

5.6.3 Grade Separation Warrant Analysis

Based on the AADT and trains per day, the calculated train exposure index threshold of 200,000 is exceeded today and in 2041 at both the Austin Drive Stouffville GO Rail Crossing and the Clayton Drive Stouffville GO Rail Crossing. Exposure indices are provided in **Table 5-21**.

Table 5-21: Kennedy Road 2017 and 2041 Rail Exposure Indices

Year	Austin Drive Stouffville GO Rail Crossing			Clayton Drive Stouffville GO Rail Crossing		
	Trains per Day	AADT	Train Exposure Index	Trains per Day	AADT	Train Exposure Index
2016	18	28,600	516,800	34	31,350	1,065,900
2041	34 (RER)	52,350	1,884,600	180 (RER)	48,550	5,826,000

5.6.4 Supporting Information and Analysis – Austin Drive Stouffville GO Rail Crossing

5.6.4.1 INTERSECTION AND MIDBLOCK TRAFFIC CONDITIONS

During peak hours, traffic is extremely congested in the AM peak hour southbound approach at Carlton Road (segment v/c ratio of 0.9). In the PM peak hour, northbound traffic is heavy at the Austin Drive Stouffville GO Rail Crossing (between Austin Drive and Carlton Road with a segment v/c ratio of 0.99). As a result, queues potentially extend beyond the level crossing, which are then compounded when trains pass by. This results in additional queuing that impacts upstream intersection and accesses. AM and PM traffic intersection level of service and mid-block volume to capacity link ratios for existing conditions are detailed in **Section 4.6.2**, and **Section 4.6.3**, and future conditions are detailed in **Section 5.3.1**.

5.6.4.2 QUEUES ON KENNEDY ROAD AT THE AUSTIN DRIVE STOUFFVILLE GO RAIL CROSSING

Existing and future queuing analysis using Synchro was also completed based on an unconstrained demand scenario and assuming a 60 second gate closure time (based on past field observations at similar GO crossings).

Currently, a total of 2 GO trains cross Kennedy Road during each of the AM peak hour and PM peak hour according to the GO Train schedule. In 2041, with the implementation of all-day two-way service, Metrolinx forecasts an average of one train every 20 minutes operating in the peak direction between Lincolnville and Union Station, and one train every 60 minutes operating in the

non-peak hours between Mount Joy and Union Station. Therefore, an average of 3 trains is expected to be crossing during each of the AM and PM peak hours in the future conditions.

Under these assumptions, 95th percentile queues at the at-grade railway crossing north of Austin Drive were assessed. The results are presented in **Table 5-22**.

Table 5-22: Existing and Future (2041) 95th Percentile Queues near the Austin Drive Stouffville GO Rail Crossing

Location	AM Peak Hour 95 th Percentile Queues (m)		PM Peak Hour 95 th Percentile Queues (m)	
	Existing	2041	Existing	2041
Northbound at Austin Drive Stouffville GO Crossing	115	171	478	696
Southbound at Austin Drive Stouffville GO Crossing	391	576	185	286



Exhibit 5-13: Existing Peak Hour 95th Percentile Queues at Austin Drive Stouffville GO Rail Crossing

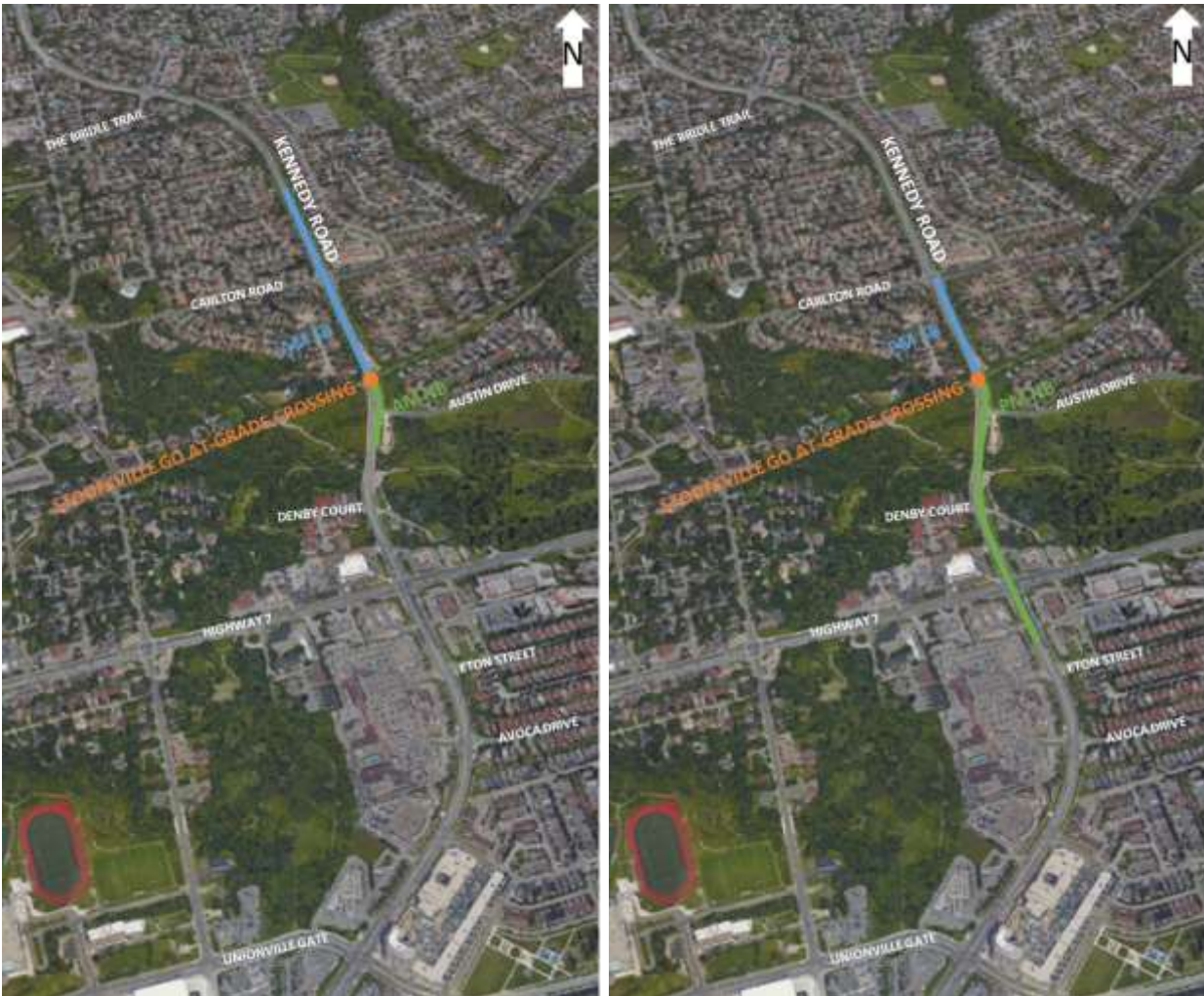


Exhibit 5-14: 2041 Peak Hour 95th Percentile Queues at Austin Drive Stouffville GO Rail Crossing

Queues at these existing critical locations are expected to increase significantly in future 2041 conditions. **Exhibit 5-13** and **Exhibit 5-14** illustrates the existing and future queue conditions at the Austin Drive Stouffville GO Rail Crossing. As such, 2041 conditions further support the need for grade separation at the at grade railway crossing.

5.6.4.3 COLLISION AND SAFETY ANALYSIS

A total of 57 collisions occurred from January 2011 to December 2015 near the railway crossing (from Carlton Road to Austin Drive). As shown in **Table 5-23**, 40 (70%) were property damage only collisions, and 17 (30%) were non-fatal injury collisions.

Table 5-23: Collisions near Austin Drive Stouffville GO Rail Crossing by Year and Severity (January 2011 to December 2015)

Location	Property Damage Only	Non-fatal Injury	Total
Carlton Road	20	13	33
Between Carlton Road and Austin Drive	6	0	6
Austin Drive	14	4	18
Total	40	17	57

6 out of the 57 collisions occurred at the railway crossing. Out of the 6 collisions, 6 (100%) were property damage only collisions, and 0 were non-fatal injury collision. **Table 5-24** shows the collisions at railway crossing by location and initial impact type. The majority of collisions were rear end collisions.

Table 5-24: Collisions at Austin Drive Stouffville GO Rail Crossing by Initial Impact Type (January 2011 to December 2015)

Location	Rear End	Sideswipe	Angle	Total
Between Carlton Road and Austin Drive	4	1	1	6

The rankings for these locations with respect to other locations along the Kennedy Road corridor are summarized in **Table 5-25**.

Table 5-25: Collision Rate Rankings for Intersections in Proximity to Austin Drive Stouffville GO Rail Crossing

Intersection	Rank	# of Intersections
Carlton Road	659	28
Austin Drive	760	28
Midblock	Rank	# of Midblock Segments
Between Carlton Road and Austin Drive	973	28

Pedestrian and cyclist collisions near the Austin Drive Stouffville GO Rail Crossing are summarized in **Table 5-26**. Between 2011 and 2015, 3 pedestrian and cyclist collisions occurred at intersections near the Austin Drive railway crossing, comprising over 3% of all pedestrian and cyclist collisions along the study corridor. Detailed information on collision statistics for vulnerable road users (pedestrians and cyclists) can be found in **Section 4.7.7**.

Table 5-26: Pedestrian and Cyclist Collisions at Austin Drive Stouffville GO Rail Crossing

Location	Pedestrian	Cyclist	Total	% Corridor Collisions
Carlton Road	0	3	3	7%
Austin Drive	0	0	0	0%
Total	0	3	3	7%

5.6.5 Supporting Information and Analysis – Clayton Drive Stouffville GO Crossing

5.6.5.1 INTERSECTION AND MIDBLOCK TRAFFIC CONDITIONS

During peak hours, traffic is somewhat congested in the AM peak period southbound approach at Denison Street (segment v/c ratio of 0.73). In the PM peak period, northbound traffic is also somewhat congested at the Stouffville GO crossing (between Gorvette Road and Clayton Drive, segment v/c ratio of 0.77). As a result, queues potentially extend beyond the level crossing, which are then compounded when trains pass by. This results in additional queuing that impacts upstream intersection and accesses. AM and PM traffic intersection level of service and mid-block volume to capacity link ratios for existing conditions are detailed in **Section 4.6.2**, and **Section 4.6.3**, and future conditions are detailed in **Section 5.3.1**.

5.6.5.2 QUEUES ON KENNEDY ROAD AT THE CLAYTON DRIVE STOUFFVILLE GO RAIL CROSSING

Existing and future queuing analysis using Synchro was also completed based on an unconstrained demand scenario and assuming a 180 second gate closure time (based on past field observations at similar GO crossings).

Currently, a total of 2 GO trains cross Kennedy Road during each of the AM peak hour and PM peak hour according to the GO Train schedule. In 2041, with the implementation of all-day two-way service, Metrolinx forecasts an average of one train every 15 minutes operating in the peak direction between Unionville and Union Station in both peak and non-peak hours. Therefore, an average of 4 trains is expected to be crossing during each of the AM and PM peak hours in the future conditions.

Under these assumptions, 95th percentile queues at the Clayton Drive Stouffville GO Rail Crossing were assessed. The results are presented in **Table 5-27**.

**Table 5-27: Existing and Future (2041) 95th Percentile Queues near Clayton Drive
Stouffville GO Rail Crossing**

Location	AM Peak Hour 95 th Percentile Queues (m)		PM Peak Hour 95 th Percentile Queues (m)	
	Existing	2041	Existing	2041
Northbound at Clayton Drive Stouffville GO Crossing	148	152	219	287
Southbound at Clayton Drive Stouffville GO Crossing	222	292	178	243

At the Clayton Drive Stouffville GO Rail Crossing, existing queues reach Denison Street in the southbound direction (AM) and pass Clayton Drive in the northbound direction (PM) during peak hour and peak direction. Queues in either direction are expected to spillover adjacent intersections within one kilometer of the crossing. **Exhibit 5-15** illustrates these queue conditions at the Clayton Drive Stouffville GO Rail Crossing. As such, existing conditions currently support the need for grade separation at the at grade railway crossing.



Exhibit 5-15: Existing Peak Hour 95th Percentile Queues at Clayton Drive Stouffville GO Rail Crossing

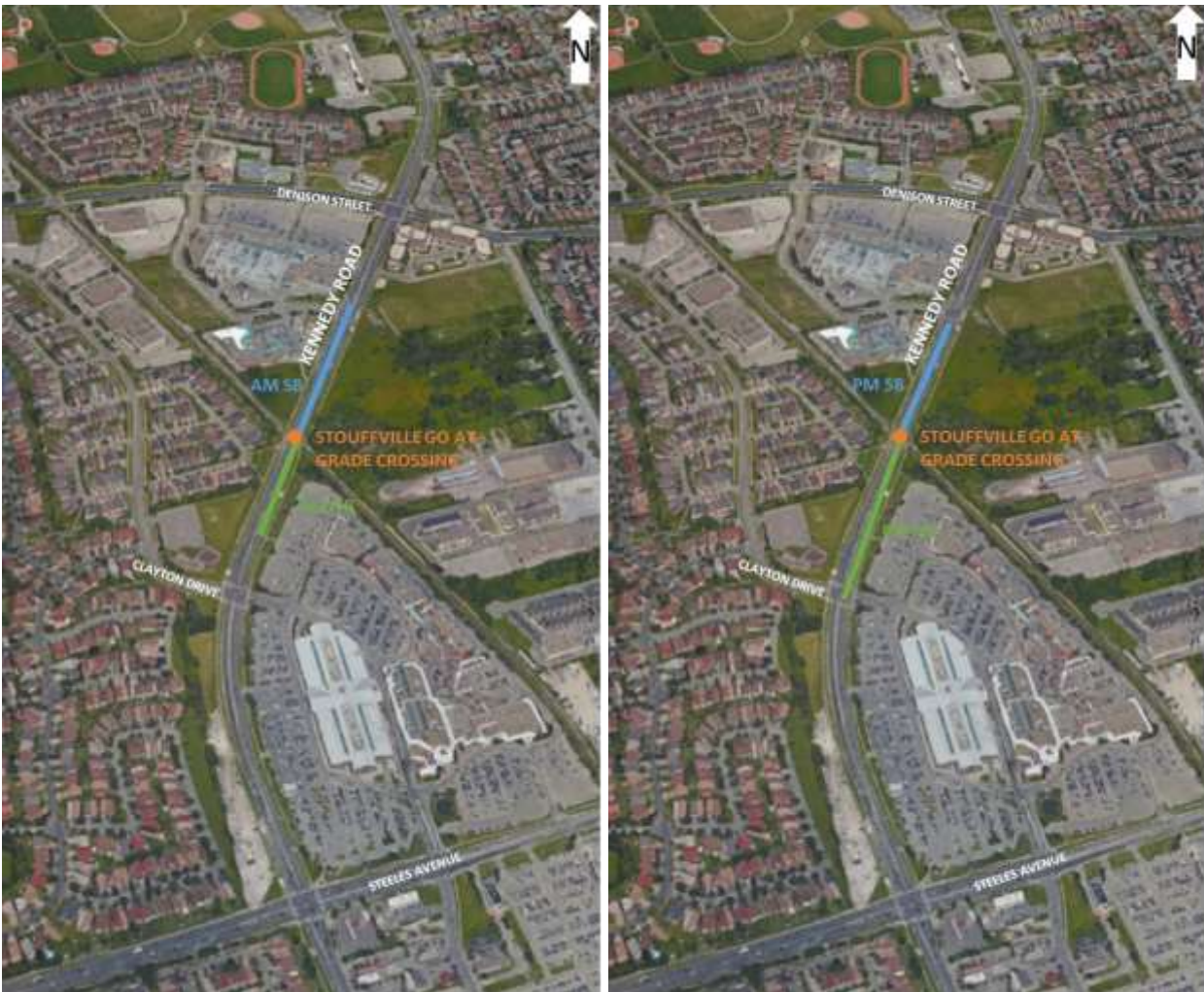


Exhibit 5-16: Future Peak Hour 95th Percentile Queues at Clayton Drive Stouffville GO Rail Crossing

Queues at these existing critical locations are expected to increase significantly in future 2041 conditions. **Exhibit 5-15** and **Exhibit 5-16** illustrates the existing and future queue conditions at the Clayton Drive Stouffville GO Rail Crossing. As such, 2041 conditions further support the need for grade separation at the at grade railway crossing.

