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November 8, 2017

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Laurie Wills, PEng
Deputy Director of Public Works
Town of Cobourg
740 Division Street, Building 7
Cobourg, ON · K9A 0H6

**Re: Transportation Assessment
 New Amherst School**

Dear Laurie,

This Transportation Assessment has been prepared in support of a proposed French Catholic Elementary School adjacent to New Amherst Boulevard in the Town of Cobourg. An application to amend the Zoning By-law to permit the school is currently before the Town. The New Amherst Secondary Plan was approved many years ago and included a 600 student elementary school. Since that time, lands initially identified for the school were converted to residential lots and a community park, and a new school site was recently identified on the west side of the subdivision for the French Catholic Elementary School. The site is located at the northwest corner of New Amherst Boulevard and Fred Adams Street (see attached Site Location Plan, note that Street Four is Fred Adams Street); it requires an amendment to the Zoning By-law to permit the school use in that location.

A Traffic Impact Study was done in February of 2003 by TSH in support of the original applications for the New Amherst subdivision. In that study, the elementary school was forecast to generate 174 and 156 trips in the weekday morning and afternoon peak hours.

The proposed school is a French Catholic Elementary School; a Concept Plan is attached to this letter. Access to the school is proposed by way of a single driveway to the parking lot and a drop-off loop, all from Fred Adams Street. Space for buses to load and unload is provided within the parking lot. No access is proposed to New Amherst Boulevard. The concept plan includes a one-storey school building planned to accommodate a maximum of 250 students and a daycare facility. The catchment area for the school is large, and 90 percent of the students are expected to travel to and from school by bus.

School Traffic Generation

In order to determine the traffic generation potential of the proposed school, we commissioned traffic surveys of a comparable existing French Catholic Elementary School in Collingwood. The Collingwood school is in its second year of operation and is also planned to ultimately accommodate 250 students along with a similar daycare facility. There were 140 students enrolled at the school at the time of the survey. The daycare numbers are unknown, but it was open and likely as full or fuller than the school relative to the planned capacity. Future traffic at the Cobourg school was estimated by factoring the measured traffic volumes by 1.79 (250/140) to account for the planned student population. In addition, the estimated traffic volumes are compared to the previous estimates contained in the TSH study. The traffic generation data is summarized in Table 1 below and includes both cars and buses.

Table 1: Traffic Generation Estimate and Comparison

	Students	AM Peak Hour (school and street)			PM Peak Hour (street)		
		In	Out	Total	In	Out	Total
Collingwood School Traffic	140	54	33	87	16	24	40
Cobourg School Traffic Estimate	250	96	59	155	29	43	71
TSH Traffic Estimate (original plan)	600	103	71	174	72	84	156
Net Traffic		-7	-12	-19	-43	-41	-85

Factoring of the Collingwood school traffic data suggests that the Cobourg site would generate 155 trips in the weekday morning peak hour when school and street traffic peak together, and 71 trips in the weekday afternoon peak hour when street traffic peaks. The estimate is likely conservative as the daycare traffic, which was included in the counts, was factored, when the daycare is likely closer to capacity than the school in Collingwood.

The estimate for the current proposal is less in both the weekday morning and afternoon peak hours than the original school traffic volumes included in the 2003 TSH report by 19 and 85 trips, respectively.

The traffic generation estimates for the school were compared to the potential traffic generation for the as-of-right use of the school lands. The lands permit residential uses and a small amount of commercial space. Based on information from GSP Group, we have included an assessment of low, medium, and high density traffic generation scenarios for these lands.

The traffic generation estimates were based on data in the recently released 10th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. The commercial rate is based on a blend of rates in the Manual including a coffee shop. The comparison is included in Table 2 below.

The traffic generation comparison indicates that the lands could generate between 21 and 132 morning peak hour trips and between 27 and 102 afternoon peak hour trips based on the current planned uses. In comparison, the school is expected to generate 155 trips in the morning peak hour and 71 trips in the afternoon peak hour.



Table 2: Traffic Generation Comparison

Land Use	Peak Hour	Trip Rate*	As-of-right Development Scenario			School
			Low - 16 singles - 20 towns	Medium - 4 singles - 46 towns	High - 4 singles - 16 towns - 60 apts - 2,500 sf comm	
Single Family Detached ITE Code 210	AM	0.74 t/u	12	3	3	
	PM	0.99 t/u	16	4	4	
Multifamily Low Rise ITE Code 220	AM	0.46 t/u	9	21	7	
	PM	0.56 t/u	11	26	9	
Multifamily Mid Rise ITE Code 221	AM	0.36 t/u	-	-	22	
	PM	0.44 t/u	-	-	26	
Commercial (incl coffee shop) blend of ITE rates	AM	40 t/ 1,000 sf	-	-	100	
	PM	25 t/ 1,000 sf	-	-	63	
Total	AM	-	21	24	132	155
	PM	-	27	30	102	71

* Note: data from ITE Trip Generation Manual, 10th Edition

Traffic Operations: County Road 2/New Amherst/Loveshin

A review of the traffic operations at the County Road 2 (Elgin Street) intersection with New Amherst Boulevard/Loveshin Road was also undertaken. Turning movement data at the intersection was collected on Wednesday, October 18, 2017 from 7 to 9 AM and from 3 to 6 PM. The morning peak hour occurred between 7:45 and 8:45 AM and the afternoon peak hour occurred between 4 and 5 PM. The peak hour turning movements are shown on the attached diagrams.

Future Background Traffic forecasts and Future Total Traffic forecasts were developed based on the following assumptions:

- 50 percent of the existing off peak direction traffic was removed to remove the effect of construction traffic entering the subdivision in the morning and leaving in the afternoon.
- Background growth was applied to Loveshin Road and County Road 2 traffic at a rate of three (3) percent per year compounded over 10 years. The chosen growth rate is consistent both with the previous study and the Town's current Transportation Master Plan and was agreed to with staff.
- Additional traffic from the New Amherst subdivision was added to reflect the build out of the remainder of the subdivision. At the time of the traffic counts, 219 of the 665 planned units in the subdivision were occupied. Existing traffic on New Amherst Boulevard (minus the construction traffic) was factored by the planned additional units. It is recognized that some of the traffic using New Amherst Boulevard is generated within the adjacent subdivision



turning to and from the west. The northbound left turn movement and the eastbound right turn movement forecasts are conservative as a result.

- Future Background Traffic includes existing traffic, reduction of construction traffic, background growth and the additional New Amherst traffic.
- 80 percent of the estimated school traffic was assigned to the County Road 2 intersection with New Amherst Boulevard in accordance with the existing turning movements at the intersection. It is assumed that about 20 percent of the school traffic will either be generated internally to the development or will access the school using a route that does not pass through the subject intersection.
- Future Total Traffic includes Future Background Traffic plus the School Traffic.

The traffic diagrams for the morning and afternoon peak hours are attached to this letter showing the traffic calculations.

The capacity of the subject intersection was assessed using Synchro version 9 under Existing, Future Background, and Future Total traffic conditions. The existing analyses reflect the current configuration of the intersection and the future analyses reflect the planned configuration of the intersection as outlined in the County's 2016 EA document for this section of County Road 2.

