traffic Volume (vph)	19	17	159	23	23	1112	127	1086
Future Volume (vph)	19	17	159	23	23	1112	127	1086
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases						2		6
Detector Phase				4		8		2
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0	7.0	7.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	11.1	11.1	11.4	11.4	31.4	31.4	31.4	31.4
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.64	0.64	0.64	0.64
v/c Ratio	0.07	0.11	0.55	0.22	0.11	0.56	0.66	0.54
Control Delay	14.2	9.1	23.3	11.9	8.2	8.7	33.8	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	9.1	23.3	11.9	8.2	8.7	33.8	8.5
LOS	B	A	C	B	A	A	C	A
Approach Delay			10.7		19.4		8.7	11.1
Approach LOS			B		B		A	B

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 49.3

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 10.8

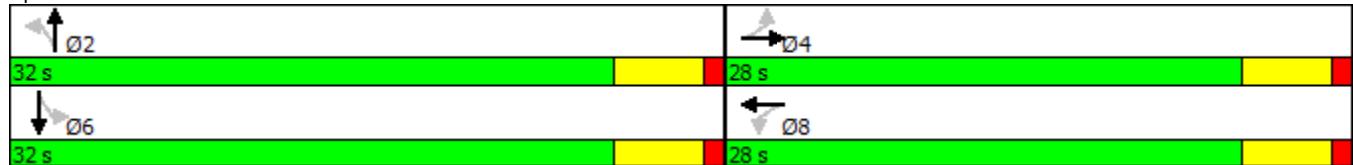
Intersection LOS: B

Intersection Capacity Utilization 66.9%

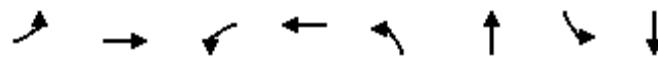
ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: Harris Road & 124 Ave



6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	21	44	173	89	25	1249	138	1207
V/c Ratio	0.07	0.11	0.55	0.22	0.11	0.56	0.66	0.54
Control Delay	14.2	9.1	23.3	11.9	8.2	8.7	33.8	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	9.1	23.3	11.9	8.2	8.7	33.8	8.5
Queue Length 50th (m)	1.5	1.3	13.7	4.3	0.9	34.2	8.1	32.4
Queue Length 95th (m)	5.5	6.9	28.2	12.6	5.1	67.5	#40.8	64.1
Internal Link Dist (m)	231.3		173.7		356.6		154.2	
Turn Bay Length (m)	30.0	20.0		30.0		25.0		
Base Capacity (vph)	608	807	634	792	223	2246	208	2249
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.05	0.27	0.11	0.11	0.56	0.66	0.54

Intersection Summary

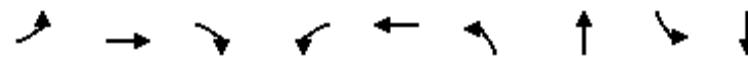
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Combined Volumes

2021 PM Peak

7: Harris Road & McMyn Road



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	218	9	230	13	2	206	1004	47	1051
Future Volume (vph)	218	9	230	13	2	206	1004	47	1051
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases					8	5	2	1	6
Permitted Phases	4			4	8		2		6
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0	10.0	23.0	10.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	28.0	11.0	32.0	10.0	31.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%	15.7%	45.7%	14.3%	44.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	16.3	16.3			16.3	34.9	31.5	31.2	26.2
Actuated g/C Ratio	0.26	0.26			0.26	0.55	0.50	0.49	0.41
v/c Ratio	0.72	0.46			0.06	0.81	0.63	0.18	0.83
Control Delay	33.9	8.5			14.0	39.3	16.5	8.9	24.4
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	8.5			14.0	39.3	16.5	8.9	24.4
LOS	C	A			B	D	B	A	C
Approach Delay	21.1				14.0		20.3		23.8
Approach LOS	C				B		C		C

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 63.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 21.8

Intersection LOS: C

Intersection Capacity Utilization 72.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 7: Harris Road & McMyn Road



7: Harris Road & McMyn Road



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	247	250	23	224	1101	51	1202
V/c Ratio	0.72	0.46	0.06	0.81	0.63	0.18	0.83
Control Delay	33.9	8.5	14.0	39.3	16.5	8.9	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	8.5	14.0	39.3	16.5	8.9	24.4
Queue Length 50th (m)	27.6	5.7	1.5	12.9	57.3	2.4	67.1
Queue Length 95th (m)	50.0	21.3	6.2	#57.1	93.7	7.9	#122.9
Internal Link Dist (m)	191.0		105.3		154.2		110.7
Turn Bay Length (m)		20.0		50.0		20.0	
Base Capacity (vph)	486	696	525	275	1752	281	1450
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	0.51	0.36	0.04	0.81	0.63	0.18	0.83

Intersection Summary

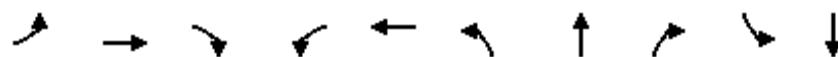
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Combined Volumes

2021 PM Peak

8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↑ ↗	↑↑↑ ↗	↗	↗	↑↑↑ ↗	↗	↗	↗	↗	↑↑ ↗
Traffic Volume (vph)	106	3268	802	230	2089	584	154	416	61	137
Future Volume (vph)	106	3268	802	230	2089	584	154	416	61	137
Turn Type	Prot	NA	Perm	Prot	NA	Split	NA	Perm	Split	NA
Protected Phases	7	4		3	8	2	2		6	6
Permitted Phases				4					2	
Detector Phase	7	4	4	3	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.0	22.4	22.4	11.9	25.4	32.8	32.8	32.8	23.8	23.8
Total Split (s)	16.0	66.0	66.0	22.0	71.0	20.0	20.0	20.0	15.0	15.0
Total Split (%)	13.0%	53.7%	53.7%	17.9%	57.7%	16.3%	16.3%	16.3%	12.2%	12.2%
Yellow Time (s)	5.0	4.9	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	2.8	2.8	2.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.4	6.4	5.9	6.4	7.8	7.8	7.8	6.8	6.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	9.9	59.6	59.6	16.1	65.7	12.2	12.2	12.2	8.2	8.2
Actuated g/C Ratio	0.08	0.48	0.48	0.13	0.53	0.10	0.10	0.10	0.07	0.07
v/c Ratio	0.82	1.44	0.86	1.08	0.88	1.87	0.91	1.36	0.56	0.70
Control Delay	94.6	229.3	22.2	132.8	30.2	432.3	100.9	203.2	74.1	69.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.6	229.3	22.2	132.8	30.2	432.3	100.9	203.2	74.1	69.5
LOS	F	F	C	F	C	F	F	F	E	E
Approach Delay		186.1			39.9		305.6		70.8	
Approach LOS		F			D		F		E	