5.6.5.3 COLLISION AND SAFETY ANALYSIS

A total of 75 collisions occurred from January 2011 to December 2015 near the railway crossing (from Gorvette Road to Clayton Drive). As shown in **Table 5-28**, 54 (72%) were property only collisions and 21 (28%) were non-fatal injury collisions.

Table 5-28: Collisions near Clayton Drive Stouffville GO Rail Crossing by Year and Severity (January 2011 to December 2015)

Location	Property Damage Only	Non-fatal Injury	Total
Gorvette Road	17	6	23
Between Gorvette Road to Clayton Drive	7	2	9
Clayton Drive	30	13	43
Total	54	21	75

9 out of the 75 collisions occurred at the railway crossing. Out of the 9 collisions, 7 (78%) were property damage only collisions, and 2 (22%) were non-fatal injury collisions. **Table 5-29** shows the collisions at the railway crossing by location and initial impact type. Similar to the Austin Drive Stouffville GO Rail Crossing, most collisions were rear end collisions.

Table 5-29: Collisions at Clayton Drive Stouffville GO Rail Crossing by Initial Impact Type (January 2011 to December 2015)

Location	Rear End	Sideswipe	Angle	Total
Between Gorvette Road to Clayton Drive	8	1	0	9

The rankings for these locations with respect to other locations along the Kennedy Road corridor are summarized in **Table 5-30**.

Table 5-30: Collision Rate Rankings for Intersections in Proximity to Clayton Drive Stouffville GO Rail Crossing

Intersection	Rank	# of Intersections
Gorvette Road	764	28
Clayton Drive	259	28
Midblock	Rank	# of Midblock Segments
Between Gorvette Road and Clayton Drive	502	28

Pedestrian and cyclist collisions near the Clayton Drive Stouffville GO Rail Crossing are summarized in **Table 5-31**. Between 2011 and 2015, 3 pedestrian and cyclist collisions occurred at intersections near the Clayton Drive railway crossing, comprising 7% of all pedestrian and cyclist collisions along the study corridor. Detailed information on collision statistics for vulnerable road users (pedestrians and cyclists) can be found in **Section 4.7.7**.

Table 5-31: Pedestrian and Cyclist Collisions at Clayton Drive Railway Crossing

Location	Pedestrian	Cyclist	Total	% Corridor Collisions
Gorvette Road	1	0	1	2%
Clayton Drive	0	2	2	5%
Total	1	2	3	7%

5.6.6 Pedestrian and Cyclist Conditions

There are continuous sidewalks on both the north and south side of Kennedy Road, but no dedicated cycling facilities. Kennedy Road across the rail tracks at both crossings is also a high volume pedestrian route, due to a number of land uses that tend to generate higher rates of pedestrian, cyclist, and transit trips including:

- Pacific Mall and Market Village
- Denison Centre
- Retail and commercial land use at Kennedy Road and Highway 7
- The Bridle Post Shopping Centre
- Milliken Mills High School

Further, pedestrian and cyclist conditions are less than ideal due to narrow sidewalks with limited buffer space between high traffic volumes on Kennedy Road. Based on a pedestrian and cyclist quality of service methodology employed for the Kennedy Road EA study, the Level of Service provided for both pedestrians and cyclists is “F” across the rail tracks.

Existing sidewalks, pedestrian demand, pedestrian, cyclist, and transit trip generators, and pedestrian and cyclist LOS maps are provided in **Section 4.4.3** (pedestrians) and **Exhibit 4-29** through **Exhibit 4-31** in **Section 4.5.3** (cyclists).

5.6.7 Summary and Recommendation

In its Regional Express Rail Level Crossings Strategy, Metrolinx follows a weighted assessment process that encompasses four components;

- Usage and existing conditions (60%);
- Operations (20%);
- Social/environmental considerations (10%);
- Cost/constructability (10%).

The assessment considers the existing and future exposure index as a large component of its usage and existing conditions category, comprising 30% of the overall weight. The methodology followed in this memorandum outlines the usage and existing conditions, and the operations of the Kennedy Road crossing.

Based on daily and future traffic volumes the existing rail exposure index is 516,800 at the Austin Drive Stouffville GO Rail Crossing and 1,065,900 at the Clayton Drive Stouffville GO Rail

Crossing, which is beyond the desirable threshold and grade separation should be considered. The future exposure index takes into account future all-day two-way GO Train service (up to Unionville Station), increasing the number of trains threefold. Further investigation was also completed on traffic operations, collision and safety, and pedestrian/cyclist conditions to supplement the rail exposure index analysis. Currently in the AM and PM peak periods, traffic delays and queuing occur in both directions at both Stouffville GO Rail Crossings. The collision and safety analysis completed in the areas adjacent to both Stouffville GO Rail Crossings noted that these sections of the corridor had modest collision rates in comparison to the rest of the study corridor, warranting further investigation into mitigation and improvements. An evaluation of pedestrian and cyclist conditions was completed for adjacent areas along Kennedy Road in proximity to the Stouffville GO Rail Crossings and noted that there were several major trip generators near the crossing but undesirable overall facilities. Current traffic volumes along Kennedy Road in both segments of the study corridor are high and continue to grow. The number of train crossings per-day is also expected to grow based on Metrolinx's RER Plan, reflected in a high future exposure index value. The impacts resulting from these higher traffic volumes and more frequent trains include longer queues and potential to increase the number and frequency of collision incidents to both road users and pedestrians.

Based on the analysis conducted and the above-factors analyzed, it is recommended that grade separation be pursued as the preferred alternative at both the Austin Drive and Clayton Drive Stouffville GO Rail Crossings.

Appendix A

AM and PM Peak Hour Synchro Reports

*Class Environmental Assessment for Kennedy
Road from Steeles Avenue to Major Mackenzie
Drive*



Lanes, Volumes, Timings
1: Kennedy Rd & Steeles Ave E

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	763	196	109	1289	97	226	711	72	174	842	147
Future Volume (vph)	136	763	196	109	1289	97	226	711	72	174	842	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	92.0		0.0	56.0		0.0	43.0		25.0	166.0		88.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.93	0.98	0.99		0.99		0.95	0.99		0.96
Fr't			0.850		0.990				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	3476	1555	1722	4954	0	1706	3544	1458	1789	3579	1585
Flt Permitted	0.082			0.230			0.156			0.228		
Satd. Flow (perm)	153	3476	1446	410	4954	0	279	3544	1379	424	3579	1529
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			204		11				102			132
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		438.0			403.1			543.5			456.9	
Travel Time (s)		26.3			24.2			32.6			27.4	
Confl. Peds. (#/hr)	102		76	76		102	27		48	48		27
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	5%	5%	6%	4%	6%	7%	3%	12%	2%	2%	3%
Adj. Flow (vph)	142	795	204	114	1343	101	235	741	75	181	877	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	142	795	204	114	1444	0	235	741	75	181	877	153
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Minimum Split (s)	11.0	56.0	56.0	11.0	56.0		11.0	50.0	50.0	11.0	50.0	50.0
Total Split (s)	11.0	56.0	56.0	11.0	56.0		11.0	50.0	50.0	11.0	50.0	50.0
Total Split (%)	8.6%	43.8%	43.8%	8.6%	43.8%		8.6%	39.1%	39.1%	8.6%	39.1%	39.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0		1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0		4.0	7.0	7.0	4.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	59.0	49.0	49.0	59.0	49.0		53.0	43.0	43.0	53.0	43.0	43.0
Actuated g/C Ratio	0.46	0.38	0.38	0.46	0.38		0.41	0.34	0.34	0.41	0.34	0.34
v/c Ratio	0.89	0.60	0.30	0.44	0.76		1.22	0.62	0.14	0.72	0.73	0.25
Control Delay	72.8	33.9	4.6	23.5	37.2		163.1	38.5	3.0	42.3	41.7	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.8	33.9	4.6	23.5	37.2		163.1	38.5	3.0	42.3	41.7	8.1
LOS	E	C	A	C	D		F	D	A	D	D	A
Approach Delay		33.5			36.2			63.8			37.5	
Approach LOS		C			D			E			D	
Queue Length 50th (m)	19.2	83.6	0.0	15.2	114.0		~49.3	82.2	0.0	27.7	102.0	3.6
Queue Length 95th (m)	#57.6	104.0	15.1	26.0	132.2		#99.2	102.7	5.8	#48.5	125.5	18.4
Internal Link Dist (m)		414.0			379.1			519.5			432.9	

Lanes, Volumes, Timings
1: Kennedy Rd & Steeles Ave E

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	92.0			56.0			43.0		25.0	166.0		88.0
Base Capacity (vph)	159	1330	679	260	1903		193	1190	530	250	1202	601
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.60	0.30	0.44	0.76		1.22	0.62	0.14	0.72	0.73	0.25

Intersection Summary

Area Type: Other

Cycle Length: 128

Actuated Cycle Length: 128

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

Natural Cycle: 130

Control Type: Pretimed

Maximum v/c Ratio: 1.22

Intersection Signal Delay: 41.8

Intersection LOS: D

Intersection Capacity Utilization 115.1%

ICU Level of Service H

Analysis Period (min) 15

~ 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.

Splits and Phases: 1: Kennedy Rd & Steeles Ave E

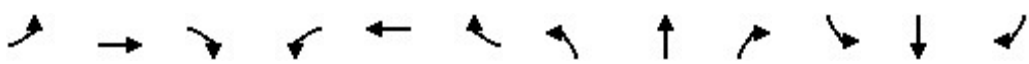
	Ø1		Ø2 (R)		Ø3		Ø4
11 s		50 s		11 s		56 s	
	Ø5		Ø6 (R)		Ø7		Ø8
11 s		50 s		11 s		56 s	

Lanes, Volumes, Timings

2: Kennedy Rd & Clayton Dr/Pacific Mall Access

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	55	181	48	22	13	162	707	46	171	929	122
Future Volume (vph)	115	55	181	48	22	13	162	707	46	171	929	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	57.0		0.0	0.0		0.0	127.0		70.0	90.0		42.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.98	0.96		0.97	0.99		0.99		0.97	0.99		0.93
Frt		0.885			0.943				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	1582	0	1825	1735	0	1772	3476	1585	1789	3510	1617
Flt Permitted	0.733			0.331			0.252			0.343		
Satd. Flow (perm)	1337	1582	0	618	1735	0	465	3476	1534	642	3510	1496
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		127			14				67			95
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		148.7			168.9			456.9			280.9	
Travel Time (s)		13.4			15.2			27.4			16.9	
Confl. Peds. (#/hr)	21		40	40		21	25		15	15		25
Confl. Bikes (#/hr)			2	2			2		3	3		2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	2%	3%	0%	0%	8%	3%	5%	3%	2%	4%	1%
Adj. Flow (vph)	120	57	189	50	23	14	169	736	48	178	968	127
Shared Lane Traffic (%)												
Lane Group Flow (vph)	120	246	0	50	37	0	169	736	48	178	968	127
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	30.0	30.0	7.0	30.0	30.0
Minimum Split (s)	42.0	42.0		42.0	42.0		11.0	37.0	37.0	11.0	37.0	37.0
Total Split (s)	43.0	43.0		43.0	43.0		12.0	75.0	75.0	12.0	75.0	75.0
Total Split (%)	33.1%	33.1%		33.1%	33.1%		9.2%	57.7%	57.7%	9.2%	57.7%	57.7%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	3.5	3.5		3.5	3.5		1.0	2.5	2.5	1.0	2.5	2.5
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)	7.0	7.0		7.0	7.0		4.0	7.0	7.0	4.0	7.0	7.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	22.2	22.2		22.2	22.2		92.7	81.6	81.6	92.8	81.6	81.6
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.71	0.63	0.63	0.71	0.63	0.63
v/c Ratio	0.53	0.66		0.48	0.12		0.41	0.34	0.05	0.34	0.44	0.13
Control Delay	54.8	30.4		59.4	28.2		9.5	13.7	1.8	8.2	15.1	4.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	30.4		59.4	28.2		9.5	13.7	1.8	8.2	15.1	4.9
LOS	D	C		E	C		A	B	A	A	B	A

Lanes, Volumes, Timings

2: Kennedy Rd & Clayton Dr/Pacific Mall Access

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		38.4			46.1			12.4			13.1	
Approach LOS		D			D			B			B	
Queue Length 50th (m)	29.8	29.9		12.3	5.3		8.7	38.8	0.0	9.2	55.6	2.6
Queue Length 95th (m)	42.7	50.1		22.4	13.1		25.0	72.6	3.6	26.2	101.4	13.8
Internal Link Dist (m)		124.7			144.9			432.9			256.9	
Turn Bay Length (m)	57.0						127.0		70.0	90.0		42.0
Base Capacity (vph)	370	529		171	490		417	2180	987	534	2203	974
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	0.32	0.47		0.29	0.08		0.41	0.34	0.05	0.33	0.44	0.13

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 35 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 17.4

Intersection LOS: B

Intersection Capacity Utilization 89.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Kennedy Rd & Clayton Dr/Pacific Mall Access



Lanes, Volumes, Timings
3: Kennedy Rd & Corvette Rd

Existing Condition - AM Peak Hour
Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	29	50	94	690	1075	61	
Future Volume (vph)	29	50	94	690	1075	61	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0	71.0			41.0	
Storage Lanes	1	1	1			1	
Taper Length (m)	2.5		2.5				
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	
Ped Bike Factor	0.99	0.98				0.85	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1825	1633	1738	3476	3544	1601	
Flt Permitted	0.950		0.162				
Satd. Flow (perm)	1816	1601	296	3476	3544	1362	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		62				43	
Link Speed (k/h)	50			60	60		
Link Distance (m)	180.2			277.2	243.2		
Travel Time (s)	13.0			16.6	14.6		
Confl. Peds. (#/hr)	4	6	54			54	
Confl. Bikes (#/hr)			3			3	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	
Heavy Vehicles (%)	0%	0%	5%	5%	3%	2%	
Adj. Flow (vph)	36	62	116	852	1327	75	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	36	62	116	852	1327	75	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm	
Protected Phases	4		1	6	2		8
Permitted Phases		4	6			2	
Detector Phase	4	4	1	6	2	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	7.0	30.0	30.0	30.0	10.0
Minimum Split (s)	37.0	37.0	11.0	37.0	37.0	37.0	37.0
Total Split (s)	38.0	38.0	12.0	92.0	80.0	80.0	38.0
Total Split (%)	29.2%	29.2%	9.2%	70.8%	61.5%	61.5%	29%
Yellow Time (s)	3.5	3.5	3.0	4.5	4.5	4.5	3.5
All-Red Time (s)	3.5	3.5	1.0	2.5	2.5	2.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	4.0	7.0	7.0	7.0	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	14.0	14.0	108.4	106.8	93.9	93.9	
Actuated g/C Ratio	0.11	0.11	0.83	0.82	0.72	0.72	
v/c Ratio	0.18	0.27	0.35	0.30	0.52	0.08	
Control Delay	51.9	13.7	6.4	4.7	15.9	10.1	
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	
Total Delay	51.9	13.7	6.4	4.7	16.0	10.1	
LOS	D	B	A	A	B	B	

Lanes, Volumes, Timings
3: Kennedy Rd & Gorvette Rd

Existing Condition - AM Peak Hour
Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Approach Delay	27.7			4.9	15.7		
Approach LOS	C			A	B		
Queue Length 50th (m)	8.9	0.0	4.0	22.5	89.6	3.6	
Queue Length 95th (m)	14.7	8.8	13.9	50.8	117.7	m9.0	
Internal Link Dist (m)	156.2			253.2	219.2		
Turn Bay Length (m)			71.0			41.0	
Base Capacity (vph)	435	428	337	2855	2560	995	
Starvation Cap Reductn	0	0	0	0	308	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	0.14	0.34	0.30	0.59	0.08	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 96 (74%), Referenced to phase 2:SBT and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.52
Intersection Signal Delay: 11.9
Intersection LOS: B
Intersection Capacity Utilization 61.9%
ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Kennedy Rd & Gorvette Rd