The County plans to widen County Road 2 east of the intersection within the 10-year horizon of this study. The planned intersection configuration includes the addition of a second westbound through lane which terminates at the intersection as a right turn lane to Loveshin Road. The westbound left turn lane is shortened to about 20 metres. In the 10 to 15 year horizon, the County plans to implement improvements to the west side of the intersection. The current concept includes the extension of the eastbound left turn lane westerly as a two-way left turn lane and the improvement of the eastbound right turn taper to a right turn lane with about 50 metres of storage. All of the improvements are preliminary and will be refined during detailed design.

The analyses are summarized in Table 2 below. Parameters of note include the following:

- Existing heavy vehicle percentages were used for the existing analyses. For the future analyses a heavy vehicle percentage of three (3) percent was used for all movements reflecting the growth in passenger car traffic.
- Existing signal timing with an east-west advance phase and a 60 second cycle length was used for all scenarios.
- Default Synchro parameters were used elsewhere.

A second Future Total scenario was assessed at the intersection in both the weekday morning and afternoon peak hours. This scenario considers traffic operations at the intersection if the future traffic volumes develop in advance of the improvements to County Road 2 (so maintain existing geometry at the intersection). It also considers the impact of converting the east-west advance phase to a westbound advance phase.



Table 3: Signalized Intersection Analyses - County Road 2/New Amherst/Loveshin

	Scenario	Measure of Effectiveness	Lane Direction Movement								
			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBTR	SB
AM Peak Hour	Existing	LOS	A	B	A	A	B	-	B	A	B
		Delay (s)	3.5	10.6	0.1	3.3	11.0	-	19.0	0.0	16.3
		v/c	0.00	0.36	0.04	0.02	0.41	-	0.09	0.01	0.04
		95% Q (m)	0.6	42.2	0.0	1.9	50.1	-	9.6	0.0	3.8
		Storage (m)	55	-	20	55	-	-	10	-	-
	Future Background	LOS	A	B	A	A	B	-	C	A	B
		Delay (s)	4.3	16.2	0.1	4.5	18.2	-	25.8	0.1	16.9
		v/c	0.01	0.54	0.06	0.04	0.63	-	0.40	0.04	0.05
		95% Q (m)	0.9	62.8	0.0	3.0	76.8	-	23.1	0.0	5.0
		Storage (m)	-	-	50	20	-	-	10	-	-
	Future Total	LOS	A	B	A	A	B	-	C	A	B
		Delay (s)	4.7	16.6	1.8	4.9	18.6	-	29.0	0.2	17.1
		v/c	0.01	0.54	0.13	0.09	0.63	-	0.53	0.06	0.06
		95% Q (m)	0.9	62.8	4.3	5.2	76.8	-	30.7	0.0	5.5
		Storage (m)	-	-	50	20	-	-	10	-	-
	Future Total Existing Geometry WB Advance	LOS	B	B	A	A	B	-	C	A	B
		Delay (s)	11.3	17.6	1.9	4.9	10.2	-	29.0	0.2	17.6
		v/c	0.01	0.58	0.15	0.10	0.46	-	0.53	0.06	0.08
		95% Q (m)	1.5	65.1	4.4	5.2	57.9	-	30.7	0.0	5.6
		Storage (m)	55	-	20	55	-	-	10	-	-
PM Peak Hour	Existing	LOS	A	B	A	A	B	-	C	B	B
		Delay (s)	4.0	15.4	1.1	3.9	15.8	-	21.9	11.6	19.7
		v/c	0.00	0.59	0.09	0.03	0.60	-	0.18	0.07	0.04
		95% Q (m)	0.6	74.2	2.4	1.8	75.9	-	12.0	4.5	4.4
		Storage (m)	55	-	20	55	-	-	10	-	-
	Future Background	LOS	A	C	A	A	C	A	C	B	B
		Delay (s)	4.0	24.3	2.9	4.5	24.5	0.0	22.4	10.6	19.6
		v/c	0.01	0.80	0.27	0.10	0.80	0.01	0.25	0.08	0.05
		95% Q (m)	0.8	135.2	10.7	4.2	135.9	0.0	16.4	5.6	5.4
		Storage (m)	-	-	50	20	-	-	10	-	-
	Future Total	LOS	A	C	A	A	C	A	C	A	B
		Delay (s)	4.3	30.9	3.1	5.2	31.1	0.0	25.0	9.5	19.4
		v/c	0.01	0.87	0.31	0.13	0.87	0.01	0.36	0.11	0.06
		95% Q (m)	0.9	137.9	11.3	4.7	138.4	0.0	20.9	6.7	5.4
		Storage (m)	-	-	50	20	-	-	10	-	-
	Future Total Existing Geometry WB Advance	LOS	A	B	A	A	A	-	D	B	C
		Delay (s)	8.7	16.2	5.7	4.3	9.4	-	39.3	13.7	28.3
		v/c	0.01	0.66	0.26	0.12	0.55	-	0.49	0.18	0.08
		95% Q (m)	1.4	117.5	21.5	4.6	90.0	-	28.2	8.5	7.1
		Storage (m)	55	-	20	55	-	-	10	-	-

The signalized intersection analyses suggest that there is enough capacity to accommodate future traffic both with and without the school traffic (i.e. both under future background and future total conditions) and either with the existing geometry or planned improvements. However, the analyses also indicate some issues with the storage provided in some of the turn lanes.



Eastbound Right Turn Lane

In the eastbound direction, the 95th percentile through queues are expected to be longer than the storage in the right turn lane indicating that there will be times when traffic cannot access the right turn lane. When the County improves the intersection, they are currently planning for a 50 metre right turn lane (plus taper), which would largely address the issue in the morning peak hour. However, in the afternoon peak hour, the 95th percentile queue is expected to be significantly longer than the right turn lane.

The County will revisit the planned infrastructure at the intersection when they prepare the detailed design allowing them to measure traffic demands at the intersection (the subdivision should be mostly complete at that time) and respond with an appropriate design. In the meantime, there continues to be enough capacity to accommodate all of the eastbound traffic and if right turning vehicles are unable to access the turn lane, they can do so once the east-west green phase begins.

Westbound Left Turn Lane

The same situation occurs in the westbound direction for the left turn lane. Although the lane is long enough to accommodate the 95th percentile queues, the 95th percentile through queues are forecast to block access to the left turn lane significantly in both peak hours which may have the effect of westbound left turning traffic not being able to make full use of the east-west advance phase. This would certainly be the case under future conditions with a planned shortening of the turn lane to 20 metres, but is even the case under existing geometric conditions where a longer 55 metre storage lane is available.

Given the low volumes of eastbound left turning traffic, the County should consider converting the east-west advance phase to a westbound advance phase, which would reduce queueing in the westbound through lane and allow westbound left turning traffic to access the westbound left turn lane during the advance phase. Again, the County will revisit the planned infrastructure at the detailed design phase of the County Road 2 widening project and will prepare an appropriate recommendation for the left turn lane. Until that time, if the east-west advance phase is converted to a westbound advance phase (assessed in the second future total scenario), the 95th percentile queues in the through lane would be slightly longer than the available storage in the morning peak hour (58 metres versus 55 metres available).

In the afternoon peak hour, the additional analysis includes both a westbound advance phase and an extension of the cycle length to 80 seconds from 60 seconds along with optimized signal timing. The changes result in a considerable reduction in the westbound through 95th percentile queue from 138 metres to 90 metres, and because the westbound through movements will flow with the westbound left turn movements, there should be better access to the left turn lane.