Intersection Summary

Cycle Length: 123

Actuated Cycle Length: 123

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.87

Intersection Signal Delay: 155.8

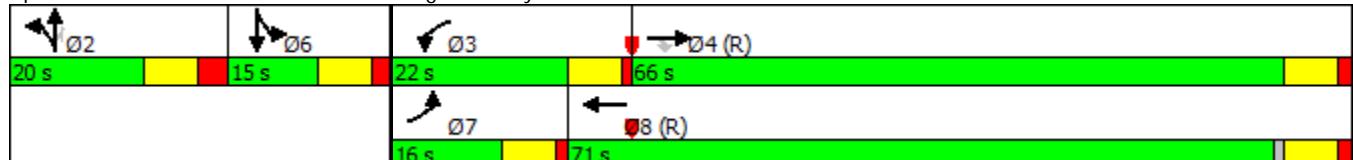
Intersection LOS: F

Intersection Capacity Utilization 120.8%

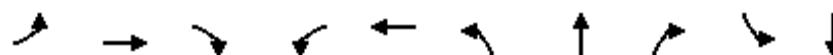
ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 8: Harris Road & Lougheed Hwy



8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	115	3552	872	250	2387	635	167	452	66	167
V/c Ratio	0.82	1.44	0.86	1.08	0.88	1.87	0.91	1.36	0.56	0.70
Control Delay	94.6	229.3	22.2	132.8	30.2	432.3	100.9	203.2	74.1	69.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.6	229.3	22.2	132.8	30.2	432.3	100.9	203.2	74.1	69.5
Queue Length 50th (m)	29.2	~449.6	97.5	~71.0	188.6	~126.7	42.7	~103.7	16.6	21.2
Queue Length 95th (m)	#61.9	#473.2	#184.2	#125.0	213.0	#164.3	#85.5	#170.9	#34.4	#36.3
Internal Link Dist (m)	1271.3			1741.4			110.7			94.1
Turn Bay Length (m)	120.0	275.0		170.0	65.0			60.0	40.0	
Base Capacity (vph)	143	2463	1013	231	2704	340	184	333	118	239
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	1.44	0.86	1.08	0.88	1.87	0.91	1.36	0.56	0.70

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

Combined Volumes

2031 AM Peak

1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	38	27	10	13	332	3	319	14	179	718	10
Future Volume (vph)	38	27	10	13	332	3	319	14	179	718	10
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases				4		8		2		6	
Permitted Phases	4				8		8	2		2	6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	36.7%	36.7%	36.7%	36.7%	36.7%	63.3%	63.3%	63.3%	63.3%	63.3%	63.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)		10.7			10.7	10.7	33.5	33.5	33.5	33.5	33.5
Actuated g/C Ratio		0.20			0.20	0.20	0.62	0.62	0.62	0.62	0.62
v/c Ratio		0.31			0.08	0.60	0.01	0.30	0.02	0.31	0.68
Control Delay		16.2			17.9	7.3	4.7	6.0	1.0	6.9	11.0
Queue Delay					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.2			17.9	7.3	4.7	6.0	1.0	6.9	11.0
LOS		B			B	A	A	A	A	B	A
Approach Delay		16.2			8.0			5.8			10.1
Approach LOS		B			A			A			B

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 54.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 9.1

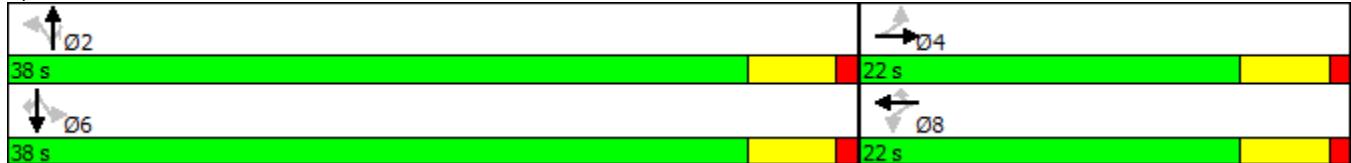
Intersection LOS: A

Intersection Capacity Utilization 68.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Harris Road & Mitchell Road/Hammond Road



1: Harris Road & Mitchell Road/Hammond Road



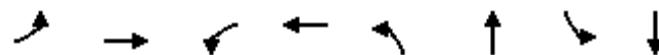
Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	102	25	361	3	347	15	195	780	11
v/c Ratio	0.31	0.08	0.60	0.01	0.30	0.02	0.31	0.68	0.01
Control Delay	16.2	17.9	7.3	4.7	6.0	1.0	6.9	11.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	17.9	7.3	4.7	6.0	1.0	6.9	11.0	0.6
Queue Length 50th (m)	6.0	2.1	0.0	0.1	13.3	0.0	7.5	41.9	0.0
Queue Length 95th (m)	16.7	7.0	17.6	1.0	29.5	0.9	20.2	91.5	0.5
Internal Link Dist (m)	437.0	716.4			589.6			178.2	
Turn Bay Length (m)			35.0	35.0		35.0	55.0		
Base Capacity (vph)	507	505	744	287	1149	990	635	1149	990
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.05	0.49	0.01	0.30	0.02	0.31	0.68	0.01

Intersection Summary

Combined Volumes

2031 AM Peak

2: Harris Road & 119 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	34	1	13	3	26	671	8	837
Future Volume (vph)	34	1	13	3	26	671	8	837
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases					4	8	2	6
Permitted Phases					4	8	2	6
Detector Phase					4	8	2	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)					0.0	0.0	0.0	0.0
Total Lost Time (s)					4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.8		6.8	34.6	34.6	34.6	34.6
Actuated g/C Ratio		0.15		0.15	0.78	0.78	0.78	0.78
v/c Ratio		0.32		0.14	0.06	0.26	0.02	0.33
Control Delay		12.3		11.3	3.7	3.0	3.2	3.3
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		12.3		11.3	3.7	3.0	3.2	3.3
LOS	B		B	A	A	A	A	A
Approach Delay		12.3		11.3		3.1		3.3
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 44.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.33

Intersection Signal Delay: 3.8

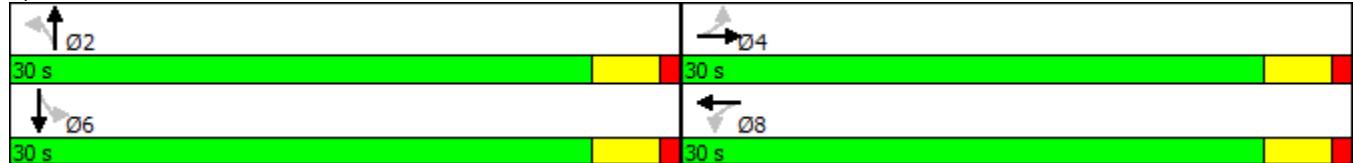
Intersection LOS: A

Intersection Capacity Utilization 36.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Harris Road & 119 Ave