Lanes, Volumes, Timings
4: Kennedy Rd & Denison St/Dennison St

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	325	58	129	742	114	118	620	60	281	1009	336
Future Volume (vph)	122	325	58	129	742	114	118	620	60	281	1009	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	48.0		0.0	150.0		39.0	80.0		44.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.99		0.98	0.98				0.88	0.97		0.88
Frt		0.977			0.980				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	3368	0	1807	3431	0	1772	3476	1633	1789	3544	1617
Flt Permitted	0.119			0.366			0.091			0.277		
Satd. Flow (perm)	229	3368	0	679	3431	0	170	3476	1432	507	3544	1426
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			13				105			207
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		322.0			182.9			243.2			339.7	
Travel Time (s)		23.2			13.2			14.6			20.4	
Confl. Peds. (#/hr)	86		44	44		86	83		67	67		83
Confl. Bikes (#/hr)							1					1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	0%	5%	4%	1%	2%	7%	3%	5%	0%	2%	3%	1%
Adj. Flow (vph)	151	401	72	159	916	141	146	765	74	347	1246	415
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	473	0	159	1057	0	146	765	74	347	1246	415
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8			6		6	2		2
Detector Phase	7	4		3	8		1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	30.0	30.0	7.0	30.0	30.0
Minimum Split (s)	11.0	39.5		11.0	39.5		11.0	37.5	37.5	11.0	37.5	37.5
Total Split (s)	12.0	41.0		12.0	41.0		12.0	65.0	65.0	12.0	65.0	65.0
Total Split (%)	9.2%	31.5%		9.2%	31.5%		9.2%	50.0%	50.0%	9.2%	50.0%	50.0%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	3.5		1.0	3.5		1.0	3.0	3.0	1.0	3.0	3.0
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)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	45.0	33.5		45.0	33.5		69.0	57.5	57.5	69.0	57.5	57.5
Actuated g/C Ratio	0.35	0.26		0.35	0.26		0.53	0.44	0.44	0.53	0.44	0.44
v/c Ratio	0.85	0.54		0.52	1.18		0.78	0.50	0.11	1.00	0.80	0.56
Control Delay	68.8	42.9		35.5	135.8		43.7	27.4	5.7	79.1	51.5	30.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.8	42.9		35.5	135.8		43.7	27.4	5.7	79.1	51.5	30.8
LOS	E	D		D	F		D	C	A	E	D	C

Lanes, Volumes, Timings
4: Kennedy Rd & Denison St/Dennison St

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		49.1			122.7			28.1			52.0	
Approach LOS		D			F			C			D	
Queue Length 50th (m)	26.1	53.4		27.6	~170.2		20.0	77.8	0.7	70.8	163.2	63.7
Queue Length 95th (m)	#45.5	62.1		39.1	#177.8		#36.3	84.3	10.3	#116.3	177.8	90.9
Internal Link Dist (m)		298.0			158.9			219.2			315.7	
Turn Bay Length (m)	60.0			48.0			150.0		39.0	80.0		44.0
Base Capacity (vph)	177	879		304	893		188	1537	691	347	1567	746
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	0.85	0.54		0.52	1.18		0.78	0.50	0.11	1.00	0.80	0.56

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.18

Intersection Signal Delay: 64.5

Intersection LOS: E

Intersection Capacity Utilization 93.1%

ICU Level of Service F

Analysis Period (min) 15

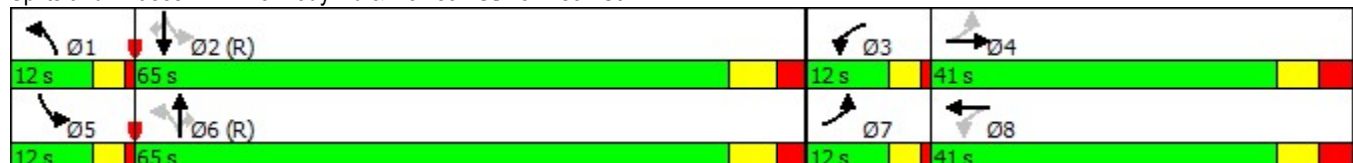
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Kennedy Rd & Denison St/Dennison St



Lanes, Volumes, Timings
5: Kennedy Rd & Milliken Mills HS S Access

Existing Condition - AM Peak Hour
Kennedy Road EA

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	20	0	850	1530	20
Future Volume (vph)	0	20	0	850	1530	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.865			0.998	
Flt Protected						
Satd. Flow (prot)	0	1662	0	3650	3643	0
Flt Permitted						
Satd. Flow (perm)	0	1662	0	3650	3643	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	82.2			339.7	142.9	
Travel Time (s)	5.9			20.4	8.6	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	25	0	1049	1889	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	25	0	1049	1914	0
Sign Control	Yield			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	52.9%			ICU Level of Service A		
Analysis Period (min)	15					

Lanes, Volumes, Timings

6: Kennedy Rd & Milliken Mills HS N Access/Highglen Ave

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	106	50	185	185	158	85	761	13	25	1255	22
Future Volume (vph)	38	106	50	185	185	158	85	761	13	25	1255	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	53.0		0.0	75.0		0.0	90.0		63.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.98		0.97	0.99			1.00				0.89
Frt		0.952			0.931			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1797	0	1807	1754	0	1825	3462	0	1825	3510	1633
Flt Permitted	0.290			0.410			0.058			0.249		
Satd. Flow (perm)	556	1797	0	758	1754	0	111	3462	0	478	3510	1453
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			36			2				105
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		183.2			282.0			142.9			266.6	
Travel Time (s)		16.5			25.4			8.6			16.0	
Confl. Peds. (#/hr)	4		32	32		4	35		9	9		35
Confl. Bikes (#/hr)	5		1	1		5	1		2	2		1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	5%	8%	0%	4%	0%
Adj. Flow (vph)	47	131	62	228	228	195	105	940	16	31	1549	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	193	0	228	423	0	105	956	0	31	1549	27
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	30.0		7.0	30.0	30.0
Minimum Split (s)	37.5	37.5		11.0	37.5		11.0	37.0		11.0	37.0	37.0
Total Split (s)	39.0	39.0		12.0	51.0		12.0	63.0		16.0	67.0	67.0
Total Split (%)	30.0%	30.0%		9.2%	39.2%		9.2%	48.5%		12.3%	51.5%	51.5%
Yellow Time (s)	3.5	3.5		3.0	3.5		3.0	4.5		3.0	4.5	4.5
All-Red Time (s)	4.0	4.0		1.0	4.0		1.0	2.5		1.0	2.5	2.5
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)	7.5	7.5		4.0	7.5		4.0	7.0		4.0	7.0	7.0
Lead/Lag	Lag	Lag		Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	22.5	22.5		38.0	34.5		82.4	74.3		79.1	68.9	68.9
Actuated g/C Ratio	0.17	0.17		0.29	0.27		0.63	0.57		0.61	0.53	0.53
v/c Ratio	0.49	0.59		0.80	0.86		0.60	0.48		0.09	0.83	0.03
Control Delay	63.3	51.3		58.8	58.3		51.6	14.4		6.9	28.4	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	63.3	51.3		58.8	58.3		51.6	14.4		6.9	28.4	0.2
LOS	E	D		E	E		D	B		A	C	A

Lanes, Volumes, Timings

6: Kennedy Rd & Milliken Mills HS N Access/Highglen Ave

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		53.7			58.4			18.0			27.5	
Approach LOS		D			E			B			C	
Queue Length 50th (m)	11.0	41.9		47.1	95.3		13.2	38.3		1.9	173.8	0.0
Queue Length 95th (m)	19.9	53.7		56.4	105.5		m24.4	m99.4		2.8	195.2	m0.2
Internal Link Dist (m)		159.2			258.0			118.9			242.6	
Turn Bay Length (m)	32.0			53.0			75.0			90.0		63.0
Base Capacity (vph)	134	448		286	610		180	1978		431	1861	820
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	0.43		0.80	0.69		0.58	0.48		0.07	0.83	0.03

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 35 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 32.1

Intersection LOS: C

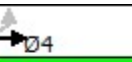
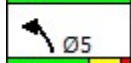
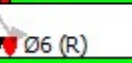
Intersection Capacity Utilization 90.8%

ICU Level of Service E

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kennedy Rd & Milliken Mills HS N Access/Highglen Ave

							
16 s		63 s		12 s		39 s	
							
12 s		67 s		51 s			

Lanes, Volumes, Timings

7: Kennedy Rd & Milliken Mills Community Centre/Lee Ave

Existing Condition - AM Peak Hour

Kennedy Road EA

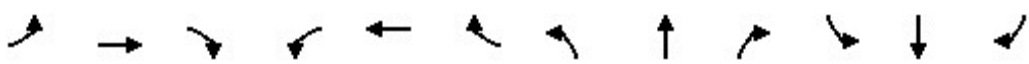
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	7	76	25	42	213	51	901	9	19	1201	117
Future Volume (vph)	59	7	76	25	42	213	51	901	9	19	1201	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		37.0	90.0		0.0	72.0		54.0
Storage Lanes	1		0	0		1	1		0	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99			1.00	0.98	1.00	1.00		1.00		0.96
Frt		0.863				0.850		0.998				0.850
Flt Protected	0.950				0.982		0.950			0.950		
Satd. Flow (prot)	1755	1635	0	0	1887	1633	1825	3503	0	1722	3510	1617
Flt Permitted	0.709				0.840		0.189			0.277		
Satd. Flow (perm)	1304	1635	0	0	1612	1606	363	3503	0	501	3510	1560
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		82				162		2				127
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		87.8			315.9			266.6			285.1	
Travel Time (s)		7.9			28.4			16.0			17.1	
Confl. Peds. (#/hr)	3		2	2		3	6		2	2		6
Confl. Bikes (#/hr)									3	3		
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 (%)	4%	0%	0%	0%	0%	0%	0%	4%	0%	6%	4%	1%
Adj. Flow (vph)	64	8	83	27	46	232	55	979	10	21	1305	127
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	91	0	0	73	232	55	989	0	21	1305	127
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	30.0	30.0		30.0	30.0	30.0
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	37.0	37.0		37.0	37.0	37.0
Total Split (s)	35.0	35.0		35.0	35.0	35.0	95.0	95.0		95.0	95.0	95.0
Total Split (%)	26.9%	26.9%		26.9%	26.9%	26.9%	73.1%	73.1%		73.1%	73.1%	73.1%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	3.5	3.5		3.5	3.5	3.5	2.5	2.5		2.5	2.5	2.5
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)	7.0	7.0			7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)	14.6	14.6			14.6	14.6	101.4	101.4		101.4	101.4	101.4
Actuated g/C Ratio	0.11	0.11			0.11	0.11	0.78	0.78		0.78	0.78	0.78
v/c Ratio	0.44	0.36			0.40	0.72	0.20	0.36		0.05	0.48	0.10
Control Delay	61.2	15.9			58.3	29.8	3.0	1.8		5.1	6.3	1.1
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	61.2	15.9			58.3	29.8	3.0	1.8		5.1	6.3	1.1
LOS	E	B			E	C	A	A		A	A	A

Lanes, Volumes, Timings

7: Kennedy Rd & Milliken Mills Community Centre/Lee Ave

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		34.6			36.7			1.9			5.9	
Approach LOS		C			D			A			A	
Queue Length 50th (m)	16.0	2.1			18.1	17.4	0.8	7.1		0.9	45.5	0.0
Queue Length 95th (m)	27.4	16.3			29.7	40.6	m2.7	16.1		4.5	94.1	5.8
Internal Link Dist (m)		63.8			291.9			242.6			261.1	
Turn Bay Length (m)						37.0	90.0			72.0		54.0
Base Capacity (vph)	280	416			347	473	282	2732		390	2737	1244
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	0.23	0.22			0.21	0.49	0.20	0.36		0.05	0.48	0.10

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 9.1

Intersection LOS: A

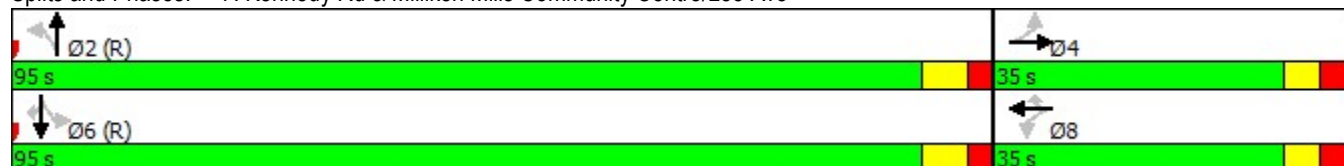
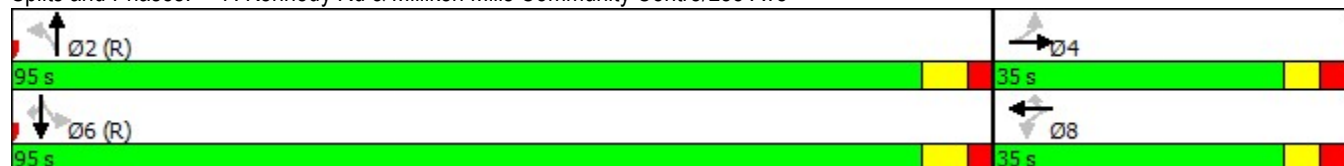
Intersection Capacity Utilization 77.1%

ICU Level of Service D

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Kennedy Rd & Milliken Mills Community Centre/Lee Ave

	
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Lanes, Volumes, Timings
8: Kennedy Rd & 14th Ave

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	508	106	115	1199	231	189	802	77	194	995	120
Future Volume (vph)	88	508	106	115	1199	231	189	802	77	194	995	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	64.0		58.0	50.0		45.0	65.0		60.0	50.0		44.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98	1.00		0.98	1.00		0.97	1.00		0.95
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	3510	1585	1789	3614	1585	1738	3510	1601	1789	3510	1570
Flt Permitted	0.079			0.360			0.087			0.176		
Satd. Flow (perm)	146	3510	1548	675	3614	1548	159	3510	1555	330	3510	1498
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115			102			97			97
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		504.0			494.8			285.1			290.2	
Travel Time (s)		36.3			35.6			17.1			17.4	
Confl. Peds. (#/hr)	8		9	9		8	28		14	14		28
Confl. Bikes (#/hr)	2					2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	3%	2%	1%	3%	5%	4%	2%	2%	4%	4%
Adj. Flow (vph)	96	552	115	125	1303	251	205	872	84	211	1082	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	552	115	125	1303	251	205	872	84	211	1082	130
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	39.5	39.5	11.0	39.5	39.5	11.0	41.5	41.5	11.0	41.5	41.5
Total Split (s)	12.0	58.0	58.0	12.0	58.0	58.0	12.0	58.0	58.0	12.0	58.0	58.0
Total Split (%)	8.6%	41.4%	41.4%	8.6%	41.4%	41.4%	8.6%	41.4%	41.4%	8.6%	41.4%	41.4%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	62.0	50.6	50.6	62.0	50.6	50.6	62.0	50.5	50.5	62.0	50.5	50.5
Actuated g/C Ratio	0.44	0.36	0.36	0.44	0.36	0.36	0.44	0.36	0.36	0.44	0.36	0.36
v/c Ratio	0.62	0.44	0.18	0.35	1.00	0.40	1.28	0.69	0.14	0.92	0.85	0.22
Control Delay	40.8	35.3	5.8	24.1	68.9	21.4	192.5	41.5	4.5	70.2	49.3	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.8	35.3	5.8	24.1	68.9	21.4	192.5	41.5	4.5	70.2	49.3	10.4
LOS	D	D	A	C	E	C	F	D	A	E	D	B