Northbound Left Turn

The northbound left turn lane at the intersection is short (about 10 metres) and accommodates only one to two vehicles. Currently the 95th percentile queue exceeds the storage slightly in the PM peak hour. The Future Total 95th percentile queues are expected to be about 30 and about 20 metres in



the AM and PM peak hours, respectively. Under the second future scenario, the 95th percentile queues are close to 30 metres in both peak hours.

The implication of having a left turn lane that is shorter than the 95th percentile queue is that left turning traffic will spill into the through lane during the red phase and block access to the intersection for other northbound traffic. The 95th percentile queue generally occurs once in the peak hour. At this intersection, the through movement in the northbound direction is low and is not expected to grow substantially, so if the left turn queue spills into the through lane, it would likely be blocking right turning traffic, potentially on a red signal when vehicles could be turning right. However, the capacity of the intersection would generally remain the same and there is enough capacity under all of the scenarios to accommodate the northbound traffic.

In this case where the intersection has been built with a short northbound left turn lane and the improvement needed to lengthen the turn lane requires removal of an existing landscaped median and/or narrowing of the landscaped boulevard, it seems appropriate to wait and see how the demand at the intersection develops over time. Most of the demand for the left turn is generated by the continued build-out of the subdivision (about 70 vehicles in the AM peak hour and about 35 in the PM peak hour), which will occur over many years, rather than the school development (under 40 vehicles in the AM peak hour and about 25 in the PM peak hour). In addition, current travel patterns suggest that traffic exiting the neighborhood is more likely to turn left than right at the intersection, but as the subdivision fills in, this may not be the case and we may see a shift in the demand from left turning to right turning.

There will be an opportunity when the County undertakes detailed design for County Road 2 to revisit the demand at the intersection and determine the best design that considers storage requirements and signal timing for the intersection. At that time, much of the subdivision will be built out, the school will be in place, and traffic demands can be measured again to support the design. In the meantime, the school can proceed and the intersection can function at acceptable levels with the current configuration, including the short northbound left turn lane, into the 10 year future horizon.

Traffic Operations and Layout Around School Site

The school site will be accessed by buses and cars from Fred Adams Street via New Amherst Boulevard. The intersection of New Amherst Boulevard and Fred Adams Street is already designed as a four-way stop intersection, which is ideal for providing protected crossing opportunities for children, parents and staff and connecting the school to the local community. The intersection has also been designed to accommodate the turning movements of buses.

The current concept plan includes a drop-off loop with separate driveways from the main parking lot. Bus activity is planned to be included in the main parking lot, minimizing any school related activity on the road. The turning movements of buses should be tested in the final site plan to ensure a clear path for buses in to and out of the site.



When the site plan is developed in more detail, consideration should be given to how students and children in the daycare will enter and exit the school. Ideally the drop-off loop would be unidirectional and two lanes wide to allow cars to pass in the loop and provide a connection to the school part of the building for students. Convenient short-term parking should be provided for parents of the daycare children near the doors for the daycare.

Conclusions

The proposed French Catholic Elementary School on the subject site is expected to generate 155 and 71 trips in the weekday morning and afternoon peak hours. In comparison to the school traffic included in the TSH study submitted in support of the original subdivision applications, the proposed school is expected to generate less in both peak hours – 19 and 85 fewer trips in the AM and PM peak hours, respectively.

The traffic generation assessment indicates that the lands could generate between 21 and 132 morning peak hour trips and between 27 and 102 afternoon peak hour trips based on the current planned uses. In comparison, the school is expected to generate 155 trips in the morning peak hour and 71 trips in the afternoon peak hour.

An analysis of the County Road 2/New Amherst/Loveshin intersection suggests that there is enough capacity to accommodate future traffic both with and without the new school under future total scenarios that consider the intersection both with and without the planned improvements along County Road 2.

We understand that the ultimate layout of the intersection will be finalized during detailed design and there will be the opportunity to plan for appropriate storage in the turn lanes at the intersection. At that time, much of the subdivision will be built out, the school will be in place, and traffic demands can be measured again to support the design. In the meantime, the County should convert the east-west advance phase to a westbound advance phase in order to provide better access to the westbound left turn lane and the advance phase for left turning traffic.

The intersection of New Amherst Boulevard and Fred Adams Street is immediately adjacent to the school and provides access for vehicles and buses to the site. The intersection is designed as a four-way stop intersection, which is ideal for providing protected crossing opportunities for children, parents and staff and connecting the school to the local community. The intersection has also been designed to accommodate the turning movements of buses.

Bus activity is planned to be included in the main parking lot, minimizing any school related activity on the road. The turning movements of buses should be tested in the final site plan to ensure a clear path for buses in to and out of the site. Ideally the drop-off loop would be unidirectional and two lanes wide to allow cars to pass in the loop and provide a connection to the school part of the building for students. Convenient short-term parking should be provided for parents of the daycare children near the doors for the daycare.



If you have any questions about the information and analysis presented in this letter, please contact me to discuss.