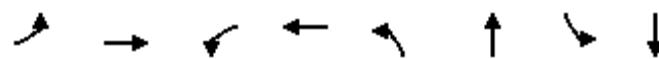
2: Harris Road & 119 Ave



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	37	28	734	9	920
v/c Ratio	0.32	0.14	0.06	0.26	0.02	0.33
Control Delay	12.3	11.3	3.7	3.0	3.2	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	11.3	3.7	3.0	3.2	3.3
Queue Length 50th (m)	2.9	1.3	0.6	9.2	0.2	12.3
Queue Length 95th (m)	10.8	6.4	2.8	18.5	1.3	24.3
Internal Link Dist (m)	236.1	105.9		178.2		173.0
Turn Bay Length (m)			30.0		30.0	
Base Capacity (vph)	876	932	443	2772	545	2769
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.04	0.06	0.26	0.02	0.33

Intersection Summary

3: Harris Road & Civic Centre Access



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	10	1	4	1	65	654	1	846
Future Volume (vph)	10	1	4	1	65	654	1	846
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases					4	8	2	6
Permitted Phases					8	2	6	
Detector Phase					8	2	2	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	28.0	28.0	27.5	27.5	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)					0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	4.5	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		6.2		6.3	42.9	42.9		42.9
Actuated g/C Ratio		0.13		0.13	0.87	0.87		0.87
v/c Ratio		0.16		0.08	0.15	0.23		0.33
Control Delay		13.4		13.9	3.4	2.2		2.5
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay		13.4		13.9	3.4	2.2		2.5
LOS	B		B	A	A		A	
Approach Delay		13.4		13.9		2.3		2.5
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 49.3

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.33

Intersection Signal Delay: 2.7

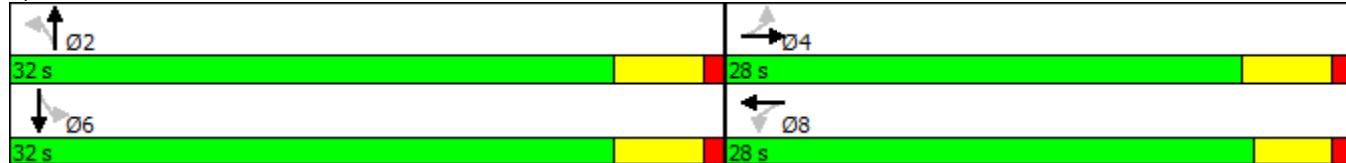
Intersection LOS: A

Intersection Capacity Utilization 59.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Harris Road & Civic Centre Access



3: Harris Road & Civic Centre Access



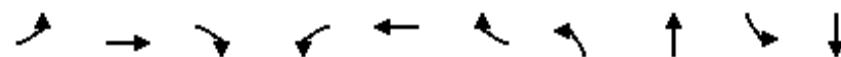
Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	37	16	71	715	954
v/c Ratio	0.16	0.08	0.15	0.23	0.33
Control Delay	13.4	13.9	3.4	2.2	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	13.9	3.4	2.2	2.5
Queue Length 50th (m)	1.0	0.4	0.0	0.0	0.0
Queue Length 95th (m)	7.0	4.4	6.4	18.3	26.7
Internal Link Dist (m)	164.5	142.8		173.0	159.1
Turn Bay Length (m)					
Base Capacity (vph)	776	737	486	3076	2926
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.02	0.15	0.23	0.33

Intersection Summary

Combined Volumes

2031 AM Peak

4: Harris Road & Ford Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	153	4	96	9	13	21	84	570	10	784
Future Volume (vph)	153	4	96	9	13	21	84	570	10	784
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases					8		5	2	1	6
Permitted Phases	4			4	8		8	2		6
Detector Phase	4	4	4	8	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	10.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	24.0	10.0	24.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	25.0	10.0	25.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	46.2%	46.2%	15.4%	38.5%	15.4%	38.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max						
Act Effect Green (s)	11.7	11.7			11.7	11.7	28.6	29.0	26.8	25.3
Actuated g/C Ratio	0.24	0.24			0.24	0.24	0.59	0.60	0.55	0.52
v/c Ratio	0.53	0.22			0.06	0.05	0.25	0.30	0.02	0.55
Control Delay	23.3	4.6			15.3	0.2	8.0	8.7	6.3	14.3
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	4.6			15.3	0.2	8.0	8.7	6.3	14.3
LOS	C	A			B	A	A	A	A	B
Approach Delay		16.2				7.9		8.6		14.2
Approach LOS		B				A		A		B

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 48.5

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 12.3

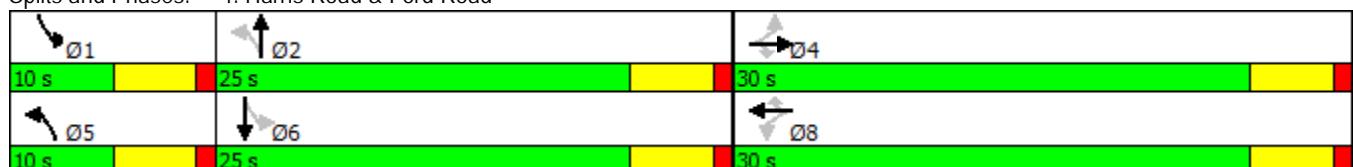
Intersection LOS: B

Intersection Capacity Utilization 58.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Harris Road & Ford Road



4: Harris Road & Ford Road



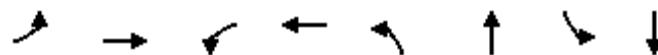
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	170	104	24	23	91	628	11	1009
V/c Ratio	0.53	0.22	0.06	0.05	0.25	0.30	0.02	0.55
Control Delay	23.3	4.6	15.3	0.2	8.0	8.7	6.3	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	4.6	15.3	0.2	8.0	8.7	6.3	14.3
Queue Length 50th (m)	14.7	0.0	1.9	0.0	3.4	13.9	0.4	41.1
Queue Length 95th (m)	30.0	7.7	6.3	0.0	10.4	41.7	2.4	#82.3
Internal Link Dist (m)	237.6		56.4			159.1		220.2
Turn Bay Length (m)		30.0		20.0	30.0		30.0	
Base Capacity (vph)	701	890	830	890	364	2112	531	1821
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.12	0.03	0.03	0.25	0.30	0.02	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘
Traffic Volume (vph)	178	25	34	13	21	708	33	848
Future Volume (vph)	178	25	34	13	21	708	33	848
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases				4	8	5	2	1
Permitted Phases	4				2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.0	32.0	32.0	32.0	9.0	27.0	9.0	27.0
Total Split (s)	32.0	32.0	32.0	32.0	9.0	29.0	9.0	29.0
Total Split (%)	45.7%	45.7%	45.7%	45.7%	12.9%	41.4%	12.9%	41.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	5.0	4.0	5.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	13.4	13.4	13.4	13.4	29.7	27.0	30.5	28.6
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.55	0.50	0.57	0.53
v/c Ratio	0.62	0.20	0.11	0.27	0.07	0.44	0.08	0.55
Control Delay	26.8	8.1	15.9	6.2	6.9	11.6	6.8	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	8.1	15.9	6.2	6.9	11.6	6.8	11.5
LOS	C	A	B	A	A	B	A	B
Approach Delay			20.7		8.3		11.5	
Approach LOS			C		A		B	