Lanes, Volumes, Timings
8: Kennedy Rd & 14th Ave

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		31.5			58.4			65.5			48.8	
Approach LOS		C			E			E			D	
Queue Length 50th (m)	14.6	60.7	0.0	19.3	189.1	29.8	~53.9	107.6	0.0	34.3	145.1	6.0
Queue Length 95th (m)	#30.3	77.2	12.8	31.6	#239.5	53.5	#104.6	130.8	8.6	#74.2	173.5	20.2
Internal Link Dist (m)		480.0			470.8			261.1			266.2	
Turn Bay Length (m)	64.0		58.0	50.0		45.0	65.0		60.0	50.0		44.0
Base Capacity (vph)	156	1267	632	362	1306	624	160	1266	622	229	1266	602
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.44	0.18	0.35	1.00	0.40	1.28	0.69	0.14	0.92	0.85	0.22

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 110 (79%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.28

Intersection Signal Delay: 53.3

Intersection LOS: D

Intersection Capacity Utilization 97.2%

ICU Level of Service F

Analysis Period (min) 15

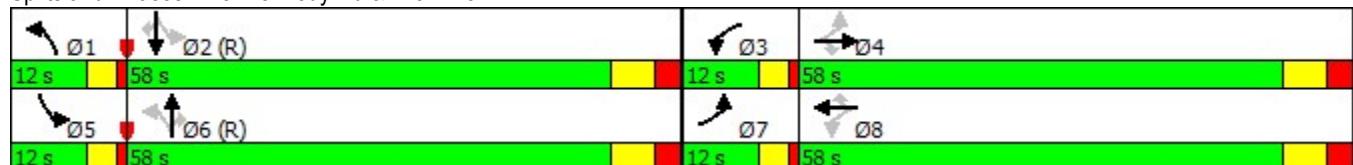
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 8: Kennedy Rd & 14th Ave



Lanes, Volumes, Timings
9: Kennedy Rd & Duffield Dr

Existing Condition - AM Peak Hour
Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	88	65	109	988	1371	550	
Future Volume (vph)	88	65	109	988	1371	550	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	65.0	0.0	63.0			52.0	
Storage Lanes	1	1	1			1	
Taper Length (m)	2.5		2.5				
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	
Ped Bike Factor	1.00	0.98	1.00			0.97	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1738	1471	1738	3510	3544	1617	
Flt Permitted	0.950		0.148				
Satd. Flow (perm)	1731	1443	271	3510	3544	1570	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		54				501	
Link Speed (k/h)	50			60	60		
Link Distance (m)	324.2			290.2	340.2		
Travel Time (s)	23.3			17.4	20.4		
Confl. Peds. (#/hr)	3	5	4			4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	5%	11%	5%	4%	3%	1%	
Adj. Flow (vph)	96	71	118	1074	1490	598	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	96	71	118	1074	1490	598	
Turn Type	Prot	Perm	Perm	NA	NA	Perm	
Protected Phases	4			6	2		8
Permitted Phases		4	6			2	
Detector Phase	4	4	6	6	2	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	40.0	40.0	40.0	40.0	10.0
Minimum Split (s)	35.0	35.0	47.0	47.0	47.0	47.0	35.0
Total Split (s)	36.0	36.0	94.0	94.0	94.0	94.0	36.0
Total Split (%)	27.7%	27.7%	72.3%	72.3%	72.3%	72.3%	28%
Yellow Time (s)	3.5	3.5	4.5	4.5	4.5	4.5	3.5
All-Red Time (s)	3.5	3.5	2.5	2.5	2.5	2.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max	None
Act Effct Green (s)	15.1	15.1	100.9	100.9	100.9	100.9	
Actuated g/C Ratio	0.12	0.12	0.78	0.78	0.78	0.78	
v/c Ratio	0.48	0.33	0.56	0.39	0.54	0.45	
Control Delay	59.9	21.4	21.2	5.9	14.0	5.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	59.9	21.4	21.2	5.9	14.0	5.5	
LOS	E	C	C	A	B	A	
Approach Delay	43.5			7.4	11.5		

Lanes, Volumes, Timings
9: Kennedy Rd & Duffield Dr

Existing Condition - AM Peak Hour
Kennedy Road EA



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Approach LOS	D			A			B
Queue Length 50th (m)	23.9	4.1	9.1	35.2	154.0	39.7	
Queue Length 95th (m)	36.5	16.3	#52.8	75.0	207.3	87.1	
Internal Link Dist (m)	300.2			266.2	316.2		
Turn Bay Length (m)	65.0		63.0			52.0	
Base Capacity (vph)	387	363	210	2724	2750	1330	
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	0.25	0.20	0.56	0.39	0.54	0.45	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 79 (61%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 11.7

Intersection LOS: B

Intersection Capacity Utilization 99.4%

ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 9: Kennedy Rd & Duffield Dr



Lanes, Volumes, Timings
10: Kennedy Rd & 407 EB Off-Ramp

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	0	187	0	0	0	0	1057	17	0	1761	200
Future Volume (vph)	141	0	187	0	0	0	0	1057	17	0	1761	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		300.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor			0.98									0.97
Frt			0.850					0.998				0.850
Flt Protected	0.950											
Satd. Flow (prot)	3161	0	1555	0	0	0	0	3502	0	0	3579	1633
Flt Permitted	0.950											
Satd. Flow (perm)	3161	0	1529	0	0	0	0	3502	0	0	3579	1589
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			38					3				220
Link Speed (k/h)		60			48			60			60	
Link Distance (m)		436.7			245.1			340.2			345.9	
Travel Time (s)		26.2			18.4			20.4			20.8	
Confl. Peds. (#/hr)			3	3			3					3
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	12%	0%	5%	0%	0%	0%	0%	4%	6%	0%	2%	0%
Adj. Flow (vph)	155	0	205	0	0	0	0	1162	19	0	1935	220
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	0	205	0	0	0	0	1181	0	0	1935	220
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							6			2	
Permitted Phases			4									2
Detector Phase	4		4					6			2	2
Switch Phase												
Minimum Initial (s)	10.0		10.0					15.0			15.0	15.0
Minimum Split (s)	31.5		31.5					34.5			34.5	34.5
Total Split (s)	32.0		32.0					98.0			98.0	98.0
Total Split (%)	24.6%		24.6%					75.4%			75.4%	75.4%
Yellow Time (s)	4.5		4.5					4.5			4.5	4.5
All-Red Time (s)	2.0		2.0					3.0			3.0	3.0
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					7.5			7.5	7.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None		None					C-Max			C-Max	C-Max
Act Effct Green (s)	19.3		19.3					96.7			96.7	96.7
Actuated g/C Ratio	0.15		0.15					0.74			0.74	0.74
v/c Ratio	0.33		0.79					0.45			0.73	0.18
Control Delay	50.2		64.1					8.4			9.4	0.6
Queue Delay	0.0		0.0					0.0			0.0	0.0
Total Delay	50.2		64.1					8.4			9.4	0.6
LOS	D		E					A			A	A
Approach Delay		58.1						8.4			8.5	

Lanes, Volumes, Timings
10: Kennedy Rd & 407 EB Off-Ramp

Existing Condition - AM Peak Hour
Kennedy Road EA

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	10.0
Minimum Split (s)	31.5
Total Split (s)	32.0
Total Split (%)	25%
Yellow Time (s)	4.5
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	

Lanes, Volumes, Timings
10: Kennedy Rd & 407 EB Off-Ramp

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	E						A			A		
Queue Length 50th (m)	18.5		41.9					48.5			142.4	1.4
Queue Length 95th (m)	27.4		66.0					102.8			133.2	m1.4
Internal Link Dist (m)		412.7			221.1			316.2			321.9	
Turn Bay Length (m)												300.0
Base Capacity (vph)	620		330					2606			2662	1238
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	0.25		0.62					0.45			0.73	0.18

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 23 (18%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 13.3

Intersection LOS: B

Intersection Capacity Utilization 73.1%

ICU Level of Service D

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Kennedy Rd & 407 EB Off-Ramp

	Ø2 (R)			Ø4
98 s			32 s	
	Ø6 (R)			Ø8
98 s			32 s	

Lane Group	Ø8
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: 407 WB Off-Ramp & Kennedy Rd

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	332	0	207	0	967	125	0	1815	0
Future Volume (vph)	0	0	0	332	0	207	0	967	125	0	1815	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.97			
Frt						0.850			0.850			
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3471	0	1601	0	3476	1633	0	3544	0
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3471	0	1601	0	3476	1582	0	3544	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)						110			151			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		370.0			404.8			345.9			162.6	
Travel Time (s)		27.8			24.3			20.8			9.8	
Confl. Peds. (#/hr)									5	5		
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	0%	3%	0%
Adj. Flow (vph)	0	0	0	400	0	249	0	1165	151	0	2187	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	400	0	249	0	1165	151	0	2187	0
Turn Type				Prot		Perm		NA	Perm		NA	
Protected Phases				8				6			2	
Permitted Phases						8			6			
Detector Phase				8		8		6	6		2	
Switch Phase												
Minimum Initial (s)				10.0		10.0		30.0	30.0		30.0	
Minimum Split (s)				32.5		32.5		38.0	38.0		38.0	
Total Split (s)				34.0		34.0		96.0	96.0		96.0	
Total Split (%)				26.2%		26.2%		73.8%	73.8%		73.8%	
Yellow Time (s)				4.5		4.5		4.5	4.5		4.5	
All-Red Time (s)				2.0		2.0		3.5	3.5		3.5	
Lost Time Adjust (s)				0.0		0.0		0.0	0.0		0.0	
Total Lost Time (s)				6.5		6.5		8.0	8.0		8.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None		None		C-Max	C-Max		C-Max	
Act Effct Green (s)				20.8		20.8		94.7	94.7		94.7	
Actuated g/C Ratio				0.16		0.16		0.73	0.73		0.73	
v/c Ratio				0.72		0.72		0.46	0.13		0.85	
Control Delay				59.2		39.9		6.9	1.8		17.6	
Queue Delay				0.0		0.0		0.0	0.0		35.7	
Total Delay				59.2		39.9		6.9	1.8		53.3	
LOS				E		D		A	A		D	
Approach Delay					51.8			6.3			53.3	
Approach LOS					D			A			D	
Queue Length 50th (m)				51.0		34.4		64.5	3.5		182.6	
Queue Length 95th (m)				58.1		51.9		53.4	3.7		217.3	

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	10.0
Minimum Split (s)	32.5
Total Split (s)	34.0
Total Split (%)	26%
Yellow Time (s)	4.5
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	

Lanes, Volumes, Timings
11: 407 WB Off-Ramp & Kennedy Rd

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (m)	346.0			380.8			321.9			138.6		
Turn Bay Length (m)												
Base Capacity (vph)				734	425			2532	1193	2582		
Starvation Cap Reductn				0	0			0	0	546		
Spillback Cap Reductn				0	0			0	0	0		
Storage Cap Reductn				0	0			0	0	0		
Reduced v/c Ratio				0.54	0.59			0.46	0.13	1.07		

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 38.2

Intersection LOS: D

Intersection Capacity Utilization 69.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 11: 407 WB Off-Ramp & Kennedy Rd



Lane Group	Ø4
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
12: Kennedy Rd & YMCA Blvd/Helen Ave

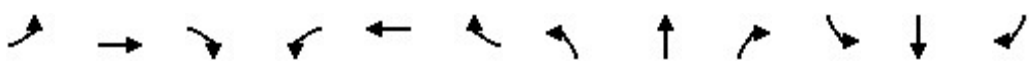
Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	25	123	253	81	15	191	860	97	16	1434	154
Future Volume (vph)	65	25	123	253	81	15	191	860	97	16	1434	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	135.0		0.0	132.0		0.0	77.0		100.0	96.0		83.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00	0.98		0.99	1.00				0.96	0.99		
Frt		0.875			0.976				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2902	1518	0	1807	1800	0	1706	3510	1633	1825	3544	1526
Flt Permitted	0.692			0.449			0.072			0.315		
Satd. Flow (perm)	2110	1518	0	850	1800	0	129	3510	1569	602	3544	1526
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		129			6				102			146
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		303.2			335.1			162.6			360.1	
Travel Time (s)		27.3			30.2			9.8			21.6	
Confl. Peds. (#/hr)	1		5	5		1			9	9		
Confl. Bikes (#/hr)	2					2						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	22%	4%	10%	1%	2%	14%	7%	4%	0%	0%	3%	7%
Adj. Flow (vph)	68	26	129	266	85	16	201	905	102	17	1509	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	155	0	266	101	0	201	905	102	17	1509	162
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	custom
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4			8			6		6	2		6
Detector Phase	7	4		3	8		1	6	6	2	2	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	11.5	38.5		11.5	38.5		11.5	40.0	40.0	40.0	40.0	40.0
Total Split (s)	12.0	40.0		12.0	40.0		20.0	88.0	88.0	68.0	68.0	88.0
Total Split (%)	8.6%	28.6%		8.6%	28.6%		14.3%	62.9%	62.9%	48.6%	48.6%	62.9%
Yellow Time (s)	3.0	3.5		3.0	3.5		3.0	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	4.0		1.0	4.0		1.0	3.5	3.5	3.5	3.5	3.5
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)	4.0	7.5		4.0	7.5		4.0	8.0	8.0	8.0	8.0	8.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	26.9	15.7		28.2	18.3		100.8	96.8	96.8	77.1	77.1	96.8
Actuated g/C Ratio	0.19	0.11		0.20	0.13		0.72	0.69	0.69	0.55	0.55	0.69
v/c Ratio	0.15	0.54		1.18	0.42		0.75	0.37	0.09	0.05	0.77	0.15
Control Delay	41.7	20.1		162.0	57.4		44.0	10.5	2.2	6.9	15.9	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.6	0.0	0.0	0.0	0.0
Total Delay	41.7	20.1		162.0	57.4		44.0	11.0	2.2	6.9	15.9	0.2
LOS	D	C		F	E		D	B	A	A	B	A

Lanes, Volumes, Timings
12: Kennedy Rd & YMCA Blvd/Helen Ave

Existing Condition - AM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		26.7			133.3			15.8			14.3	
Approach LOS		C			F			B			B	
Queue Length 50th (m)	7.9	6.8		~66.0	25.7		29.5	46.5	0.0	1.1	121.6	0.0
Queue Length 95th (m)	12.2	24.8		#100.7	38.5		#67.2	86.2	7.5	m1.6	#273.2	m0.1
Internal Link Dist (m)		279.2			311.1			138.6			336.1	
Turn Bay Length (m)	135.0			132.0			77.0		100.0	96.0		83.0
Base Capacity (vph)	455	451		225	422		287	2425	1116	331	1950	1099
Starvation Cap Reductn	0	0		0	0		0	1035	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	0.15	0.34		1.18	0.24		0.70	0.65	0.09	0.05	0.77	0.15

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 34 (24%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.18

Intersection Signal Delay: 28.1

Intersection LOS: C

Intersection Capacity Utilization 100.5%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

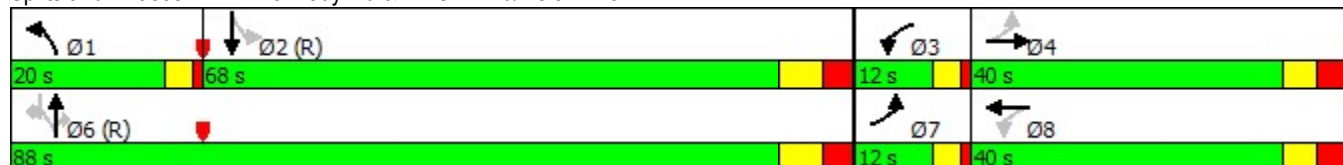
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Kennedy Rd & YMCA Blvd/Helen Ave