Sincerely,



Julia Salvini, MEng, PEng
President

Cc: Deborah Keay, DM Wills Associates Ltd.
Glenn Scheels, GSP Group

Attach: Site Location Plan
Concept Plan
Traffic Diagrams
Synchro Analysis



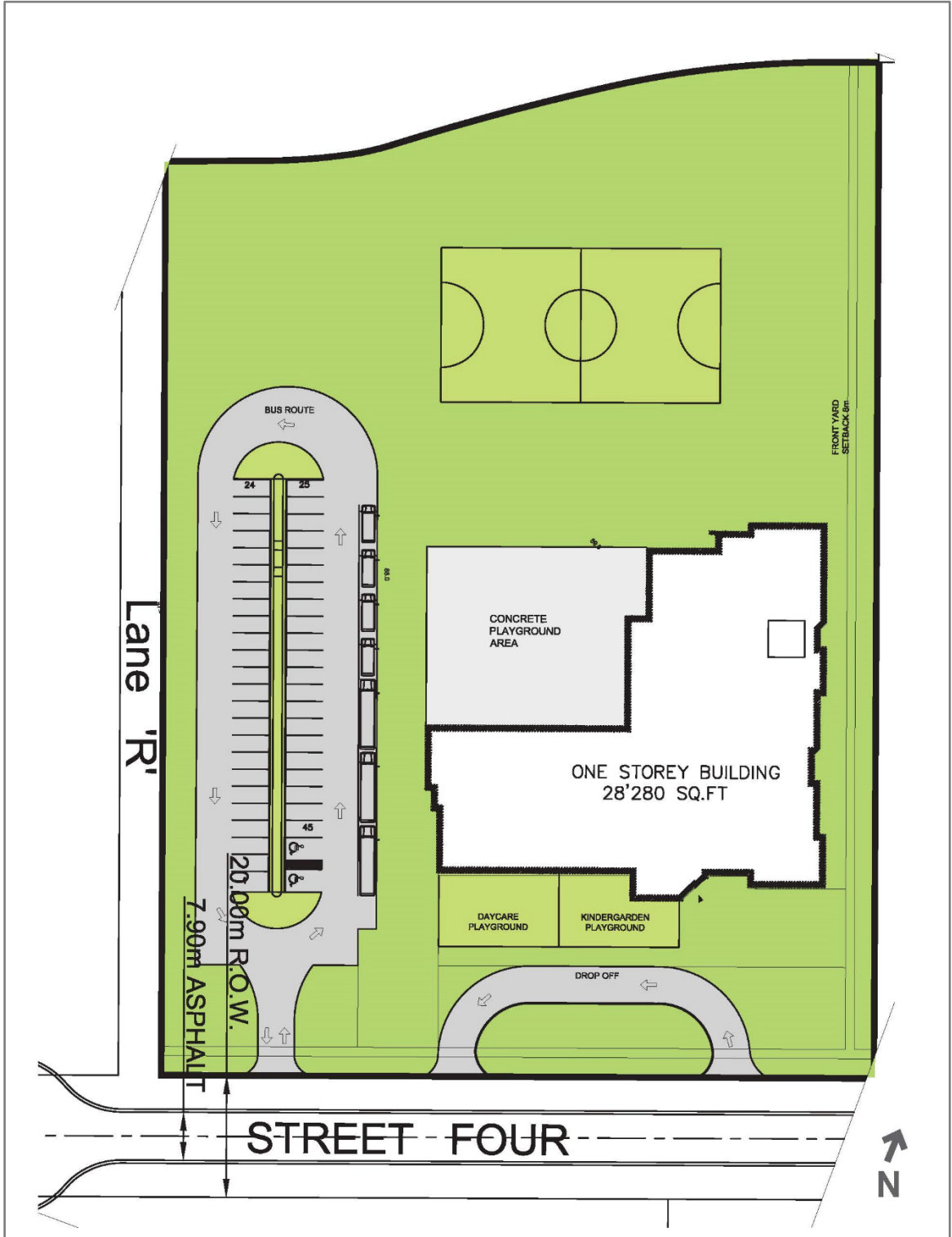
Attachments





Site Location Plan

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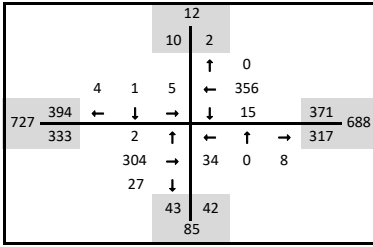
Concept Plan

Source: GSP Group

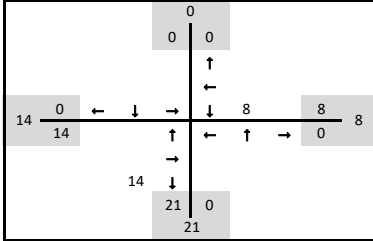
New Amherst French Catholic School Traffic Calculations

AM Peak Hour - Hwy 2/New Amherst/Loveshin

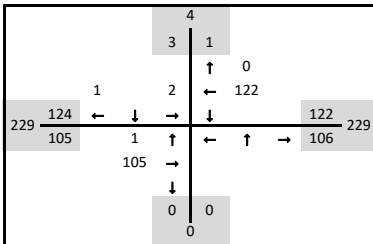
Existing Traffic - Wednesday, Oct 18, 2017, 7:45



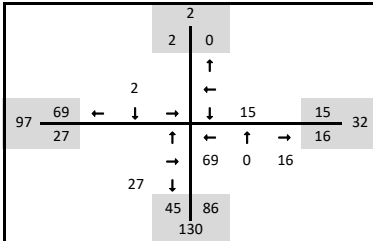
Construction Traffic



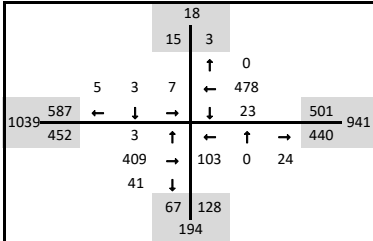
Background Growth



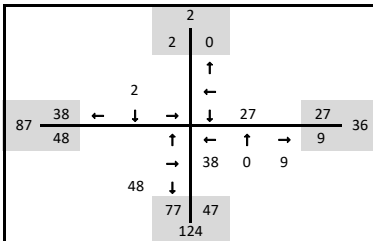
Additional New Amherst Traffic



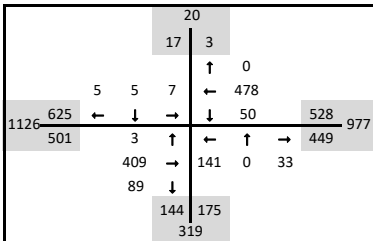
Future Background Traffic



School Traffic

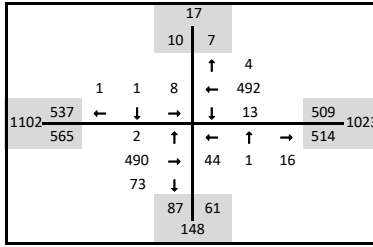


Future Total Traffic

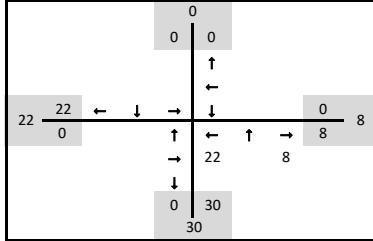


PM Peak Hour - Hwy 2/New Amherst/Loveshin

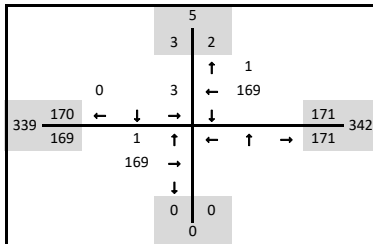
Existing Traffic - Wednesday, Oct 18, 2017, 4:00



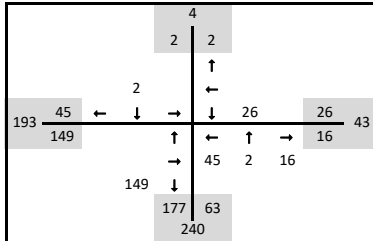
Construction Traffic



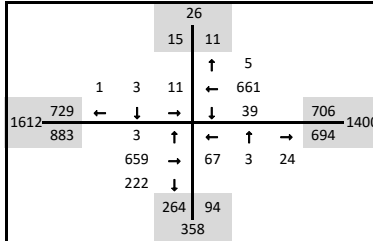
Background Growth



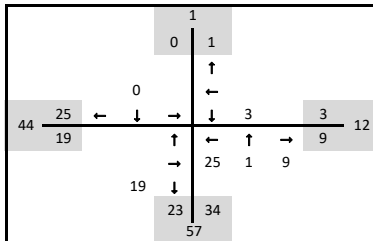
Additional New Amherst Traffic



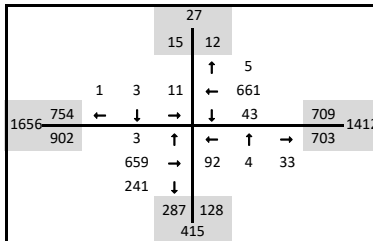
Future Background Traffic



School Traffic



Future Total Traffic



Lanes, Volumes, Timings
3: New Amherst/Loveshin & Elgin

12/19/2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	304	27	15	356	0	34	0	8	5	1	4
Future Volume (vph)	2	304	27	15	356	0	34	0	8	5	1	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	55.0		0.0	10.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850					0.850			0.946	
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1217	1746	1338	1615	1795	0	1772	1633	0	0	1364	0
Flt Permitted	0.533			0.561							0.909	
Satd. Flow (perm)	683	1746	1338	954	1795	0	1865	1633	0	0	1271	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135					496			4	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		431.3			585.2			330.1			230.7	
Travel Time (s)		25.9			35.1			23.8			16.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	50%	10%	22%	13%	7%	0%	3%	0%	0%	40%	100%	0%
Adj. Flow (vph)	2	330	29	16	387	0	37	0	9	5	1	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	330	29	16	387	0	37	9	0	0	10	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	26.3	26.3	8.0	26.3		17.4	17.4		17.4	17.4	
Total Split (s)	8.0	32.0	32.0	8.0	32.0		20.0	20.0		20.0	20.0	
Total Split (%)	13.3%	53.3%	53.3%	13.3%	53.3%		33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	5.0	23.7	23.7	5.0	23.7		12.6	12.6		12.6	12.6	
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.0	2.4	2.4	0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.3	8.3	3.0	8.3		7.4	7.4		7.4	7.4	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	Max	Max		None	None		None	None	