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 53.7

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 12.3

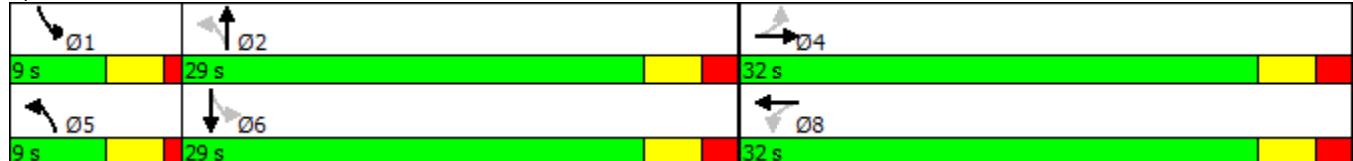
Intersection LOS: B

Intersection Capacity Utilization 57.2%

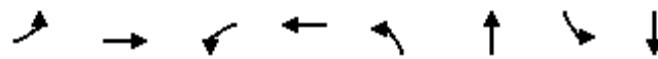
ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Harris Road & 122 Ave/122a Ave



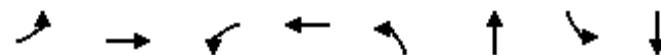
5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	193	93	37	132	23	780	36	1031
v/c Ratio	0.62	0.20	0.11	0.27	0.07	0.44	0.08	0.55
Control Delay	26.8	8.1	15.9	6.2	6.9	11.6	6.8	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	8.1	15.9	6.2	6.9	11.6	6.8	11.5
Queue Length 50th (m)	14.2	1.7	2.4	0.9	0.8	18.7	1.3	26.8
Queue Length 95th (m)	36.6	11.1	9.0	11.5	4.1	56.4	5.6	79.6
Internal Link Dist (m)		58.8		123.0		220.2		356.6
Turn Bay Length (m)	30.0		30.0		30.0		30.0	
Base Capacity (vph)	643	886	665	884	351	1776	432	1865
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.10	0.06	0.15	0.07	0.44	0.08	0.55

Intersection Summary

6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑	↓	↑	↓	↑	↑↓	↑	↑↓
Traffic Volume (vph)	22	13	95	5	13	979	22	804
Future Volume (vph)	22	13	95	5	13	979	22	804
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases						2		6
Detector Phase				4		8		2
Switch Phase						6		6
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0	7.0	7.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	8.9	8.9	8.9	8.9	32.6	32.6	32.6	32.6
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.67	0.67	0.67	0.67
v/c Ratio	0.10	0.08	0.41	0.28	0.04	0.45	0.08	0.37
Control Delay	15.9	11.5	21.6	11.6	5.2	6.2	5.8	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	11.5	21.6	11.6	5.2	6.2	5.8	5.6
LOS	B	B	C	B	A	A	A	A
Approach Delay			13.6		16.9		6.1	5.6
Approach LOS			B		B		A	A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 48.3

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 7.0

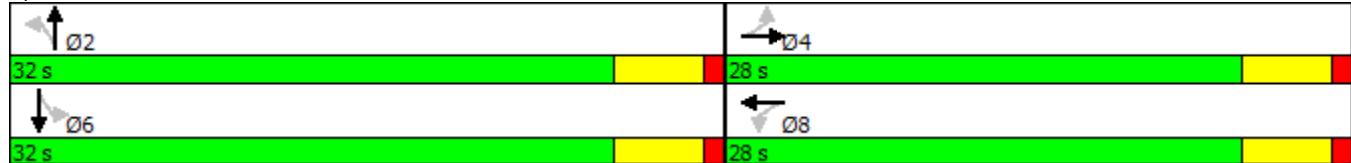
Intersection LOS: A

Intersection Capacity Utilization 47.6%

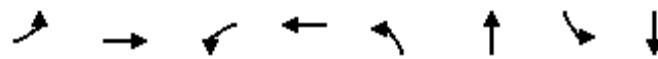
ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Harris Road & 124 Ave



6: Harris Road & 124 Ave



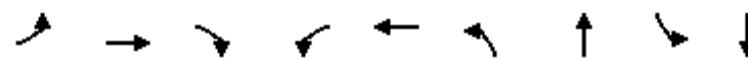
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	24	26	103	91	14	1075	24	877
v/c Ratio	0.10	0.08	0.41	0.28	0.04	0.45	0.08	0.37
Control Delay	15.9	11.5	21.6	11.6	5.2	6.2	5.8	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	11.5	21.6	11.6	5.2	6.2	5.8	5.6
Queue Length 50th (m)	1.7	1.0	7.7	3.3	0.4	22.7	0.7	17.2
Queue Length 95th (m)	6.2	5.5	18.2	12.1	2.4	43.3	3.8	33.1
Internal Link Dist (m)	231.3		173.7		356.6		154.2	
Turn Bay Length (m)	30.0	20.0		30.0		25.0		
Base Capacity (vph)	620	833	657	786	392	2385	301	2388
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.03	0.16	0.12	0.04	0.45	0.08	0.37

Intersection Summary

Combined Volumes

2031 AM Peak

7: Harris Road & McMyn Road



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	228	1	83	1	1	154	920	16	754
Future Volume (vph)	228	1	83	1	1	154	920	16	754
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases					8	5	2	1	6
Permitted Phases	4			4	8		2		6
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0	10.0	23.0	10.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	28.0	11.0	27.0	10.0	26.0
Total Split (%)	43.1%	43.1%	43.1%	43.1%	43.1%	16.9%	41.5%	15.4%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	15.4	15.4			15.4	30.8	29.8	26.9	23.1
Actuated g/C Ratio	0.27	0.27			0.27	0.54	0.52	0.47	0.40
v/c Ratio	0.69	0.18			0.02	0.46	0.55	0.05	0.60
Control Delay	28.9	3.1			10.5	12.4	13.3	8.2	17.7
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	3.1			10.5	12.4	13.3	8.2	17.7
LOS	C	A			B	B	B	A	B
Approach Delay	22.1				10.5		13.2		17.5
Approach LOS	C				B		B		B

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 57.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 16.0

Intersection LOS: B

Intersection Capacity Utilization 62.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 7: Harris Road & McMyn Road