Lanes, Volumes, Timings

13: Kennedy Rd & Unionville Gate/South Unionville Ave Dr

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	75	153	151	353	33	183	642	50	18	1455	274
Future Volume (vph)	76	75	153	151	353	33	183	642	50	18	1455	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	57.0		0.0	83.0		70.0	193.0		98.0	35.0		85.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt			0.850		0.987				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1883	1570	1807	3538	0	1755	3476	1633	1825	3544	1617
Flt Permitted	0.515			0.580			0.070			0.397		
Satd. Flow (perm)	989	1883	1570	1103	3538	0	129	3476	1599	763	3544	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159		8				66			169
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		264.4			158.5			360.1			256.8	
Travel Time (s)		19.0			11.4			21.6			15.4	
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	4%	1%	2%	0%	4%	5%	0%	0%	3%	1%
Adj. Flow (vph)	79	78	159	157	368	34	191	669	52	19	1516	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	78	159	157	402	0	191	669	52	19	1516	285
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		1	6			2	
Permitted Phases	4		4	8			6		6	2		2
Detector Phase	4	4	4	3	8		1	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0		7.0	32.0	32.0	32.0	32.0	32.0
Minimum Split (s)	39.5	39.5	39.5	11.0	39.5		11.0	39.5	39.5	39.5	39.5	39.5
Total Split (s)	45.0	45.0	45.0	12.0	57.0		28.0	83.0	83.0	55.0	55.0	55.0
Total Split (%)	32.1%	32.1%	32.1%	8.6%	40.7%		20.0%	59.3%	59.3%	39.3%	39.3%	39.3%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0		3.0	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.5	3.5	3.5	1.0	3.5		1.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	18.4	18.4	18.4	33.9	30.4		98.1	94.6	94.6	76.3	76.3	76.3
Actuated g/C Ratio	0.13	0.13	0.13	0.24	0.22		0.70	0.68	0.68	0.54	0.54	0.54
v/c Ratio	0.61	0.32	0.46	0.51	0.52		0.75	0.28	0.05	0.05	0.78	0.30
Control Delay	74.9	55.9	11.2	48.9	48.8		53.1	10.9	3.3	8.7	15.7	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.9	55.9	11.2	48.9	48.8		53.1	10.9	3.3	8.7	15.7	3.2
LOS	E	E	B	D	D		D	B	A	A	B	A
Approach Delay		38.2			48.8			19.3			13.6	

Lanes, Volumes, Timings

13: Kennedy Rd & Unionville Gate/South Unionville Ave Dr

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	D			D			B			B		
Queue Length 50th (m)	21.3	20.2	0.0	37.0	51.9		35.1	31.1	0.0	1.4	69.2	7.8
Queue Length 95th (m)	34.6	31.8	17.9	49.6	58.8		70.8	60.7	5.8	m3.3	#287.3	22.5
Internal Link Dist (m)	240.4			134.5			336.1			232.8		
Turn Bay Length (m)	57.0			83.0			193.0		98.0	35.0		85.0
Base Capacity (vph)	264	504	536	307	1256		368	2349	1102	415	1932	958
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.15	0.30	0.51	0.32		0.52	0.28	0.05	0.05	0.78	0.30

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 7 (5%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 22.7

Intersection LOS: C

Intersection Capacity Utilization 97.5%

ICU Level of Service F

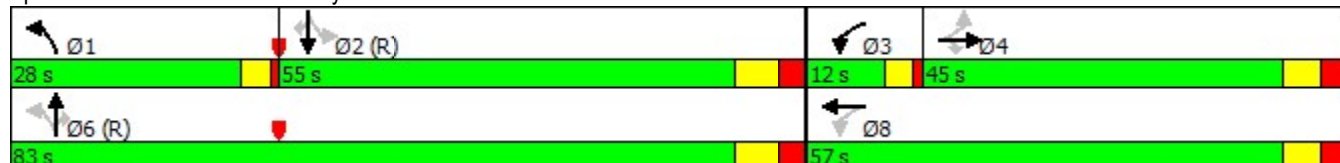
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 13: Kennedy Rd & Unionville Gate/South Unionville Ave Dr



Lanes, Volumes, Timings
14: Kennedy Rd & Castan Dr

Existing Condition - AM Peak Hour
Kennedy Road EA

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	32	698	34	48	1655
Future Volume (vph)	16	32	698	34	48	1655
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0	0.0		0.0	42.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt		0.850	0.993			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1825	1633	3450	0	1825	3544
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1825	1633	3450	0	1825	3544
Link Speed (k/h)	40		60			60
Link Distance (m)	247.2		256.8			190.3
Travel Time (s)	22.2		15.4			11.4
Confl. Peds. (#/hr)				4	4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	5%	6%	0%	3%
Adj. Flow (vph)	17	33	727	35	50	1724
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	33	762	0	50	1724
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	55.7%			ICU Level of Service B		
Analysis Period (min)	15					

Lanes, Volumes, Timings

15: Kennedy Rd & Peachtree Mall S Access/Avoca Dr

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	4	32	35	15	57	70	640	6	23	1614	6
Future Volume (vph)	34	4	32	35	15	57	70	640	6	23	1614	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		0.0	100.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.98	0.99		1.00	0.98			1.00		0.99	1.00	
Frt		0.866			0.881			0.999			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1722	1640	0	1772	1650	0	1789	3441	0	1825	3540	0
Flt Permitted	0.709			0.733			0.104			0.401		
Satd. Flow (perm)	1262	1640	0	1362	1650	0	196	3441	0	764	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			58			1				
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		109.6			410.4			190.3			150.5	
Travel Time (s)		9.9			36.9			11.4			9.0	
Confl. Peds. (#/hr)	15		3	3		15	3		8	8		3
Confl. Bikes (#/hr)							1					1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	6%	0%	0%	3%	0%	0%	2%	6%	0%	0%	3%	0%
Adj. Flow (vph)	35	4	33	36	15	58	71	653	6	23	1647	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	37	0	36	73	0	71	659	0	23	1653	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Detector Phase	4	4		8	8		1	6		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	30.0		30.0	30.0	
Minimum Split (s)	39.5	39.5		39.5	39.5		11.0	37.0		37.0	37.0	
Total Split (s)	41.0	41.0		41.0	41.0		12.0	99.0		87.0	87.0	
Total Split (%)	29.3%	29.3%		29.3%	29.3%		8.6%	70.7%		62.1%	62.1%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	4.5		4.5	4.5	
All-Red Time (s)	4.0	4.0		4.0	4.0		1.0	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		4.0	7.0		7.0	7.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Act Effct Green (s)	14.6	14.6		14.6	14.6		117.4	115.8		106.5	106.5	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.84	0.83		0.76	0.76	
v/c Ratio	0.27	0.18		0.25	0.33		0.28	0.23		0.04	0.61	
Control Delay	59.5	19.8		58.8	21.2		9.0	3.1		4.9	5.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	59.5	19.8		58.8	21.2		9.0	3.1		4.9	5.9	
LOS	E	B		E	C		A	A		A	A	

Lanes, Volumes, Timings

15: Kennedy Rd & Peachtree Mall S Access/Avoca Dr

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		39.1			33.6			3.7			5.9	
Approach LOS		D			C			A			A	
Queue Length 50th (m)	9.4	1.1		9.7	4.0		2.6	26.2		1.0	45.4	
Queue Length 95th (m)	17.4	10.2		17.6	16.2		13.3	46.6		m1.5	m66.5	
Internal Link Dist (m)		85.6			386.4			166.3			126.5	
Turn Bay Length (m)				20.0			100.0			60.0		
Base Capacity (vph)	301	417		325	438		258	2846		581	2692	
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	0.12	0.09		0.11	0.17		0.28	0.23		0.04	0.61	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 89 (64%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 7.3

Intersection LOS: A

Intersection Capacity Utilization 83.6%

ICU Level of Service E

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kennedy Rd & Peachtree Mall S Access/Avoca Dr



Lanes, Volumes, Timings
16: Kennedy Rd & Peachtree Mall N Access/Eton St

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	10	13	0	18	12	683	10	7	1690	82
Future Volume (vph)	0	0	10	13	0	18	12	683	10	7	1690	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	50.0		0.0	62.0		62.0
Storage Lanes	0		1	1		0	1		0	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.865		0.850			0.998				0.850
Flt Protected				0.950			0.950			0.950		
Satd. Flow (prot)	0	0	1662	1825	1633	0	1825	3643	0	1825	3650	1633
Flt Permitted				0.950			0.950			0.950		
Satd. Flow (perm)	0	0	1662	1825	1633	0	1825	3643	0	1825	3650	1633
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		140.1			268.7			150.5			203.0	
Travel Time (s)		12.6			24.2			9.0			12.2	
Confl. Peds. (#/hr)							7		4	4		7
Confl. Bikes (#/hr)							1		1	1		1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	10	13	0	18	12	697	10	7	1724	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	10	13	18	0	12	707	0	7	1724	84
Sign Control		Yield			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 63.4% ICU Level of Service B

Analysis Period (min) 15

Lanes, Volumes, Timings
17: Kennedy Rd & Highway 7

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	453	64	362	1393	38	113	472	151	72	1288	139
Future Volume (vph)	67	453	64	362	1393	38	113	472	151	72	1288	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	78.0		95.0	43.0		87.0	111.0		126.0	100.0		46.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.97	0.99		0.98			0.98	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1722	3380	1570	1738	3544	1541	1755	3444	1458	1789	3614	1601
Flt Permitted	0.103			0.346			0.072			0.436		
Satd. Flow (perm)	187	3380	1519	627	3544	1509	133	3444	1428	818	3614	1562
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			129			97			154			129
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		303.4			351.7			203.0			185.7	
Travel Time (s)		15.6			18.1			12.2			11.1	
Confl. Peds. (#/hr)	8		19	19		8	11		8	8		11
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	6%	8%	4%	5%	3%	6%	4%	6%	12%	2%	1%	2%
Adj. Flow (vph)	68	462	65	369	1421	39	115	482	154	73	1314	142
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	462	65	369	1421	39	115	482	154	73	1314	142
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	38.0	38.0	7.0	38.0	38.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	45.5	11.0	44.5	44.5	11.0	44.5	44.5
Total Split (s)	12.0	47.0	47.0	20.0	55.0	55.0	12.0	61.0	61.0	12.0	61.0	61.0
Total Split (%)	8.6%	33.6%	33.6%	14.3%	39.3%	39.3%	8.6%	43.6%	43.6%	8.6%	43.6%	43.6%
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5	2.5	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	50.7	39.5	39.5	63.2	50.2	50.2	65.7	55.8	55.8	64.5	53.3	53.3
Actuated g/C Ratio	0.36	0.28	0.28	0.45	0.36	0.36	0.47	0.40	0.40	0.46	0.38	0.38
v/c Ratio	0.45	0.48	0.12	0.90	1.12	0.06	0.74	0.35	0.23	0.17	0.95	0.21
Control Delay	32.7	43.9	0.5	55.1	106.2	0.2	59.3	34.5	11.3	20.8	59.8	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	43.9	0.5	55.1	106.2	0.2	59.3	34.5	11.3	20.8	59.8	12.5
LOS	C	D	A	E	F	A	E	C	B	C	E	B
Approach Delay		37.8			93.6			33.5			53.5	

Lanes, Volumes, Timings
17: Kennedy Rd & Highway 7

Existing Condition - AM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	D			F			C			D		
Queue Length 50th (m)	10.6	56.2	0.0	70.2	~247.8	0.0	21.5	60.2	5.2	12.2	198.1	7.9
Queue Length 95th (m)	19.9	73.0	0.0	#123.4	#290.4	0.0	#46.4	75.5	20.1	22.7	#233.6	28.1
Internal Link Dist (m)	279.4			327.7			179.0			161.7		
Turn Bay Length (m)	78.0		95.0	43.0		87.0	111.0		126.0	100.0		46.0
Base Capacity (vph)	155	953	521	411	1269	603	155	1373	661	434	1381	676
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.48	0.12	0.90	1.12	0.06	0.74	0.35	0.23	0.17	0.95	0.21

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 35 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.12

Intersection Signal Delay: 63.9

Intersection LOS: E

Intersection Capacity Utilization 112.8%

ICU Level of Service H

Analysis Period (min) 15

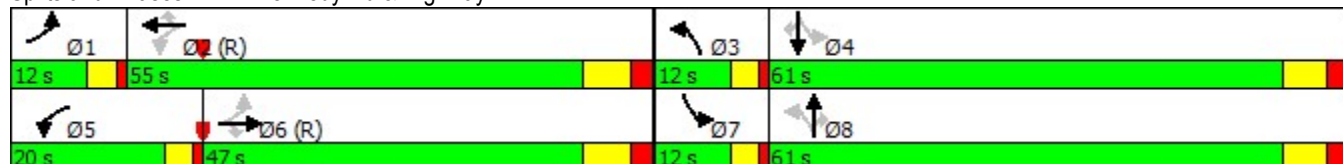
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 17: Kennedy Rd & Highway 7



Lanes, Volumes, Timings
18: Kennedy Rd & Denby Ct/Second St

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	23	2	1	0	9	574	4	0	1496	5
Future Volume (vph)	2	0	23	2	1	0	9	574	4	0	1496	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		0.0	55.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.876						0.999				
Flt Protected		0.996			0.968		0.950					
Satd. Flow (prot)	0	1602	0	0	1860	0	1825	3468	0	1921	3612	0
Flt Permitted		0.996			0.968		0.950					
Satd. Flow (perm)	0	1602	0	0	1860	0	1825	3468	0	1921	3612	0
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		173.6			149.5			185.7			258.9	
Travel Time (s)		15.6			13.5			11.1			15.5	
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)							1		1	1		1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	0%	5%	25%	0%	1%	20%
Adj. Flow (vph)	2	0	23	2	1	0	9	586	4	0	1527	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	0	0	3	0	9	590	0	0	1532	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.5% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings
19: Kennedy Rd & Austin Dr

Existing Condition - AM Peak Hour
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Lane Configurations							
Traffic Volume (vph)	64	142	538	23	165	1467	
Future Volume (vph)	64	142	538	23	165	1467	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	41.0	0.0		37.0	57.0		
Storage Lanes	1	1		1	1		
Taper Length (m)	2.5				2.5		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
Ped Bike Factor				0.98	1.00		
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1825	1601	3444	1555	1807	3614	
Flt Permitted	0.950				0.404		
Satd. Flow (perm)	1825	1601	3444	1520	768	3614	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		158		26			
Link Speed (k/h)	40		60			60	
Link Distance (m)	254.1		258.9			100.6	
Travel Time (s)	22.9		15.5			6.0	
Confl. Peds. (#/hr)				1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Heavy Vehicles (%)	0%	2%	6%	5%	1%	1%	
Adj. Flow (vph)	71	158	598	26	183	1630	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	71	158	598	26	183	1630	
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA	
Protected Phases	8		6		5	2	4
Permitted Phases		8		6	2		
Detector Phase	8	8	6	6	5	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	30.0	30.0	7.0	30.0	10.0
Minimum Split (s)	33.5	33.5	37.0	37.0	11.0	37.0	33.5
Total Split (s)	35.0	35.0	93.0	93.0	12.0	105.0	35.0
Total Split (%)	25.0%	25.0%	66.4%	66.4%	8.6%	75.0%	25%
Yellow Time (s)	3.5	3.5	4.5	4.5	3.0	4.5	3.5
All-Red Time (s)	3.0	3.0	2.5	2.5	1.0	2.5	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.5	6.5	7.0	7.0	4.0	7.0	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Recall Mode	None	None	C-Max	C-Max	None	C-Max	None
Act Effct Green (s)	14.1	14.1	100.4	100.4	115.4	112.4	
Actuated g/C Ratio	0.10	0.10	0.72	0.72	0.82	0.80	
v/c Ratio	0.39	0.52	0.24	0.02	0.26	0.56	
Control Delay	63.2	13.8	22.0	14.8	4.0	6.6	
Queue Delay	0.0	0.0	0.0	0.0	1.9	7.4	
Total Delay	63.2	13.8	22.0	14.8	5.9	13.9	
LOS	E	B	C	B	A	B	
Approach Delay	29.1		21.7			13.1	