Lanes, Volumes, Timings
 3: New Amherst/Loveshin & Elgin

12/19/2017

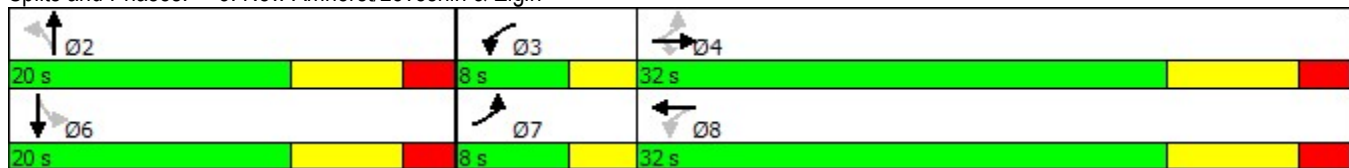


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0	11.0		11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	35.1	24.5	24.5	35.1	24.5		10.3	10.3				10.3
Actuated g/C Ratio	0.75	0.52	0.52	0.75	0.52		0.22	0.22				0.22
v/c Ratio	0.00	0.36	0.04	0.02	0.41		0.09	0.01				0.04
Control Delay	3.5	10.6	0.1	3.3	11.0		19.0	0.0				16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0				0.0
Total Delay	3.5	10.6	0.1	3.3	11.0		19.0	0.0				16.3
LOS	A	B	A	A	B		B	A				B
Approach Delay		9.7			10.7			15.3				16.3
Approach LOS		A			B			B				B
Queue Length 50th (m)	0.0	8.9	0.0	0.1	10.7		1.9	0.0				0.3
Queue Length 95th (m)	0.6	42.2	0.0	1.9	50.1		9.6	0.0				3.8
Internal Link Dist (m)		407.3			561.2			306.1				206.7
Turn Bay Length (m)	55.0		20.0	55.0			10.0					
Base Capacity (vph)	569	908	761	785	934		516	810				355
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	0.00	0.36	0.04	0.02	0.41		0.07	0.01				0.03

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	47
Natural Cycle:	55
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.41
Intersection Signal Delay:	10.6
Intersection LOS:	B
Intersection Capacity Utilization:	40.2%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 3: New Amherst/Loveshin & Elgin



Lanes, Volumes, Timings
3: New Amherst/Loveshin & Elgin

12/19/2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	490	73	13	492	4	44	1	16	8	1	1
Future Volume (vph)	2	490	73	13	492	4	44	1	16	8	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	55.0		0.0	10.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.858			0.988	
Flt Protected	0.950			0.950			0.950				0.961	
Satd. Flow (prot)	1825	1865	1617	1484	1846	0	1674	1222	0	0	1523	0
Flt Permitted	0.384			0.390			0.755				0.753	
Satd. Flow (perm)	738	1865	1617	609	1846	0	1331	1222	0	0	1194	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135		1			17			1	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		431.3			585.2			330.1			230.7	
Travel Time (s)		25.9			35.1			23.8			16.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	1%	23%	4%	0%	9%	100%	31%	13%	0%	100%
Adj. Flow (vph)	2	533	79	14	535	4	48	1	17	9	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	533	79	14	539	0	48	18	0	0	11	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	26.3	26.3	8.0	26.3		17.4	17.4		17.4	17.4	
Total Split (s)	8.0	32.0	32.0	8.0	32.0		20.0	20.0		20.0	20.0	
Total Split (%)	13.3%	53.3%	53.3%	13.3%	53.3%		33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	5.0	23.7	23.7	5.0	23.7		12.6	12.6		12.6	12.6	
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9		5.0	5.0		5.0	5.0	
All-Red Time (s)	0.0	2.4	2.4	0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	8.3	8.3	3.0	8.3		7.4	7.4		7.4	7.4	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	Max	Max		None	None		None	None	

Lanes, Volumes, Timings
 3: New Amherst/Loveshin & Elgin

12/19/2017

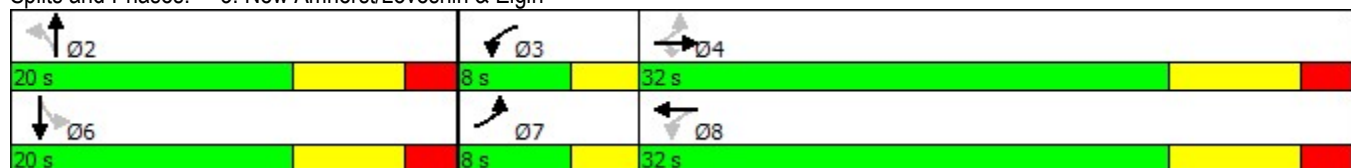


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0	11.0		11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	35.1	24.5	24.5	35.1	24.5		10.4	10.4				10.4
Actuated g/C Ratio	0.70	0.49	0.49	0.70	0.49		0.21	0.21				0.21
v/c Ratio	0.00	0.59	0.09	0.03	0.60		0.18	0.07				0.04
Control Delay	4.0	15.4	1.1	3.9	15.8		21.9	11.6				19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0				0.0
Total Delay	4.0	15.4	1.1	3.9	15.8		21.9	11.6				19.7
LOS	A	B	A	A	B		C	B				B
Approach Delay		13.5			15.5			19.1				19.7
Approach LOS		B			B			B				B
Queue Length 50th (m)	0.1	43.7	0.0	0.4	44.4		4.4	0.1				0.9
Queue Length 95th (m)	0.6	74.2	2.4	1.8	75.9		12.0	4.5				4.4
Internal Link Dist (m)		407.3			561.2			306.1				206.7
Turn Bay Length (m)	55.0		20.0	55.0			10.0					
Base Capacity (vph)	623	903	852	512	894		342	327				307
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	0.00	0.59	0.09	0.03	0.60		0.14	0.06				0.04

Intersection Summary

























Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	50.5
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.60
Intersection Signal Delay:	14.7
Intersection LOS:	B
Intersection Capacity Utilization:	47.6%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 3: New Amherst/Loveshin & Elgin