7: Harris Road & McMyn Road



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	249	90	7	167	1011	17	858
V/c Ratio	0.69	0.18	0.02	0.46	0.55	0.05	0.60
Control Delay	28.9	3.1	10.5	12.4	13.3	8.2	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	3.1	10.5	12.4	13.3	8.2	17.7
Queue Length 50th (m)	24.5	0.0	0.2	8.0	32.2	0.7	40.0
Queue Length 95th (m)	45.2	5.7	2.5	21.1	#94.6	3.7	70.1
Internal Link Dist (m)	191.0		105.3		154.2		110.7
Turn Bay Length (m)		20.0		50.0		20.0	
Base Capacity (vph)	549	714	662	361	1843	324	1424
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	0.45	0.13	0.01	0.46	0.55	0.05	0.60

Intersection Summary

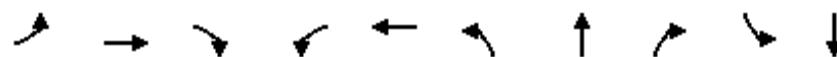
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Combined Volumes

2031 AM Peak

8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	02	03, 04 (R)	05	06	07, 08 (R)	09	10	11	02	03, 04 (R)
Traffic Volume (vph)	20	1958	489	214	3181	887	77	147	42	63
Future Volume (vph)	20	1958	489	214	3181	887	77	147	42	63
Turn Type	Prot	NA	Perm	Prot	NA	Split	NA	Perm	Split	NA
Protected Phases	7	4		3	8	2	2		6	6
Permitted Phases					4				2	
Detector Phase	7	4	4	3	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.0	22.4	22.4	11.9	25.4	32.8	32.8	32.8	23.8	23.8
Total Split (s)	12.0	70.0	70.0	13.0	70.0	25.0	25.0	25.0	15.0	15.0
Total Split (%)	9.8%	56.9%	56.9%	10.6%	56.9%	20.3%	20.3%	20.3%	12.2%	12.2%
Yellow Time (s)	5.0	4.9	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	2.8	2.8	2.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.4	6.4	5.9	6.4	7.8	7.8	7.8	6.8	6.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	6.0	63.6	63.6	7.1	69.4	17.2	17.2	17.2	8.2	8.2
Actuated g/C Ratio	0.05	0.52	0.52	0.06	0.56	0.14	0.14	0.14	0.07	0.07
v/c Ratio	0.26	0.81	0.49	2.28	1.24	2.01	0.32	0.46	0.39	0.37
Control Delay	64.0	27.8	3.0	633.6	136.5	489.2	51.5	14.8	65.1	45.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	27.8	3.0	633.6	136.5	489.2	51.5	14.8	65.1	45.4
LOS	E	C	A	F	F	F	D	B	E	D
Approach Delay		23.2			167.2		395.9			52.0
Approach LOS		C			F		F			D

Intersection Summary

Cycle Length: 123

Actuated Cycle Length: 123

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.28

Intersection Signal Delay: 151.1

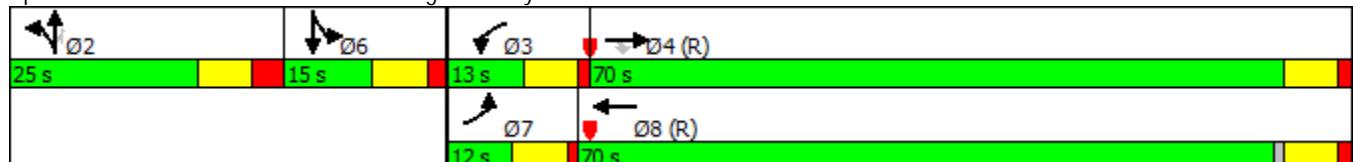
Intersection LOS: F

Intersection Capacity Utilization 116.9%

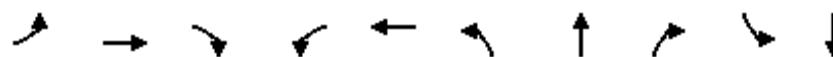
ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 8: Harris Road & Lougheed Hwy



8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	2128	532	233	3540	964	84	160	46	91
V/c Ratio	0.26	0.81	0.49	2.28	1.24	2.01	0.32	0.46	0.39	0.37
Control Delay	64.0	27.8	3.0	633.6	136.5	489.2	51.5	14.8	65.1	45.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	27.8	3.0	633.6	136.5	489.2	51.5	14.8	65.1	45.4
Queue Length 50th (m)	5.5	159.2	0.0	~96.3	~430.5	~197.4	19.5	3.6	11.4	8.8
Queue Length 95th (m)	14.8	180.5	17.0	#148.7	#454.7	#238.9	35.9	24.5	24.3	17.8
Internal Link Dist (m)		1271.3			1741.4		110.7			94.1
Turn Bay Length (m)	120.0		275.0	170.0		65.0		60.0	40.0	
Base Capacity (vph)	86	2629	1075	102	2862	480	260	345	118	248
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.81	0.49	2.28	1.24	2.01	0.32	0.46	0.39	0.37

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Combined Volumes

2031 PM Peak

1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	33	48	18	43	450	30	967	16	554	497	69
Future Volume (vph)	33	48	18	43	450	30	967	16	554	497	69
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases				4		8		2		6	
Permitted Phases	4				8		8	2		2	6
Detector Phase	4	4	8	8	8	2	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	27.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	98.0	98.0	98.0	98.0	98.0	98.0
Total Split (%)	18.3%	18.3%	18.3%	18.3%	18.3%	81.7%	81.7%	81.7%	81.7%	81.7%	81.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	17.0			17.0	17.0	93.0	93.0	93.0	93.0	93.0	93.0
Actuated g/C Ratio	0.14			0.14	0.14	0.78	0.78	0.78	0.78	0.78	0.78
v/c Ratio	0.43			0.28	1.28	0.05	0.73	0.01	2.25	0.37	0.06
Control Delay	51.5			49.6	171.4	3.4	10.7	1.2	590.2	5.1	0.8
Queue Delay				0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Total Delay	51.5			49.6	171.4	3.4	10.7	1.2	590.2	5.8	0.8
LOS	D			D	F	A	B	A	F	A	A
Approach Delay	51.5			156.7			10.3			294.5	
Approach LOS	D			F			B			F	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 2.25

Intersection Signal Delay: 155.5

Intersection LOS: F

Intersection Capacity Utilization 105.6%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 1: Harris Road & Mitchell Road/Hammond Road