Lanes, Volumes, Timings
19: Kennedy Rd & Austin Dr

Existing Condition - AM Peak Hour
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Approach LOS	C		C		B		
Queue Length 50th (m)	19.2	0.0	70.4	2.7	6.6	60.4	
Queue Length 95th (m)	30.9	18.8	94.2	m11.9	20.8	133.0	
Internal Link Dist (m)	230.1		234.9			76.6	
Turn Bay Length (m)	41.0			37.0	57.0		
Base Capacity (vph)	371	451	2469	1097	695	2902	
Starvation Cap Reductn	0	0	0	0	372	1231	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.19	0.35	0.24	0.02	0.57	0.98	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 24 (17%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 16.5

Intersection LOS: B

Intersection Capacity Utilization 60.1%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 19: Kennedy Rd & Austin Dr



Lanes, Volumes, Timings
20: Kennedy Rd & Carlton Rd

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	92	73	416	540	60	95	471	149	23	1116	184
Future Volume (vph)	49	92	73	416	540	60	95	471	149	23	1116	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	48.0		61.0	73.0		0.0	138.0		44.0	140.0		52.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00		0.98			0.98	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1706	1746	1601	1825	1902	1601	1690	3510	1585	1825	3579	1601
Flt Permitted	0.112			0.621			0.066			0.458		
Satd. Flow (perm)	201	1746	1580	1192	1902	1569	117	3510	1550	879	3579	1564
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125			94			166			129
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		268.3			267.4			294.6			810.8	
Travel Time (s)		24.1			24.1			17.7			48.6	
Confl. Peds. (#/hr)	6		1	1		6	1		1	1		1
Confl. Bikes (#/hr)							1					1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	10%	2%	0%	1%	2%	8%	4%	3%	0%	2%	2%
Adj. Flow (vph)	54	102	81	462	600	67	106	523	166	26	1240	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	102	81	462	600	67	106	523	166	26	1240	204
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	3	8	8	1	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	31.0	31.0	31.0	31.0	31.0
Minimum Split (s)	11.5	38.5	38.5	11.5	38.5	38.5	11.5	38.0	38.0	38.0	38.0	38.0
Total Split (s)	12.0	45.0	45.0	20.0	53.0	53.0	12.0	75.0	75.0	63.0	63.0	63.0
Total Split (%)	8.6%	32.1%	32.1%	14.3%	37.9%	37.9%	8.6%	53.6%	53.6%	45.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	4.0	4.0	1.0	4.0	4.0	1.0	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	46.1	34.9	34.9	58.4	45.4	45.4	73.6	70.6	70.6	58.7	58.7	58.7
Actuated g/C Ratio	0.33	0.25	0.25	0.42	0.32	0.32	0.53	0.50	0.50	0.42	0.42	0.42
v/c Ratio	0.36	0.23	0.17	0.81	0.97	0.12	0.71	0.30	0.19	0.07	0.83	0.28
Control Delay	31.1	42.3	2.1	45.5	77.0	2.9	48.7	21.4	3.3	12.7	21.3	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	42.3	2.1	45.5	77.0	2.9	48.7	21.4	3.3	12.7	21.3	5.2
LOS	C	D	A	D	E	A	D	C	A	B	C	A

Lanes, Volumes, Timings
20: Kennedy Rd & Carlton Rd

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay	26.0			59.7			21.2			18.9		
Approach LOS	C			E			C			B		
Queue Length 50th (m)	8.6	22.1	0.0	95.3	163.8	0.0	15.1	45.1	0.0	3.1	85.8	11.5
Queue Length 95th (m)	17.1	37.6	3.1	130.2	#238.4	5.3	#41.2	57.7	11.8	m5.8	147.9	28.7
Internal Link Dist (m)	244.3			243.4			270.6			786.8		
Turn Bay Length (m)	48.0		61.0	73.0			138.0		44.0	140.0		52.0
Base Capacity (vph)	152	467	514	569	619	574	151	1769	864	368	1501	731
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.22	0.16	0.81	0.97	0.12	0.70	0.30	0.19	0.07	0.83	0.28

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 42 (30%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 32.6

Intersection LOS: C

Intersection Capacity Utilization 107.2%

ICU Level of Service G

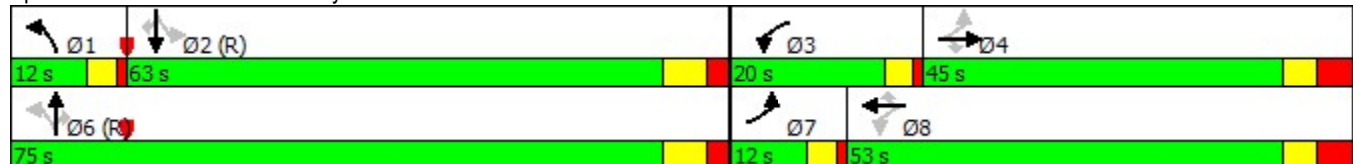
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Kennedy Rd & Carlton Rd



Lanes, Volumes, Timings
21: Kennedy Rd & The Bridle Trail

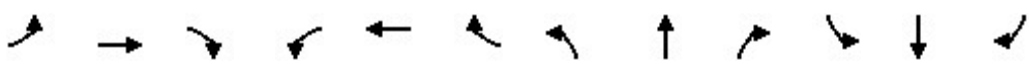
Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	41	12	108	151	51	18	519	23	17	1236	213
Future Volume (vph)	65	41	12	108	151	51	18	519	23	17	1236	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	23.0		0.0	27.0		0.0	90.0		41.0	120.0		40.0
Storage Lanes	1		0	1		0	1		1	1		2
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00				1.00		1.00					0.94
Frt		0.965			0.962				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1360	0	1825	1669	0	1722	3650	1633	1825	3614	1633
Flt Permitted	0.546			0.720			0.141			0.429		
Satd. Flow (perm)	1045	1360	0	1383	1669	0	255	3650	1633	824	3614	1540
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			13				31			127
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		238.2			161.4			810.8			257.8	
Travel Time (s)		21.4			14.5			48.6			15.5	
Confl. Peds. (#/hr)	4					4	17					17
Confl. Bikes (#/hr)	1											1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	37%	34%	0%	13%	2%	6%	0%	0%	0%	1%	0%
Adj. Flow (vph)	68	43	13	113	157	53	19	541	24	18	1288	222
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	56	0	113	210	0	19	541	24	18	1288	222
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		35.0	35.0	35.0	35.0	35.0	35.0
Minimum Split (s)	39.0	39.0		39.0	39.0		42.0	42.0	42.0	42.0	42.0	42.0
Total Split (s)	51.0	51.0		51.0	51.0		89.0	89.0	89.0	89.0	89.0	89.0
Total Split (%)	36.4%	36.4%		36.4%	36.4%		63.6%	63.6%	63.6%	63.6%	63.6%	63.6%
Yellow Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.5	2.5		2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5
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)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	44.0	44.0		44.0	44.0		82.0	82.0	82.0	82.0	82.0	82.0
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.59	0.59	0.59	0.59	0.59	0.59
v/c Ratio	0.21	0.13		0.26	0.39		0.13	0.25	0.02	0.04	0.61	0.23
Control Delay	37.4	29.0		37.9	37.8		20.3	20.1	9.6	6.2	10.5	4.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	37.4	29.0		37.9	37.8		20.3	20.1	9.6	6.2	10.6	4.2
LOS	D	C		D	D		C	C	A	A	B	A

Lanes, Volumes, Timings
21: Kennedy Rd & The Bridle Trail

Existing Condition - AM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		33.6			37.8			19.7			9.6	
Approach LOS		C			D			B			A	
Queue Length 50th (m)	13.8	8.9		23.4	42.7		3.7	59.2	1.5	1.4	63.6	9.6
Queue Length 95th (m)	26.5	19.4		39.8	65.7		10.8	74.1	8.5	m2.6	93.7	22.2
Internal Link Dist (m)		214.2			137.4			786.8			233.8	
Turn Bay Length (m)	23.0			27.0			90.0		41.0	120.0		40.0
Base Capacity (vph)	328	434		434	533		149	2137	969	482	2116	954
Starvation Cap Reductn	0	0		0	0		0	0	0	0	111	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	0.13		0.26	0.39		0.13	0.25	0.02	0.04	0.64	0.23

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 108 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 16.7

Intersection LOS: B

Intersection Capacity Utilization 102.5%

ICU Level of Service G

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 21: Kennedy Rd & The Bridle Trail



Lanes, Volumes, Timings
22: Kennedy Rd & Birchview Ln

Existing Condition - AM Peak Hour
Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	15	42	7	620	1453	3	
Future Volume (vph)	15	42	7	620	1453	3	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0	105.0			0.0	
Storage Lanes	1	0	1			0	
Taper Length (m)	2.5		2.5				
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	
Frt	0.901						
Flt Protected	0.987		0.950				
Satd. Flow (prot)	1647	0	1587	3510	3579	0	
Flt Permitted	0.987		0.152				
Satd. Flow (perm)	1647	0	254	3510	3579	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	44						
Link Speed (k/h)	40			60	60		
Link Distance (m)	142.4			257.8	309.6		
Travel Time (s)	12.8			15.5	18.6		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Heavy Vehicles (%)	14%	0%	15%	4%	2%	0%	
Adj. Flow (vph)	16	44	7	646	1514	3	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	60	0	7	646	1517	0	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4			6	2		8
Permitted Phases			6				
Detector Phase	4		6	6	2		
Switch Phase							
Minimum Initial (s)	10.0		30.0	30.0	30.0		10.0
Minimum Split (s)	31.0		37.0	37.0	37.0		31.0
Total Split (s)	32.0		108.0	108.0	108.0		32.0
Total Split (%)	22.9%		77.1%	77.1%	77.1%		23%
Yellow Time (s)	3.5		4.5	4.5	4.5		3.5
All-Red Time (s)	3.5		2.5	2.5	2.5		3.5
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	7.0		7.0	7.0	7.0		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None		C-Max	C-Max	C-Max		None
Act Effct Green (s)	12.8		118.0	118.0	118.0		
Actuated g/C Ratio	0.09		0.84	0.84	0.84		
v/c Ratio	0.32		0.03	0.22	0.50		
Control Delay	26.2		1.0	0.7	5.8		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	26.2		1.0	0.7	5.8		
LOS	C		A	A	A		
Approach Delay	26.2			0.7	5.8		
Approach LOS	C			A	A		
Queue Length 50th (m)	4.2		0.1	2.0	35.1		

Lanes, Volumes, Timings
22: Kennedy Rd & Birchview Ln

Existing Condition - AM Peak Hour
Kennedy Road EA

							
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Queue Length 95th (m)	16.7		m0.4	5.7	m54.7		
Internal Link Dist (m)	118.4			233.8	285.6		
Turn Bay Length (m)			105.0				
Base Capacity (vph)	330		214	2958	3016		
Starvation Cap Reductn	0		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.18		0.03	0.22	0.50		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 73 (52%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 4.8

Intersection LOS: A

Intersection Capacity Utilization 60.3%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: Kennedy Rd & Birchview Ln

	Ø2 (R)		Ø4
108 s		32 s	
	Ø6 (R)		Ø8
108 s		32 s	

Lanes, Volumes, Timings
23: Kennedy Rd & 16th Ave

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	516	156	347	1448	27	149	405	78	89	928	390
Future Volume (vph)	167	516	156	347	1448	27	149	405	78	89	928	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	92.0		93.0	70.0		72.0	145.0		70.0	70.0		63.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98	0.99		0.97	1.00		0.98	1.00		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	3544	1601	1807	3614	1570	1755	3510	1570	1825	3579	1601
Flt Permitted	0.063			0.423			0.106			0.415		
Satd. Flow (perm)	118	3544	1562	800	3614	1528	196	3510	1544	795	3579	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163			97			97			132
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		347.4			311.5			309.6			154.6	
Travel Time (s)		20.8			18.7			18.6			9.3	
Confl. Peds. (#/hr)	12		10	10		12	7		4	4		7
Confl. Bikes (#/hr)	1		1	1		1						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	2%	1%	1%	4%	4%	4%	4%	0%	2%	2%
Adj. Flow (vph)	174	538	163	361	1508	28	155	422	81	93	967	406
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	538	163	361	1508	28	155	422	81	93	967	406
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	35.0	35.0	7.0	35.0	35.0	7.0	15.0	15.0	7.0	15.0	15.0
Minimum Split (s)	11.0	42.5	42.5	11.0	42.5	42.5	11.0	41.5	41.5	11.0	41.5	41.5
Total Split (s)	15.0	71.0	71.0	12.0	68.0	68.0	12.0	45.0	45.0	12.0	45.0	45.0
Total Split (%)	10.7%	50.7%	50.7%	8.6%	48.6%	48.6%	8.6%	32.1%	32.1%	8.6%	32.1%	32.1%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	None	None
Act Effct Green (s)	78.0	63.5	63.5	72.0	60.5	60.5	49.2	37.7	37.7	48.8	37.5	37.5
Actuated g/C Ratio	0.56	0.45	0.45	0.51	0.43	0.43	0.35	0.27	0.27	0.35	0.27	0.27
v/c Ratio	0.89	0.33	0.20	0.77	0.97	0.04	0.99	0.45	0.17	0.28	1.01	0.79
Control Delay	74.0	25.4	3.7	34.7	54.8	0.1	128.0	33.6	6.1	32.4	81.1	44.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.0	25.4	3.7	34.7	54.8	0.1	128.0	33.6	6.1	32.4	81.1	44.4
LOS	E	C	A	C	D	A	F	C	A	C	F	D

Lanes, Volumes, Timings
23: Kennedy Rd & 16th Ave

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		31.0			50.2			52.5			67.9	
Approach LOS		C			D			D			E	
Queue Length 50th (m)	31.6	49.6	0.0	52.5	211.3	0.0	37.2	30.7	0.1	0.0	~150.8	80.3
Queue Length 95th (m)	#74.7	63.2	12.4	73.1	#262.4	0.0	#73.6	48.2	7.5	0.0	#193.1	121.4
Internal Link Dist (m)		323.4			287.5			285.6			130.6	
Turn Bay Length (m)	92.0		93.0	70.0		72.0	145.0		70.0	70.0		63.0
Base Capacity (vph)	195	1607	797	468	1561	715	157	945	486	337	958	516
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.33	0.20	0.77	0.97	0.04	0.99	0.45	0.17	0.28	1.01	0.79

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 38 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 52.4

Intersection LOS: D

Intersection Capacity Utilization 102.9%

ICU Level of Service G

Analysis Period (min) 15

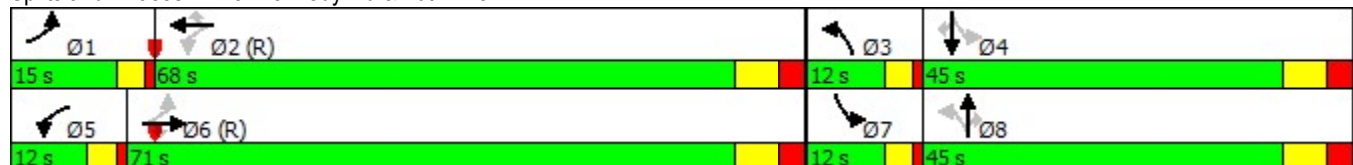
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 23: Kennedy Rd & 16th Ave



Lanes, Volumes, Timings
24: Kennedy Rd & Nipigon Ave

Existing Condition - AM Peak Hour
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	12	8	575	12	8	1450
Future Volume (vph)	12	8	575	12	8	1450
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	42.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt	0.945		0.997			
Flt Protected	0.971				0.950	
Satd. Flow (prot)	1763	0	3639	0	1825	3650
Flt Permitted	0.971				0.950	
Satd. Flow (perm)	1763	0	3639	0	1825	3650
Link Speed (k/h)	40		60			60
Link Distance (m)	283.6		154.6			173.3
Travel Time (s)	25.5		9.3			10.4
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	13	9	646	13	9	1629
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	0	659	0	9	1629
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 50.1% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings
25: Kennedy Rd & Beckett Ave