Lanes, Volumes, Timings
3: New Amherst/Loveshin & Elgin

12/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	409	41	23	478	0	103	0	24	7	3	5
Future Volume (vph)	3	409	41	23	478	0	103	0	24	7	3	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	20.0		0.0	10.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850					0.850			0.958	
Flt Protected	0.950			0.950			0.950				0.976	
Satd. Flow (prot)	1772	1865	1585	1772	1865	1865	1772	1585	0	0	1744	0
Flt Permitted	0.379			0.459			0.747				0.828	
Satd. Flow (perm)	707	1865	1585	856	1865	1865	1393	1585	0	0	1479	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135					397			5	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		431.3			585.2			330.1			230.7	
Travel Time (s)		25.9			35.1			23.8			16.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	3	445	45	25	520	0	112	0	26	8	3	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	445	45	25	520	0	112	26	0	0	16	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	26.3	26.3	8.0	26.3	26.3	17.4	17.4		17.4	17.4	
Total Split (s)	8.0	32.0	32.0	8.0	32.0	32.0	20.0	20.0		20.0	20.0	
Total Split (%)	13.3%	53.3%	53.3%	13.3%	53.3%	53.3%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	5.0	23.7	23.7	5.0	23.7	23.7	12.6	12.6		12.6	12.6	
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	5.0	5.0		5.0	5.0	
All-Red Time (s)	0.0	2.4	2.4	0.0	2.4	2.4	2.4	2.4		2.4	2.4	
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)	3.0	8.3	8.3	3.0	8.3	8.3	7.4	7.4		7.4	7.4	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	Max	Max	Max	None	None		None	None	

Lanes, Volumes, Timings
 3: New Amherst/Loveshin & Elgin

12/19/2017

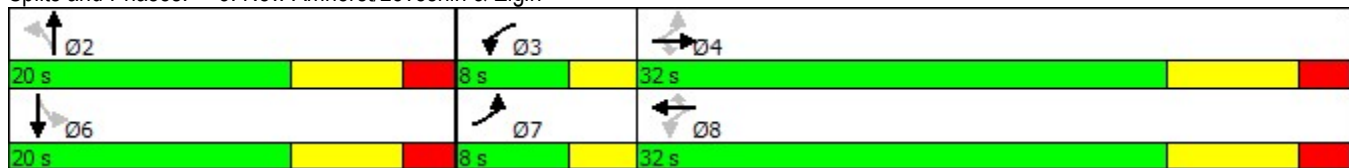


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	34.8	24.3	24.3	34.8	24.3		11.0	11.0				11.0
Actuated g/C Ratio	0.64	0.44	0.44	0.64	0.44		0.20	0.20				0.20
v/c Ratio	0.01	0.54	0.06	0.04	0.63		0.40	0.04				0.05
Control Delay	4.3	16.2	0.1	4.5	18.2		25.8	0.1				16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0				0.0
Total Delay	4.3	16.2	0.1	4.5	18.2		25.8	0.1				16.9
LOS	A	B	A	A	B		C	A				B
Approach Delay		14.7			17.6			21.0				16.9
Approach LOS		B			B			C				B
Queue Length 50th (m)	0.1	34.3	0.0	0.8	42.2		10.7	0.0				1.0
Queue Length 95th (m)	0.9	62.8	0.0	3.0	76.8		23.1	0.0				5.0
Internal Link Dist (m)		407.3			561.2			306.1				206.7
Turn Bay Length (m)			50.0	20.0			10.0					
Base Capacity (vph)	548	826	777	629	826		327	676				352
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	0.01	0.54	0.06	0.04	0.63		0.34	0.04				0.05

Intersection Summary

























Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 54.8
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 16.7
 Intersection Capacity Utilization 48.9%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 3: New Amherst/Loveshin & Elgin



Lanes, Volumes, Timings
3: New Amherst/Loveshin & Elgin

12/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	659	222	39	661	5	67	3	24	11	3	1
Future Volume (vph)	3	659	222	39	661	5	67	3	24	11	3	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	20.0		0.0	10.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.866			0.992	
Flt Protected	0.950			0.950			0.950				0.964	
Satd. Flow (prot)	1772	1865	1585	1772	1865	1585	1772	1615	0	0	1784	0
Flt Permitted	0.212			0.214			0.747				0.761	
Satd. Flow (perm)	395	1865	1585	399	1865	1585	1393	1615	0	0	1408	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			241			135		26			1	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		431.3			585.2			330.1			230.7	
Travel Time (s)		25.9			35.1			23.8			16.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	3	716	241	42	718	5	73	3	26	12	3	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	716	241	42	718	5	73	29	0	0	16	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	26.3	26.3	8.0	26.3	26.3	17.4	17.4		17.4	17.4	
Total Split (s)	8.0	32.0	32.0	8.0	32.0	32.0	20.0	20.0		20.0	20.0	
Total Split (%)	13.3%	53.3%	53.3%	13.3%	53.3%	53.3%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	5.0	23.7	23.7	5.0	23.7	23.7	12.6	12.6		12.6	12.6	
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	5.0	5.0		5.0	5.0	
All-Red Time (s)	0.0	2.4	2.4	0.0	2.4	2.4	2.4	2.4		2.4	2.4	
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)	3.0	8.3	8.3	3.0	8.3	8.3	7.4	7.4		7.4	7.4	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	Max	Max	Max	None	None		None	None	

Lanes, Volumes, Timings
 3: New Amherst/Loveshin & Elgin

12/19/2017

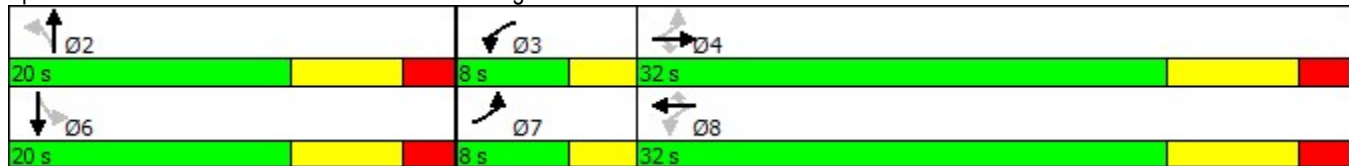


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	35.1	24.5	24.5	35.1	24.5	24.5	10.6	10.6				10.6
Actuated g/C Ratio	0.69	0.48	0.48	0.69	0.48	0.48	0.21	0.21				0.21
v/c Ratio	0.01	0.80	0.27	0.10	0.80	0.01	0.25	0.08				0.05
Control Delay	4.0	24.3	2.9	4.5	24.5	0.0	22.4	10.6				19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				0.0
Total Delay	4.0	24.3	2.9	4.5	24.5	0.0	22.4	10.6				19.6
LOS	A	C	A	A	C	A	C	B				B
Approach Delay		18.9			23.2			19.1				19.6
Approach LOS		B			C			B				B
Queue Length 50th (m)	0.1	68.1	0.0	1.3	68.3	0.0	6.8	0.3				1.3
Queue Length 95th (m)	0.8	#135.2	10.7	4.2	#135.9	0.0	16.4	5.6				5.4
Internal Link Dist (m)		407.3			561.2			306.1				206.7
Turn Bay Length (m)			50.0	20.0			10.0					
Base Capacity (vph)	413	899	889	415	899	834	356	433				361
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	0.01	0.80	0.27	0.10	0.80	0.01	0.21	0.07				0.04

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 50.8
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 20.7
 Intersection LOS: C
 Intersection Capacity Utilization 56.2%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: New Amherst/Loveshin & Elgin