1: Harris Road & Mitchell Road/Hammond Road



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	97	67	489	33	1051	17	602	540	75
V/c Ratio	0.43	0.28	1.28	0.05	0.73	0.01	2.25	0.37	0.06
Control Delay	51.5	49.6	171.4	3.4	10.7	1.2	590.2	5.1	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Total Delay	51.5	49.6	171.4	3.4	10.7	1.2	590.2	5.8	0.8
Queue Length 50th (m)	21.3	15.0	~112.5	1.6	112.9	0.0	~175.8	35.6	0.0
Queue Length 95th (m)	39.2	29.6	#180.7	4.0	161.3	1.5	#248.7	49.4	3.1
Internal Link Dist (m)	437.0	381.2			233.5			178.2	
Turn Bay Length (m)			35.0	35.0		35.0	55.0		
Base Capacity (vph)	228	240	382	620	1443	1230	268	1443	1243
Starvation Cap Reductn	0	0	0	0	0	0	0	534	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.28	1.28	0.05	0.73	0.01	2.25	0.59	0.06

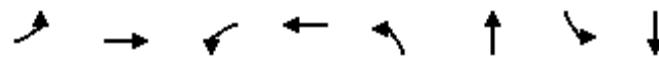
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

Combined Volumes

2031 PM Peak

2: Harris Road & 119 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	35	7	8	5	69	1370	26	1070
Future Volume (vph)	35	7	8	5	69	1370	26	1070
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases					2		6	
Detector Phase				4	8	8	2	2
Switch Phase							6	6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0		0.0		0.0
Total Lost Time (s)				4.0		4.0		4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		7.8		7.8	32.7	32.7	32.7	32.7
Actuated g/C Ratio	0.17		0.17	0.71	0.71	0.71	0.71	0.71
v/c Ratio	0.40		0.17	0.28	0.59	0.16	0.49	
Control Delay	16.6		13.7	8.0	6.1	6.7	5.1	
Queue Delay		0.0		0.0	0.0	0.0	0.0	
Total Delay	16.6		13.7	8.0	6.1	6.7	5.1	
LOS	B		B	A	A	A	A	
Approach Delay	16.6		13.7		6.2		5.1	
Approach LOS	B		B		A		A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 45.8

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 6.3

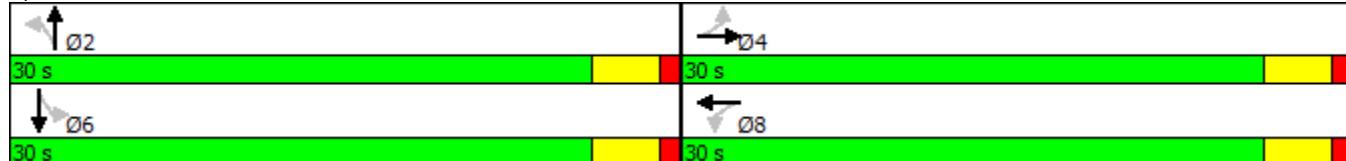
Intersection LOS: A

Intersection Capacity Utilization 62.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: Harris Road & 119 Ave



2: Harris Road & 119 Ave



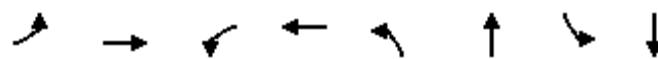
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	110	47	75	1500	28	1225
v/c Ratio	0.40	0.17	0.28	0.59	0.16	0.49
Control Delay	16.6	13.7	8.0	6.1	6.7	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.6	13.7	8.0	6.1	6.7	5.1
Queue Length 50th (m)	5.5	2.5	2.0	29.0	0.7	20.6
Queue Length 95th (m)	15.2	8.4	10.0	57.3	4.3	40.7
Internal Link Dist (m)	236.1	105.9		178.2		173.0
Turn Bay Length (m)			30.0		30.0	
Base Capacity (vph)	862	901	264	2522	177	2507
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.05	0.28	0.59	0.16	0.49

Intersection Summary

Combined Volumes

2031 PM Peak

3: Harris Road & Civic Centre Access



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	26	1	1	1	65	1322	7	1085
Future Volume (vph)	26	1	1	1	65	1322	7	1085
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases					4	8	2	6
Permitted Phases					4	8	2	6
Detector Phase					4	8	2	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	28.0	28.0	27.5	27.5	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)					0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	4.5	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		7.5			7.7	37.2	37.2	37.2
Actuated g/C Ratio		0.16			0.16	0.77	0.77	0.77
v/c Ratio		0.36			0.08	0.24	0.53	0.48
Control Delay		16.8			10.9	7.4	5.5	5.1
Queue Delay		0.0			0.0	0.0	0.0	0.0
Total Delay		16.8			10.9	7.4	5.5	5.1
LOS	B		B		A	A	A	A
Approach Delay		16.8			10.9		5.6	5.1
Approach LOS		B			B		A	A

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 48.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 5.8

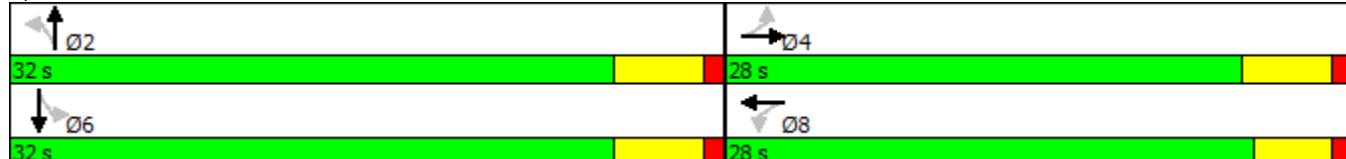
Intersection LOS: A

Intersection Capacity Utilization 74.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Harris Road & Civic Centre Access



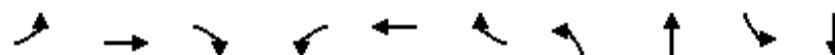
3: Harris Road & Civic Centre Access



Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	95	20	71	1447	1237
v/c Ratio	0.36	0.08	0.24	0.53	0.48
Control Delay	16.8	10.9	7.4	5.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	10.9	7.4	5.5	5.1
Queue Length 50th (m)	5.8	0.5	2.2	33.0	26.2
Queue Length 95th (m)	14.1	4.4	9.9	59.7	48.3
Internal Link Dist (m)	164.5	142.8		173.0	159.1
Turn Bay Length (m)					
Base Capacity (vph)	736	787	291	2727	2565
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.13	0.03	0.24	0.53	0.48

Intersection Summary

4: Harris Road & Ford Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	269	31	153	4	16	20	184	1081	43	989
Future Volume (vph)	269	31	153	4	16	20	184	1081	43	989
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases					4	8	5	2	1	6
Permitted Phases				4	4	8	8	2	6	
Detector Phase				4	4	8	8	5	2	1
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	10.0	5.0	10.0
Minimum Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	9.0	24.0	9.0	24.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	10.0	36.0	9.0	35.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	13.3%	48.0%	12.0%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)				5.0	5.0	5.0	4.0	5.0	4.0	5.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max						
Act Effect Green (s)	20.6	20.6			20.6	20.6	39.5	35.0	36.2	30.1
Actuated g/C Ratio	0.29	0.29			0.29	0.29	0.56	0.49	0.51	0.43
v/c Ratio	0.82	0.29			0.04	0.04	0.80	0.68	0.19	0.89
Control Delay	41.4	4.8			17.4	0.1	39.1	18.4	9.7	28.5
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	4.8			17.4	0.1	39.1	18.4	9.7	28.5
LOS	D	A			B	A	D	B	A	C
Approach Delay	29.0				8.6			21.4		27.9
Approach LOS	C				A			C		C