Existing Condition - AM Peak Hour
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Lane Configurations							
Traffic Volume (vph)	203	25	526	26	9	1341	
Future Volume (vph)	203	25	526	26	9	1341	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	20.0		55.0	54.0		
Storage Lanes	1	1		1	1		
Taper Length (m)	2.5				2.5		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
Ped Bike Factor		0.98					
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1825	1633	3476	1570	1825	3579	
Flt Permitted	0.950				0.426		
Satd. Flow (perm)	1825	1601	3476	1570	818	3579	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		15		29			
Link Speed (k/h)	48		60			60	
Link Distance (m)	265.8		173.3			318.0	
Travel Time (s)	19.9		10.4			19.1	
Confl. Peds. (#/hr)		5					
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	
Heavy Vehicles (%)	0%	0%	5%	4%	0%	2%	
Adj. Flow (vph)	228	28	591	29	10	1507	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	228	28	591	29	10	1507	
Turn Type	Prot	Perm	NA	Perm	Perm	NA	
Protected Phases	4		6			2	8
Permitted Phases		4		6	2		
Detector Phase	4	4	6	6	2	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0	30.0	10.0
Minimum Split (s)	35.5	35.5	37.0	37.0	37.0	37.0	35.5
Total Split (s)	37.0	37.0	103.0	103.0	103.0	103.0	37.0
Total Split (%)	26.4%	26.4%	73.6%	73.6%	73.6%	73.6%	26%
Yellow Time (s)	3.5	3.5	4.5	4.5	4.5	4.5	3.5
All-Red Time (s)	4.0	4.0	2.5	2.5	2.5	2.5	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.5	7.5	7.0	7.0	7.0	7.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max	None
Act Effct Green (s)	22.6	22.6	102.9	102.9	102.9	102.9	
Actuated g/C Ratio	0.16	0.16	0.74	0.74	0.74	0.74	
v/c Ratio	0.78	0.10	0.23	0.02	0.02	0.57	
Control Delay	73.6	28.4	17.0	9.9	6.4	10.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	73.6	28.4	17.0	9.9	6.4	10.1	
LOS	E	C	B	A	A	B	
Approach Delay	68.6		16.7			10.1	

Lanes, Volumes, Timings
25: Kennedy Rd & Beckett Ave

Existing Condition - AM Peak Hour
Kennedy Road EA

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Approach LOS	E		B			B	
Queue Length 50th (m)	61.3	3.1	61.4	0.8	0.7	90.3	
Queue Length 95th (m)	84.0	11.2	m94.0	m6.1	2.7	126.3	
Internal Link Dist (m)	241.8		149.3			294.0	
Turn Bay Length (m)		20.0		55.0	54.0		
Base Capacity (vph)	384	349	2555	1161	601	2631	
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	0.59	0.08	0.23	0.02	0.02	0.57	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 37 (26%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 62.3%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 25: Kennedy Rd & Beckett Ave

103 s	37 s
103 s	37 s

Lanes, Volumes, Timings
26: Kennedy Rd & Wilfred Murison Ave

Existing Condition - AM Peak Hour
Kennedy Road EA

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	32	25	541	12	10	1350
Future Volume (vph)	32	25	541	12	10	1350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	50.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt	0.941		0.997			
Flt Protected	0.973				0.950	
Satd. Flow (prot)	1759	0	3437	0	1659	3544
Flt Permitted	0.973				0.950	
Satd. Flow (perm)	1759	0	3437	0	1659	3544
Link Speed (k/h)	40		60			60
Link Distance (m)	236.7		318.0			378.3
Travel Time (s)	21.3		19.1			22.7
Confl. Peds. (#/hr)	1	3		1	1	
Confl. Bikes (#/hr)				3	3	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	0%	0%	6%	0%	10%	3%
Adj. Flow (vph)	42	33	712	16	13	1776
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	0	728	0	13	1776
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	48.4%			ICU Level of Service A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
27: Kennedy Rd & Bur Oak Ave

Existing Condition - AM Peak Hour
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Lane Configurations							
Traffic Volume (vph)	427	221	378	138	203	882	
Future Volume (vph)	427	221	378	138	203	882	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		52.0	55.0		
Storage Lanes	1	1		1	1		
Taper Length (m)	2.5				2.5		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
Ped Bike Factor	1.00	0.94		0.95	0.99		
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1825	1555	3510	1541	1772	3544	
Flt Permitted	0.950				0.455		
Satd. Flow (perm)	1823	1464	3510	1469	838	3544	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		265		182			
Link Speed (k/h)	40		60			60	
Link Distance (m)	253.8		378.3			302.0	
Travel Time (s)	22.8		22.7			18.1	
Confl. Peds. (#/hr)	1	37		12	12		
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	
Heavy Vehicles (%)	0%	5%	4%	6%	3%	3%	
Adj. Flow (vph)	562	291	497	182	267	1161	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	562	291	497	182	267	1161	
Turn Type	Prot	Perm	NA	Perm	Perm	NA	
Protected Phases	8		6			2	4
Permitted Phases		8		6	2		
Detector Phase	8	8	6	6	2	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0	30.0	10.0
Minimum Split (s)	35.0	35.0	37.5	37.5	37.5	37.5	35.0
Total Split (s)	55.0	55.0	65.0	65.0	65.0	65.0	55.0
Total Split (%)	45.8%	45.8%	54.2%	54.2%	54.2%	54.2%	46%
Yellow Time (s)	3.5	3.5	5.0	5.0	5.0	5.0	3.5
All-Red Time (s)	3.5	3.5	2.5	2.5	2.5	2.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.5	7.5	7.5	7.5	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max	None
Act Effct Green (s)	41.9	41.9	63.6	63.6	63.6	63.6	
Actuated g/C Ratio	0.35	0.35	0.53	0.53	0.53	0.53	
v/c Ratio	0.88	0.43	0.27	0.21	0.60	0.62	
Control Delay	52.5	6.1	16.8	3.1	28.9	23.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	52.5	6.1	16.8	3.1	28.9	23.3	
LOS	D	A	B	A	C	C	
Approach Delay	36.6		13.2			24.3	

Lanes, Volumes, Timings
27: Kennedy Rd & Bur Oak Ave

Existing Condition - AM Peak Hour
Kennedy Road EA



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Approach LOS	D		B		C		
Queue Length 50th (m)	121.2	4.0	33.3	0.0	53.3	122.9	
Queue Length 95th (m)	121.5	10.7	39.2	6.1	65.9	117.2	
Internal Link Dist (m)	229.8		354.3			278.0	
Turn Bay Length (m)				52.0	55.0		
Base Capacity (vph)	730	744	1859	863	443	1877	
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	0.77	0.39	0.27	0.21	0.60	0.62	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 23 (19%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 25.3

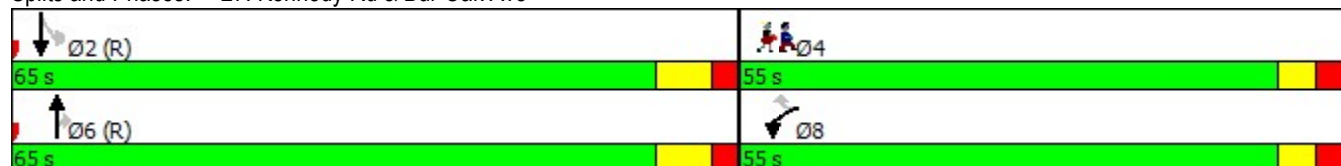
Intersection LOS: C

Intersection Capacity Utilization 92.0%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 27: Kennedy Rd & Bur Oak Ave



Lanes, Volumes, Timings
28: Kennedy Rd & Angus Glen Blvd

Existing Condition - AM Peak Hour
Kennedy Road EA

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Traffic Volume (vph)	6	145	68	596	1038	6
Future Volume (vph)	6	145	68	596	1038	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0	0.0	90.0			55.0
Storage Lanes	1	1	1			1
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1825	1570	1644	3544	3544	1396
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1825	1570	1644	3544	3544	1396
Link Speed (k/h)	40			60	60	
Link Distance (m)	234.8			302.0	341.0	
Travel Time (s)	21.1			18.1	20.5	
Confl. Peds. (#/hr)			6			6
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	0%	4%	11%	3%	3%	17%
Adj. Flow (vph)	8	191	89	784	1366	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	191	89	784	1366	8
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	45.8%			ICU Level of Service A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
29: Kennedy Rd & The Fairways/Castlemore Ave

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	11	14	30	162	11	118	13	544	103	27	837	6
Future Volume (vph)	11	14	30	162	11	118	13	544	103	27	837	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		64.0	57.0		56.0	50.0		46.0
Storage Lanes	0		0	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.99		1.00	0.98		1.00		0.97	1.00		0.98
Frt		0.927			0.863				0.850			0.850
Flt Protected		0.990		0.950			0.950			0.950		
Satd. Flow (prot)	0	1650	0	1825	1600	0	1573	3544	1601	1825	3544	1633
Flt Permitted		0.919		0.716			0.271			0.410		
Satd. Flow (perm)	0	1529	0	1371	1600	0	449	3544	1555	785	3544	1597
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			136				118			41
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		207.4			193.2			341.0			227.3	
Travel Time (s)		18.7			17.4			20.5			13.6	
Confl. Peds. (#/hr)	8		4	4		8	1		5	5		1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	15%	4%	0%	10%	1%	16%	3%	2%	0%	3%	0%
Adj. Flow (vph)	13	16	34	186	13	136	15	625	118	31	962	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	0	186	149	0	15	625	118	31	962	7
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6		6	2		2
Detector Phase	4	4		8	8		6	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		33.0	33.0	33.0	33.0	33.0	33.0
Minimum Split (s)	44.5	44.5		44.5	44.5		40.5	40.5	40.5	40.5	40.5	40.5
Total Split (s)	50.0	50.0		50.0	50.0		70.0	70.0	70.0	70.0	70.0	70.0
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%	58.3%	58.3%	58.3%	58.3%
Yellow Time (s)	3.5	3.5		3.5	3.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	4.0	4.0		4.0	4.0		2.5	2.5	2.5	2.5	2.5	2.5
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)		7.5		7.5	7.5		7.5	7.5	7.5	7.5	7.5	7.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		23.2		23.2	23.2		81.8	81.8	81.8	81.8	81.8	81.8
Actuated g/C Ratio		0.19		0.19	0.19		0.68	0.68	0.68	0.68	0.68	0.68
v/c Ratio		0.20		0.70	0.36		0.05	0.26	0.11	0.06	0.40	0.01
Control Delay		20.5		58.2	9.6		11.2	11.7	5.2	4.5	4.7	0.0
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		20.5		58.2	9.6		11.2	11.7	5.2	4.5	4.7	0.0
LOS		C		E	A		B	B	A	A	A	A
Approach Delay		20.5			36.6			10.7			4.7	

Lanes, Volumes, Timings
29: Kennedy Rd & The Fairways/Castlemore Ave

Existing Condition - AM Peak Hour
Kennedy Road EA

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Approach LOS	C			D			B			A		
Queue Length 50th (m)		5.7		41.8	2.6		1.8	43.6	4.0	1.1	19.6	0.0
Queue Length 95th (m)		14.3		54.4	15.3		m6.4	64.8	16.7	m2.9	27.9	m0.0
Internal Link Dist (m)		183.4			169.2			317.0			203.3	
Turn Bay Length (m)							57.0		56.0	50.0		46.0
Base Capacity (vph)		563		485	654		306	2417	1098	535	2417	1102
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		0.38	0.23		0.05	0.26	0.11	0.06	0.40	0.01

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 95 (79%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 12.2

Intersection LOS: B

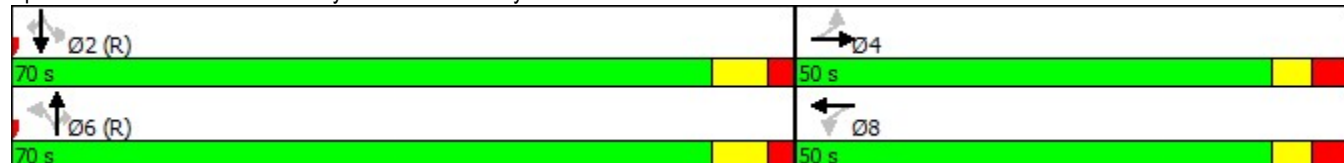
Intersection Capacity Utilization 87.8%

ICU Level of Service E

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 29: Kennedy Rd & The Fairways/Castlemore Ave



Lanes, Volumes, Timings
30: Kennedy Rd & Schoolhouse Rd

Existing Condition - AM Peak Hour
Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	29	130	546	762	11
Future Volume (vph)	14	29	130	546	762	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt	0.909				0.998	
Flt Protected	0.984		0.950			
Satd. Flow (prot)	1600	0	1825	3544	3567	0
Flt Permitted	0.984		0.950			
Satd. Flow (perm)	1600	0	1825	3544	3567	0
Link Speed (k/h)	40			60	60	
Link Distance (m)	115.5			227.3	167.2	
Travel Time (s)	10.4			13.6	10.0	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	11%	0%	3%	2%	10%
Adj. Flow (vph)	16	33	149	628	876	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	49	0	149	628	889	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 41.9% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings
31: Kennedy Rd & Major Mackenzie Dr E

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	510	219	157	1713	125	257	242	93	69	473	119
Future Volume (vph)	24	510	219	157	1713	125	257	242	93	69	473	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		92.0	50.0		160.0	140.0		80.0	50.0		92.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00		0.99	1.00					0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1738	3510	1633	1772	3579	1570	1772	3544	1601	1789	3544	1601
Flt Permitted	0.079			0.346			0.238			0.581		
Satd. Flow (perm)	145	3510	1610	645	3579	1548	444	3544	1601	1094	3544	1580
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			252			144			107			137
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		424.7			384.5			167.2			409.3	
Travel Time (s)		21.8			19.8			10.0			24.6	
Confl. Peds. (#/hr)	2		2	2		2	1					1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	5%	4%	0%	3%	2%	4%	3%	3%	2%	2%	3%	2%
Adj. Flow (vph)	28	586	252	180	1969	144	295	278	107	79	544	137
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	586	252	180	1969	144	295	278	107	79	544	137
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	37.5	37.5	11.0	37.5	37.5	11.0	37.0	37.0	38.5	38.5	38.5
Total Split (s)	12.0	53.0	53.0	12.0	53.0	53.0	15.0	55.0	55.0	40.0	40.0	40.0
Total Split (%)	10.0%	44.2%	44.2%	10.0%	44.2%	44.2%	12.5%	45.8%	45.8%	33.3%	33.3%	33.3%
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5	2.5	1.0	1.0	1.0	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	6.0	6.0	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	61.5	50.9	50.9	67.6	58.0	58.0	43.7	41.7	41.7	25.2	25.2	25.2
Actuated g/C Ratio	0.51	0.42	0.42	0.56	0.48	0.48	0.36	0.35	0.35	0.21	0.21	0.21
v/c Ratio	0.17	0.39	0.30	0.39	1.14	0.17	1.04	0.23	0.17	0.34	0.73	0.31
Control Delay	15.6	25.9	4.0	16.5	100.2	4.3	118.5	49.2	23.5	43.1	49.8	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	25.9	4.0	16.5	100.2	4.3	118.5	49.2	23.5	43.1	49.8	7.7
LOS	B	C	A	B	F	A	F	D	C	D	D	A
Approach Delay		19.2			87.6			75.2			41.5	

Lanes, Volumes, Timings
31: Kennedy Rd & Major Mackenzie Dr E

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	B			F			E			D		
Queue Length 50th (m)	2.8	50.5	0.0	19.4	~301.2	0.0	~71.5	33.0	6.5	16.0	63.3	0.0
Queue Length 95th (m)	7.6	66.4	14.1	34.2	#353.8	11.3	#114.6	42.4	22.9	27.3	73.2	13.4
Internal Link Dist (m)	400.7			360.5			143.2			385.3		
Turn Bay Length (m)	50.0			92.0	50.0			160.0	140.0			80.0
Base Capacity (vph)	181	1488	828	456	1730	823	283	1447	717	296	959	527
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.39	0.30	0.39	1.14	0.17	1.04	0.19	0.15	0.27	0.57	0.26

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 2 (2%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 65.3