Lanes, Volumes, Timings
3: New Amherst/Loveshin & Elgin

12/19/2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	409	89	50	478	0	141	0	33	7	5	5
Future Volume (vph)	3	409	89	50	478	0	141	0	33	7	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	20.0		0.0	10.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850					0.850			0.962	
Flt Protected	0.950			0.950			0.950				0.978	
Satd. Flow (prot)	1772	1865	1585	1772	1865	1865	1772	1585	0	0	1755	0
Flt Permitted	0.376			0.456			0.746				0.840	
Satd. Flow (perm)	701	1865	1585	851	1865	1865	1391	1585	0	0	1507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135					397			5	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		431.3			585.2			330.1			230.7	
Travel Time (s)		25.9			35.1			23.8			16.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	3	445	97	54	520	0	153	0	36	8	5	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	445	97	54	520	0	153	36	0	0	18	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	26.3	26.3	8.0	26.3	26.3	17.4	17.4		17.4	17.4	
Total Split (s)	8.0	32.0	32.0	8.0	32.0	32.0	20.0	20.0		20.0	20.0	
Total Split (%)	13.3%	53.3%	53.3%	13.3%	53.3%	53.3%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	5.0	23.7	23.7	5.0	23.7	23.7	12.6	12.6		12.6	12.6	
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	5.0	5.0		5.0	5.0	
All-Red Time (s)	0.0	2.4	2.4	0.0	2.4	2.4	2.4	2.4		2.4	2.4	
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)	3.0	8.3	8.3	3.0	8.3	8.3	7.4	7.4		7.4	7.4	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	Max	Max	Max	None	None		None	None	

Lanes, Volumes, Timings
 3: New Amherst/Loveshin & Elgin

12/19/2017

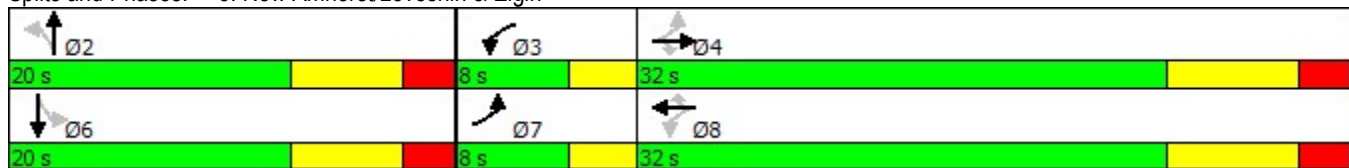


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	34.9	24.3	24.3	34.9	24.3		11.5	11.5				11.5
Actuated g/C Ratio	0.63	0.44	0.44	0.63	0.44		0.21	0.21				0.21
v/c Ratio	0.01	0.54	0.13	0.09	0.63		0.53	0.06				0.06
Control Delay	4.7	16.6	1.8	4.9	18.6		29.0	0.2				17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0				0.0
Total Delay	4.7	16.6	1.8	4.9	18.6		29.0	0.2				17.1
LOS	A	B	A	A	B		C	A				B
Approach Delay		13.9			17.3			23.5				17.1
Approach LOS		B			B			C				B
Queue Length 50th (m)	0.1	36.2	0.0	1.9	44.6		15.1	0.0				1.1
Queue Length 95th (m)	0.9	62.8	4.3	5.2	76.8		30.7	0.0				5.5
Internal Link Dist (m)		407.3			561.2			306.1				206.7
Turn Bay Length (m)			50.0	20.0			10.0					
Base Capacity (vph)	541	819	772	621	819		325	674				355
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	0.01	0.54	0.13	0.09	0.63		0.47	0.05				0.05

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 55.3
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 16.8
 Intersection Capacity Utilization 60.2%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 3: New Amherst/Loveshin & Elgin



Lanes, Volumes, Timings
3: New Amherst/Loveshin & Elgin

12/19/2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	659	241	43	661	5	92	4	33	11	3	1
Future Volume (vph)	3	659	241	43	661	5	92	4	33	11	3	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	20.0		0.0	10.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.865			0.992	
Flt Protected	0.950			0.950			0.950				0.964	
Satd. Flow (prot)	1772	1865	1585	1772	1865	1585	1772	1613	0	0	1784	0
Flt Permitted	0.183			0.185			0.747				0.754	
Satd. Flow (perm)	341	1865	1585	345	1865	1585	1393	1613	0	0	1395	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			262			135		36			1	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		431.3			585.2			330.1			230.7	
Travel Time (s)		25.9			35.1			23.8			16.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	3	716	262	47	718	5	100	4	36	12	3	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	716	262	47	718	5	100	40	0	0	16	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	7	4	4	3	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	8.0	26.3	26.3	8.0	26.3	26.3	17.4	17.4		17.4	17.4	
Total Split (s)	8.0	32.0	32.0	8.0	32.0	32.0	20.0	20.0		20.0	20.0	
Total Split (%)	13.3%	53.3%	53.3%	13.3%	53.3%	53.3%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	5.0	23.7	23.7	5.0	23.7	23.7	12.6	12.6		12.6	12.6	
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	5.0	5.0		5.0	5.0	
All-Red Time (s)	0.0	2.4	2.4	0.0	2.4	2.4	2.4	2.4		2.4	2.4	
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)	3.0	8.3	8.3	3.0	8.3	8.3	7.4	7.4		7.4	7.4	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	Max	Max	Max	None	None		None	None	

Lanes, Volumes, Timings
 3: New Amherst/Loveshin & Elgin

12/19/2017

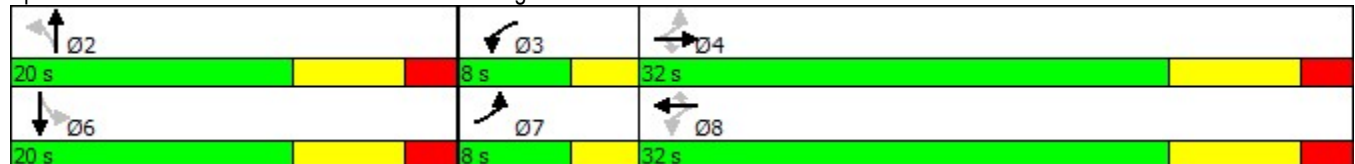


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	34.8	24.3	24.3	34.8	24.3	24.3	10.9	10.9				10.9
Actuated g/C Ratio	0.64	0.44	0.44	0.64	0.44	0.44	0.20	0.20				0.20
v/c Ratio	0.01	0.87	0.31	0.13	0.87	0.01	0.36	0.11				0.06
Control Delay	4.3	30.9	3.1	5.2	31.1	0.0	25.0	9.5				19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				0.0
Total Delay	4.3	30.9	3.1	5.2	31.1	0.0	25.0	9.5				19.4
LOS	A	C	A	A	C	A	C	A				B
Approach Delay		23.4			29.3			20.6				19.4
Approach LOS		C			C			C				B
Queue Length 50th (m)	0.1	68.1	0.0	1.5	68.3	0.0	9.4	0.4				1.3
Queue Length 95th (m)	0.9	#137.9	11.3	4.7	#138.4	0.0	20.9	6.7				5.4
Internal Link Dist (m)		407.3			561.2			306.1				206.7
Turn Bay Length (m)			50.0	20.0			10.0					
Base Capacity (vph)	350	827	848	353	827	778	328	408				330
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	0.01	0.87	0.31	0.13	0.87	0.01	0.30	0.10				0.05