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 70.8

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 25.1

Intersection LOS: C

Intersection Capacity Utilization 79.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: Harris Road & Ford Road



4: Harris Road & Ford Road



Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	326	166	21	22	200	1190	47	1321
v/c Ratio	0.82	0.29	0.04	0.04	0.80	0.68	0.19	0.89
Control Delay	41.4	4.8	17.4	0.1	39.1	18.4	9.7	28.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	4.8	17.4	0.1	39.1	18.4	9.7	28.5
Queue Length 50th (m)	41.9	0.0	2.1	0.0	13.2	74.4	2.7	88.1
Queue Length 95th (m)	#79.4	12.2	6.7	0.0	#51.7	106.1	7.5	#141.4
Internal Link Dist (m)	237.6		56.4			159.1		220.2
Turn Bay Length (m)		30.0		20.0	30.0		30.0	
Base Capacity (vph)	484	668	620	617	251	1748	247	1489
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.25	0.03	0.04	0.80	0.68	0.19	0.89

Intersection Summary

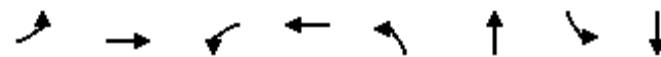
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Combined Volumes

2031 PM Peak

5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑	→	↑	→	↑	↑↓	↑	↑↓
Traffic Volume (vph)	218	49	69	30	62	1285	192	1069
Future Volume (vph)	218	49	69	30	62	1285	192	1069
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases				4	8	5	2	1
Permitted Phases				4	8	2	6	
Detector Phase				4	4	8	5	2
Switch Phase							1	6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	32.0	32.0	32.0	32.0	9.0	27.0	9.0	27.0
Total Split (s)	32.0	32.0	32.0	32.0	9.0	46.0	12.0	49.0
Total Split (%)	35.6%	35.6%	35.6%	35.6%	10.0%	51.1%	13.3%	54.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	5.0	4.0	5.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	21.0	21.0	21.0	21.0	47.2	41.2	53.5	46.2
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.56	0.49	0.63	0.55
v/c Ratio	0.82	0.29	0.25	0.31	0.34	0.83	0.82	0.77
Control Delay	53.0	12.1	26.8	9.1	12.5	25.2	43.5	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	12.1	26.8	9.1	12.5	25.2	43.5	19.8
LOS	D	B	C	A	B	C	D	B
Approach Delay			37.6		14.8		24.6	
Approach LOS			D		B		C	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 84.3

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 24.5

Intersection LOS: C

Intersection Capacity Utilization 83.8%

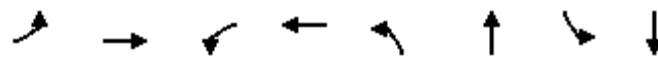
ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 5: Harris Road & 122 Ave/122a Ave



5: Harris Road & 122 Ave/122a Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	237	142	75	157	67	1437	209	1459
V/c Ratio	0.82	0.29	0.25	0.31	0.34	0.83	0.82	0.77
Control Delay	53.0	12.1	26.8	9.1	12.5	25.2	43.5	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	12.1	26.8	9.1	12.5	25.2	43.5	19.8
Queue Length 50th (m)	37.7	6.9	10.1	4.3	3.9	107.7	19.1	100.2
Queue Length 95th (m)	#70.1	20.9	21.6	18.5	9.9	#169.8	#62.5	147.1
Internal Link Dist (m)		58.8		123.0		220.2		356.6
Turn Bay Length (m)	30.0		30.0		30.0		30.0	
Base Capacity (vph)	372	603	390	612	195	1725	256	1902
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.24	0.19	0.26	0.34	0.83	0.82	0.77

Intersection Summary

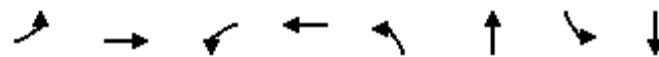
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Combined Volumes

2031 PM Peak

6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↑ ↗	↗ ↘
Traffic Volume (vph)	22	20	189	27	30	1405	150	1305
Future Volume (vph)	22	20	189	27	30	1405	150	1305
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases				4		8		2
Permitted Phases						2		6
Detector Phase				4		8		2
Switch Phase						6		6
Minimum Initial (s)	5.0	5.0	5.0	5.0	7.0	7.0	7.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	23.0	23.0	23.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	92.0	92.0	92.0	92.0
Total Split (%)	23.3%	23.3%	23.3%	23.3%	76.7%	76.7%	76.7%	76.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	21.0	21.0	21.0	21.0	88.1	88.1	88.1	88.1
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.74	0.74	0.74	0.74
v/c Ratio	0.11	0.16	0.86	0.30	0.17	0.61	0.98	0.56
Control Delay	41.7	22.7	80.0	20.5	7.4	8.7	85.9	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
Total Delay	41.7	22.7	80.0	20.5	7.4	8.7	85.9	9.0
LOS	D	C	E	C	A	A	F	A
Approach Delay		28.7			59.8		8.7	16.7
Approach LOS		C			E		A	B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 119.1

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 17.1

Intersection LOS: B

Intersection Capacity Utilization 78.3%

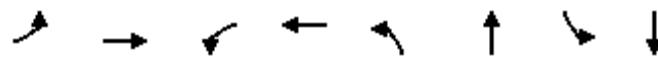
ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Harris Road & 124 Ave



6: Harris Road & 124 Ave



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	24	52	205	105	33	1578	163	1451
V/c Ratio	0.11	0.16	0.86	0.30	0.17	0.61	0.98	0.56
Control Delay	41.7	22.7	80.0	20.5	7.4	8.7	85.9	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
Total Delay	41.7	22.7	80.0	20.5	7.4	8.7	85.9	9.0
Queue Length 50th (m)	5.0	4.5	48.9	8.3	2.3	89.8	35.6	77.6
Queue Length 95th (m)	13.0	15.9	#88.7	24.4	6.5	108.4	#46.1	93.7
Internal Link Dist (m)		231.3		173.7		356.6		154.2
Turn Bay Length (m)	30.0		20.0		30.0		25.0	
Base Capacity (vph)	235	352	260	372	199	2608	166	2612
Starvation Cap Reductn	0	0	0	0	0	0	0	798
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.15	0.79	0.28	0.17	0.61	0.98	0.80

Intersection Summary

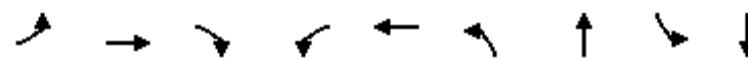
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Combined Volumes