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 54.7
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 25.5
 Intersection LOS: C
 Intersection Capacity Utilization 57.2%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: New Amherst/Loveshin & Elgin



Lanes, Volumes, Timings 3: New Amherst/Loveshin & Elgin

12/19/2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	409	89	50	478	0	141	0	33	7	5	5
Future Volume (vph)	3	409	89	50	478	0	141	0	33	7	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	55.0		0.0	10.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850					0.850			0.962	
Flt Protected	0.950			0.950			0.950				0.978	
Satd. Flow (prot)	1217	1746	1338	1615	1795	0	1772	1633	0	0	1242	0
Flt Permitted	0.471			0.406			0.746				0.840	
Satd. Flow (perm)	603	1746	1338	690	1795	0	1391	1633	0	0	1067	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			135					397			5	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		431.3			585.2			330.1			230.7	
Travel Time (s)		25.9			35.1			23.8			16.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	50%	10%	22%	13%	7%	0%	3%	0%	0%	40%	100%	0%
Adj. Flow (vph)	3	445	97	54	520	0	153	0	36	8	5	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	445	97	54	520	0	153	36	0	0	18	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	26.3	26.3	26.3	8.0	26.3		17.4	17.4		17.4	17.4	
Total Split (s)	32.0	32.0	32.0	8.0	40.0		20.0	20.0		20.0	20.0	
Total Split (%)	53.3%	53.3%	53.3%	13.3%	66.7%		33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	23.7	23.7	23.7	5.0	31.7		12.6	12.6		12.6	12.6	
Yellow Time (s)	5.9	5.9	5.9	3.0	5.9		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.4	2.4	2.4	0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	8.3	8.3	8.3	3.0	8.3		7.4	7.4		7.4	7.4	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	Max	Max		None	None		None	None	

Lanes, Volumes, Timings
 3: New Amherst/Loveshin & Elgin

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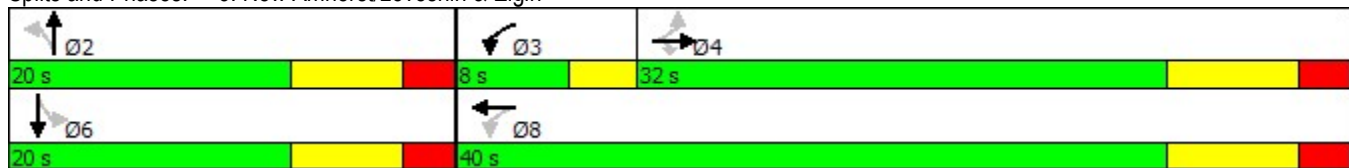


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)	7.0	7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0		11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0		0		0	0		0	0	
Act Effct Green (s)	24.3	24.3	24.3	37.9	34.8		11.5	11.5				11.5
Actuated g/C Ratio	0.44	0.44	0.44	0.69	0.63		0.21	0.21				0.21
v/c Ratio	0.01	0.58	0.15	0.10	0.46		0.53	0.06				0.08
Control Delay	11.3	17.6	1.9	4.9	10.2		29.0	0.2				17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0				0.0
Total Delay	11.3	17.6	1.9	4.9	10.2		29.0	0.2				17.6
LOS	B	B	A	A	B		C	A				B
Approach Delay		14.8			9.7			23.5				17.6
Approach LOS		B			A			C				B
Queue Length 50th (m)	0.2	37.0	0.0	1.9	33.0		15.1	0.0				1.2
Queue Length 95th (m)	1.5	65.1	4.4	5.2	57.9		30.7	0.0				5.6
Internal Link Dist (m)		407.3			561.2			306.1				206.7
Turn Bay Length (m)	55.0		20.0	55.0			10.0					
Base Capacity (vph)	265	767	663	559	1129		325	685				253
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	0.01	0.58	0.15	0.10	0.46		0.47	0.05				0.07

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	55.3
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.58
Intersection Signal Delay:	13.8
Intersection LOS:	B
Intersection Capacity Utilization:	68.0%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 3: New Amherst/Loveshin & Elgin



Lanes, Volumes, Timings
3: New Amherst/Loveshin & Elgin

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	659	241	43	661	5	92	4	33	11	3	1
Future Volume (vph)	3	659	241	43	661	5	92	4	33	11	3	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		20.0	55.0		0.0	10.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.865			0.992	
Flt Protected	0.950			0.950			0.950				0.964	
Satd. Flow (prot)	1825	1865	1617	1484	1846	0	1674	1205	0	0	1584	0
Flt Permitted	0.388			0.254			0.747				0.754	
Satd. Flow (perm)	745	1865	1617	397	1846	0	1317	1205	0	0	1239	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			128		1			36			1	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		431.3			585.2			330.1			230.7	
Travel Time (s)		25.9			35.1			23.8			16.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	1%	23%	4%	0%	9%	100%	31%	13%	0%	100%
Adj. Flow (vph)	3	716	262	47	718	5	100	4	36	12	3	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	716	262	47	723	0	100	40	0	0	16	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	26.3	26.3	26.3	8.0	26.3		17.4	17.4		17.4	17.4	
Total Split (s)	51.0	51.0	51.0	8.0	59.0		21.0	21.0		21.0	21.0	
Total Split (%)	63.8%	63.8%	63.8%	10.0%	73.8%		26.3%	26.3%		26.3%	26.3%	
Maximum Green (s)	42.7	42.7	42.7	5.0	50.7		13.6	13.6		13.6	13.6	
Yellow Time (s)	5.9	5.9	5.9	3.0	5.9		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.4	2.4	2.4	0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	8.3	8.3	8.3	3.0	8.3		7.4	7.4		7.4	7.4	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	Max	Max		None	None		None	None	

Lanes, Volumes, Timings
 3: New Amherst/Loveshin & Elgin

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)	7.0	7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0		11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0		0		0	0		0	0	
Act Effct Green (s)	43.3	43.3	43.3	56.7	53.5		11.6	11.6				11.6
Actuated g/C Ratio	0.58	0.58	0.58	0.76	0.72		0.16	0.16				0.16
v/c Ratio	0.01	0.66	0.26	0.12	0.55		0.49	0.18				0.08
Control Delay	8.7	16.2	5.7	4.3	9.4		39.3	13.7				28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0				0.0
Total Delay	8.7	16.2	5.7	4.3	9.4		39.3	13.7				28.3
LOS	A	B	A	A	A		D	B				C
Approach Delay		13.4			9.1			32.0				28.3
Approach LOS		B			A			C				C
Queue Length 50th (m)	0.2	70.7	8.9	1.6	52.2		13.8	0.5				1.9
Queue Length 95th (m)	1.4	117.5	21.5	4.6	90.0		28.2	8.5				7.1
Internal Link Dist (m)		407.3			561.2			306.1				206.7
Turn Bay Length (m)	55.0		20.0	55.0			10.0					
Base Capacity (vph)	432	1082	992	376	1324		243	252				230
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	0.01	0.66	0.26	0.13	0.55		0.41	0.16				0.07

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	74.5
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	13.2
Intersection LOS:	B
Intersection Capacity Utilization:	57.2%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 3: New Amherst/Loveshin & Elgin