2031 PM Peak

7: Harris Road & McMyn Road



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	257	10	274	17	3	249	1283	56	1262
Future Volume (vph)	257	10	274	17	3	249	1283	56	1262
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases					8	5	2	1	6
Permitted Phases	4			4	8		2		6
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	28.0	28.0	28.0	28.0	28.0	10.0	23.0	10.0	23.0
Total Split (s)	28.0	28.0	28.0	28.0	28.0	17.0	52.0	10.0	45.0
Total Split (%)	31.1%	31.1%	31.1%	31.1%	31.1%	18.9%	57.8%	11.1%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)					5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effect Green (s)	21.6	21.6			21.6	56.7	48.8	45.1	40.1
Actuated g/C Ratio	0.24	0.24			0.24	0.64	0.55	0.51	0.45
v/c Ratio	0.89	0.57			0.08	0.86	0.72	0.30	0.90
Control Delay	62.9	16.8			21.1	47.0	18.4	11.7	32.3
Queue Delay	0.0	0.0			0.0	0.0	0.5	0.0	46.2
Total Delay	62.9	16.8			21.1	47.0	18.9	11.7	78.5
LOS	E	B			C	D	B	B	E
Approach Delay	39.5				21.1		23.4		75.8
Approach LOS	D				C		C		E

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 88.3

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 46.6

Intersection LOS: D

Intersection Capacity Utilization 84.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 7: Harris Road & McMyn Road



7: Harris Road & McMyn Road



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	290	298	29	271	1406	61	1443
V/c Ratio	0.89	0.57	0.08	0.86	0.72	0.30	0.90
Control Delay	62.9	16.8	21.1	47.0	18.4	11.7	32.3
Queue Delay	0.0	0.0	0.0	0.0	0.5	0.0	46.2
Total Delay	62.9	16.8	21.1	47.0	18.9	11.7	78.5
Queue Length 50th (m)	50.3	17.9	2.9	32.1	101.0	3.8	125.4
Queue Length 95th (m)	#95.7	44.1	9.9	#76.1	128.7	8.3	#175.3
Internal Link Dist (m)	191.0		105.3		154.2		110.7
Turn Bay Length (m)		20.0		50.0		20.0	
Base Capacity (vph)	346	542	367	323	1955	200	1597
Starvation Cap Reductn	0	0	0	0	186	0	293
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.55	0.08	0.84	0.79	0.30	1.11

Intersection Summary

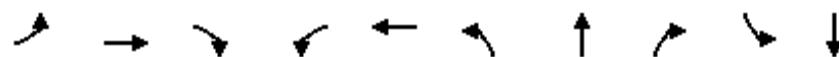
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Combined Volumes

2031 PM Peak

8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↑ ↗	↑↑↑ ↗	↗	↗	↑↑↑ ↗	↗	↑	↗	↗	↑↑↑ ↗
Traffic Volume (vph)	125	3862	963	276	2469	732	193	521	72	164
Future Volume (vph)	125	3862	963	276	2469	732	193	521	72	164
Turn Type	Prot	NA	Perm	Prot	NA	Split	NA	Perm	Split	NA
Protected Phases	7	4		3	8	2	2		6	6
Permitted Phases				4					2	
Detector Phase	7	4	4	3	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.0	22.4	22.4	11.9	25.4	32.8	32.8	32.8	23.8	23.8
Total Split (s)	16.0	66.0	66.0	22.0	71.0	20.0	20.0	20.0	15.0	15.0
Total Split (%)	13.0%	53.7%	53.7%	17.9%	57.7%	16.3%	16.3%	16.3%	12.2%	12.2%
Yellow Time (s)	5.0	4.9	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	2.8	2.8	2.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.4	6.4	5.9	6.4	7.8	7.8	7.8	6.8	6.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max
Act Effect Green (s)	10.0	59.6	59.6	16.1	65.6	12.2	12.2	12.2	8.2	8.2
Actuated g/C Ratio	0.08	0.48	0.48	0.13	0.53	0.10	0.10	0.10	0.07	0.07
v/c Ratio	0.95	1.70	1.04	1.30	1.05	2.34	1.14	1.70	0.66	0.84
Control Delay	119.7	344.2	58.8	204.8	59.5	637.4	158.5	349.9	82.2	82.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.7	344.2	58.8	204.8	59.5	637.4	158.5	349.9	82.2	82.6
LOS	F	F	E	F	E	F	F	F	F	F
Approach Delay		283.0			73.4		469.9			82.5
Approach LOS		F			E		F			F

Intersection Summary

Cycle Length: 123

Actuated Cycle Length: 123

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.34

Intersection Signal Delay: 242.8

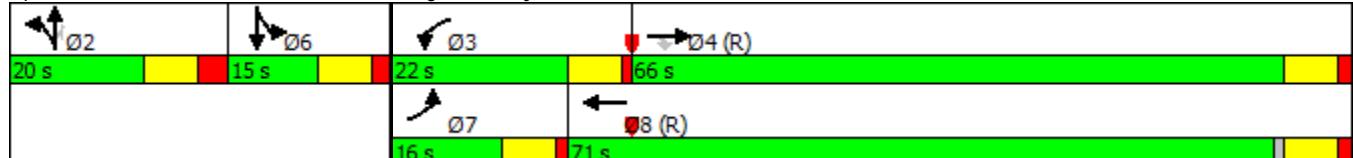
Intersection LOS: F

Intersection Capacity Utilization 139.0%

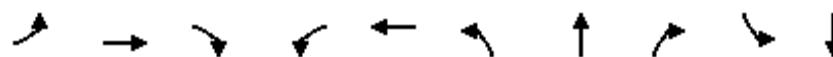
ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 8: Harris Road & Lougheed Hwy



8: Harris Road & Lougheed Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	136	4198	1047	300	2821	796	210	566	78	200
V/c Ratio	0.95	1.70	1.04	1.30	1.05	2.34	1.14	1.70	0.66	0.84
Control Delay	119.7	344.2	58.8	204.8	59.5	637.4	158.5	349.9	82.2	82.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.7	344.2	58.8	204.8	59.5	637.4	158.5	349.9	82.2	82.6
Queue Length 50th (m)	35.1	~574.8	~223.6	~97.5	~285.2	~170.6	~62.2	~165.0	19.7	25.8
Queue Length 95th (m)	#76.2	#594.2	#307.0	#155.1	#313.5	#210.5	#112.5	#237.1	#43.4	#47.4
Internal Link Dist (m)	1271.3			1741.4			110.7			94.1
Turn Bay Length (m)	120.0	275.0		170.0	65.0			60.0	40.0	
Base Capacity (vph)	143	2463	1004	231	2698	340	184	333	118	239
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	1.70	1.04	1.30	1.05	2.34	1.14	1.70	0.66	0.84

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.