Intersection LOS: E

Intersection Capacity Utilization 100.1%

ICU Level of Service G

Analysis Period (min) 15

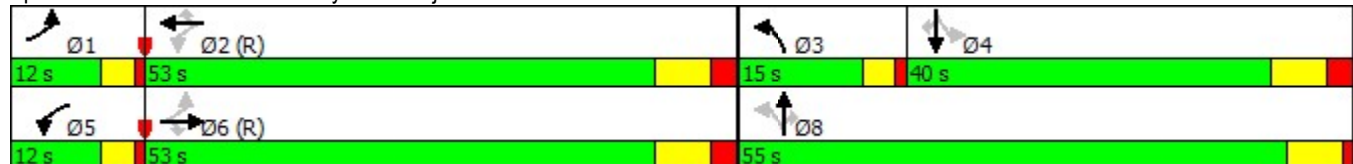
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 31: Kennedy Rd & Major Mackenzie Dr E



Lanes, Volumes, Timings
98: Kennedy Rd & GO Crossing

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑			↑↑			↑			↑	
Traffic Volume (vph)	0	835	0	0	1125	0	0	2	0	0	0	0
Future Volume (vph)	0	835	0	0	1125	0	0	2	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	3579	0	0	3579	0	0	1883	0	0	1883	0
Flt Permitted												
Satd. Flow (perm)	0	3579	0	0	3579	0	0	1883	0	0	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		280.9			277.2			208.5			186.5	
Travel Time (s)		16.9			16.6			15.0			13.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	908	0	0	1223	0	0	2	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	908	0	0	1223	0	0	2	0	0	0	0
Turn Type		NA			NA			NA				
Protected Phases		2			6			4			8	
Permitted Phases												
Detector Phase		2			6			4			8	
Switch Phase												
Minimum Initial (s)		833.0			833.0			158.0			158.0	
Minimum Split (s)		893.0			893.0			180.0			180.0	
Total Split (s)		900.0			900.0			180.0			180.0	
Total Split (%)		83.3%			83.3%			16.7%			16.7%	
Yellow Time (s)		10.0			10.0			2.0			2.0	
All-Red Time (s)		50.0			50.0			20.0			20.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		60.0			60.0			22.0			22.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max			C-Max			Max			Max	
Act Effct Green (s)		840.0			840.0			158.0				
Actuated g/C Ratio		0.78			0.78			0.15				
v/c Ratio		0.33			0.44			0.01				
Control Delay		36.1			41.1			394.5				
Queue Delay		22.8			48.0			0.0				
Total Delay		58.9			89.0			394.5				
LOS		E			F			F				
Approach Delay		58.9			89.0			394.5				
Approach LOS		E			F			F				
Queue Length 50th (m)		316.3			483.0			3.9				
Queue Length 95th (m)		311.6			466.5			9.7				
Internal Link Dist (m)		256.9			253.2			184.5			162.5	
Turn Bay Length (m)												
Base Capacity (vph)		2783			2783			275				

Lanes, Volumes, Timings
98: Kennedy Rd & GO Crossing

Existing Condition - AM Peak Hour
Kennedy Road EA

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Starvation Cap Reductn		1896			1667			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		1.02			1.10			0.01				

Intersection Summary

Area Type: Other

Cycle Length: 1080

Actuated Cycle Length: 1080

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of 1st Green

Natural Cycle: 1075

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 76.5

Intersection LOS: E

Intersection Capacity Utilization 894.2%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 98: Kennedy Rd & GO Crossing



Lanes, Volumes, Timings
99: Kennedy Rd & Go Crossing

Existing Condition - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑↑			↑↑	
Traffic Volume (vph)	0	0	0	0	2	0	0	680	0	0	1605	0
Future Volume (vph)	0	0	0	0	2	0	0	680	0	0	1605	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Fr t												
Flt Protected												
Satd. Flow (prot)	0	1883	0	0	1883	0	0	3579	0	0	3579	0
Flt Permitted												
Satd. Flow (perm)	0	1883	0	0	1883	0	0	3579	0	0	3579	0
Right Turn on Red												
Satd. Flow (RTOR)												
Link Speed (k/h)												
Link Distance (m)												
Travel Time (s)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	2	0	0	739	0	0	1745	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	2	0	0	739	0	0	1745	0
Turn Type												
Protected Phases												
Permitted Phases												
Detector Phase												
Switch Phase												
Minimum Initial (s)												
Minimum Split (s)												
Total Split (s)												
Total Split (%)												
Yellow Time (s)												
All-Red Time (s)												
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode												
Act Effct Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												
LOS												
Approach Delay												
Approach LOS												
Queue Length 50th (m)												
Queue Length 95th (m)												
Internal Link Dist (m)												
Turn Bay Length (m)												
Base Capacity (vph)												

Lanes, Volumes, Timings
99: Kennedy Rd & Go Crossing

Existing Condition - AM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn					0			2140			1283	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.01			1.15			1.16	

Intersection Summary

Area Type: Other

Cycle Length: 1080

Actuated Cycle Length: 1080

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of 1st Green

Natural Cycle: 1075

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 97.4

Intersection LOS: F

Intersection Capacity Utilization 894.2%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 99: Kennedy Rd & Go Crossing



Lanes, Volumes, Timings
1: Kennedy Rd & Steeles Ave E

Existing Condition - PM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	1153	294	141	754	146	166	896	122	171	861	156
Future Volume (vph)	194	1153	294	141	754	146	166	896	122	171	861	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	92.0		0.0	56.0		0.0	43.0		25.0	166.0		88.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.98		0.84	0.98	0.99		0.99		0.87	0.98		0.95
Frt			0.850		0.976				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1807	3510	1601	1807	4827	0	1772	3579	1498	1807	3579	1555
Flt Permitted	0.205			0.083			0.134			0.117		
Satd. Flow (perm)	383	3510	1348	155	4827	0	248	3579	1297	218	3579	1474
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			159		36				102			158
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		438.0			403.1			543.5			456.9	
Travel Time (s)		26.3			24.2			32.6			27.4	
Confl. Peds. (#/hr)	98		186	186		98	47		143	143		47
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 (%)	1%	4%	2%	1%	5%	2%	3%	2%	9%	1%	2%	5%
Adj. Flow (vph)	211	1253	320	153	820	159	180	974	133	186	936	170
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	1253	320	153	979	0	180	974	133	186	936	170
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Minimum Split (s)	11.0	55.0	55.0	11.0	55.0		11.0	51.0	51.0	11.0	51.0	51.0
Total Split (s)	11.0	55.0	55.0	11.0	55.0		11.0	51.0	51.0	11.0	51.0	51.0
Total Split (%)	8.6%	43.0%	43.0%	8.6%	43.0%		8.6%	39.8%	39.8%	8.6%	39.8%	39.8%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0		1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0		4.0	7.0	7.0	4.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effect Green (s)	58.0	48.0	48.0	58.0	48.0		54.0	44.0	44.0	54.0	44.0	44.0
Actuated g/C Ratio	0.45	0.38	0.38	0.45	0.38		0.42	0.34	0.34	0.42	0.34	0.34
v/c Ratio	0.84	0.95	0.53	0.96	0.53		0.96	0.79	0.26	1.04	0.76	0.28
Control Delay	52.0	54.9	18.6	87.4	31.3		84.3	43.6	10.3	107.3	42.2	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	54.9	18.6	87.4	31.3		84.3	43.6	10.3	107.3	42.2	6.7
LOS	D	D	B	F	C		F	D	B	F	D	A
Approach Delay		48.0			38.9			45.8			46.9	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	30.3	160.3	30.3	22.3	67.5		27.1	116.0	5.2	~29.0	109.8	2.0
Queue Length 95th (m)	#61.9	#206.1	58.7	#65.0	81.2		#66.7	141.5	19.9	#76.4	134.5	17.3
Internal Link Dist (m)		414.0			379.1			519.5			432.9	

Lanes, Volumes, Timings
1: Kennedy Rd & Steeles Ave E

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	92.0			56.0			43.0		25.0	166.0		88.0
Base Capacity (vph)	251	1316	604	160	1832		187	1230	512	178	1230	610
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.95	0.53	0.96	0.53		0.96	0.79	0.26	1.04	0.76	0.28

Intersection Summary

Area Type: Other

Cycle Length: 128

Actuated Cycle Length: 128

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

Natural Cycle: 130

Control Type: Pretimed

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 45.4

Intersection LOS: D

Intersection Capacity Utilization 115.2%

ICU Level of Service H

Analysis Period (min) 15

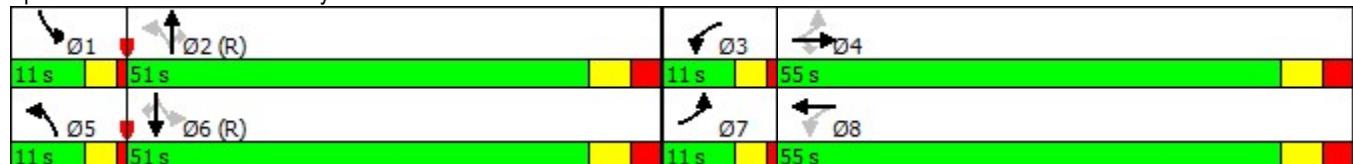
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Kennedy Rd & Steeles Ave E



Lanes, Volumes, Timings

2: Kennedy Rd & Clayton Dr/Pacific Mall Access

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	104	210	164	75	96	123	939	79	212	777	71
Future Volume (vph)	139	104	210	164	75	96	123	939	79	212	777	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	57.0		0.0	0.0		0.0	127.0		70.0	90.0		42.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	2.5			0.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	0.95		0.97	0.99		0.99		0.97	1.00		0.93
Frt		0.900			0.916				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	1615	0	1789	1716	0	1825	3579	1633	1789	3476	1633
Flt Permitted	0.572			0.325			0.261			0.204		
Satd. Flow (perm)	1056	1615	0	591	1716	0	496	3579	1588	383	3476	1521
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		77			49				86			101
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		148.7			168.9			456.9			282.3	
Travel Time (s)		13.4			15.2			27.4			16.9	
Confl. Peds. (#/hr)	12		62	62		12	23		12	12		23
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%	2%	1%	2%	0%	2%	0%	2%	0%	2%	5%	0%
Adj. Flow (vph)	151	113	228	178	82	104	134	1021	86	230	845	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	341	0	178	186	0	134	1021	86	230	845	77
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	30.0	30.0	7.0	30.0	30.0
Minimum Split (s)	42.0	42.0		42.0	42.0		11.0	37.0	37.0	11.0	37.0	37.0
Total Split (s)	43.0	43.0		43.0	43.0		20.0	75.0	75.0	12.0	67.0	67.0
Total Split (%)	33.1%	33.1%		33.1%	33.1%		15.4%	57.7%	57.7%	9.2%	51.5%	51.5%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	3.5	3.5		3.5	3.5		1.0	2.5	2.5	1.0	2.5	2.5
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)	7.0	7.0		7.0	7.0		4.0	7.0	7.0	4.0	7.0	7.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	36.0	36.0		36.0	36.0		80.2	68.0	68.0	77.8	66.8	66.8
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.62	0.52	0.52	0.60	0.51	0.51
v/c Ratio	0.52	0.68		1.09	0.36		0.34	0.55	0.10	0.73	0.47	0.09
Control Delay	47.1	39.8		141.5	29.8		11.6	22.1	3.4	26.3	21.7	1.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.1	39.8		141.5	29.8		11.6	22.1	3.4	26.3	21.7	1.8
LOS	D	D		F	C		B	C	A	C	C	A
Approach Delay		42.1			84.5			19.6			21.3	

Lanes, Volumes, Timings
2: Kennedy Rd & Clayton Dr/Pacific Mall Access

Existing Condition - PM Peak Hour

Kennedy Road EA

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	D			F			B			C		
Queue Length 50th (m)	32.7	60.9		~51.2	27.9		12.5	88.8	0.0	22.9	70.9	0.0
Queue Length 95th (m)	55.0	95.1		#97.0	49.0		20.7	107.8	7.8	#39.1	91.3	4.8
Internal Link Dist (m)		124.7			144.9			432.9			258.3	
Turn Bay Length (m)	57.0						127.0		70.0	90.0		42.0
Base Capacity (vph)	292	502		163	510		480	1872	871	315	1784	830
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	0.52	0.68		1.09	0.36		0.28	0.55	0.10	0.73	0.47	0.09

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 42 (32%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 30.9

Intersection LOS: C

Intersection Capacity Utilization 95.8%

ICU Level of Service F

Analysis Period (min) 15

~ 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.

Splits and Phases: 2: Kennedy Rd & Clayton Dr/Pacific Mall Access



Lanes, Volumes, Timings
3: Kennedy Rd & Gorvette Rd

Existing Condition - PM Peak Hour

Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	143	115	103	1201	901	46	
Future Volume (vph)	143	115	103	1201	901	46	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0	71.0			41.0	
Storage Lanes	1	1	1			1	
Taper Length (m)	0.0		2.5				
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	
Ped Bike Factor	1.00	0.98	0.99			0.94	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1772	1601	1789	3579	3544	1585	
Flt Permitted	0.950		0.259				
Satd. Flow (perm)	1767	1569	485	3579	3544	1498	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		120				39	
Link Speed (k/h)	50			60	60		
Link Distance (m)	180.2			275.8	243.2		
Travel Time (s)	13.0			16.5	14.6		
Confl. Peds. (#/hr)	2	6	15			15	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Heavy Vehicles (%)	3%	2%	2%	2%	3%	3%	
Adj. Flow (vph)	149	120	107	1251	939	48	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	149	120	107	1251	939	48	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm	
Protected Phases	4		1	6	2		8
Permitted Phases		4	6			2	
Detector Phase	4	4	1	6	2	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	7.0	30.0	30.0	30.0	10.0
Minimum Split (s)	37.0	37.0	11.0	37.0	37.0	37.0	37.0
Total Split (s)	38.0	38.0	12.0	92.0	80.0	80.0	38.0
Total Split (%)	29.2%	29.2%	9.2%	70.8%	61.5%	61.5%	29%
Yellow Time (s)	3.5	3.5	3.0	4.5	4.5	4.5	3.5
All-Red Time (s)	3.5	3.5	1.0	2.5	2.5	2.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	4.0	7.0	7.0	7.0	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	17.8	17.8	101.2	98.2	86.6	86.6	
Actuated g/C Ratio	0.14	0.14	0.78	0.76	0.67	0.67	
v/c Ratio	0.62	0.38	0.24	0.46	0.40	0.05	
Control Delay	62.5	10.8	5.6	7.4	9.7	3.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	62.5	10.8	5.6	7.4	9.7	3.7	
LOS	E	B	A	A	A	A	
Approach Delay	39.4			7.3	9.4		

Lanes, Volumes, Timings
3: Kennedy Rd & Gorvette Rd

Existing Condition - PM Peak Hour
Kennedy Road EA



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Approach LOS	D			A		A	
Queue Length 50th (m)	37.0	0.0	5.1	51.9	48.3	1.5	
Queue Length 95th (m)	52.5	15.4	14.6	97.3	m35.3	m0.3	
Internal Link Dist (m)	156.2			251.8	219.2		
Turn Bay Length (m)			71.0			41.0	
Base Capacity (vph)	422	465	459	2702	2359	1010	
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	0.35	0.26	0.23	0.46	0.40	0.05	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 89 (68%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 11.4

Intersection LOS: B

Intersection Capacity Utilization 57.2%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Kennedy Rd & Gorvette Rd



Lanes, Volumes, Timings
4: Kennedy Rd & Denison St

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	827	29	117	395	220	102	949	291	234	878	127
Future Volume (vph)	200	827	29	117	395	220	102	949	291	234	878	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	48.0		0.0	150.0		39.0	80.0		44.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00	1.00		0.99	0.99		0.99		0.97	1.00		0.95
Frt		0.995			0.946				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	3556	0	1772	3270	0	1789	3579	1601	1722	3544	1601
Flt Permitted	0.229			0.119			0.210			0.178		
Satd. Flow (perm)	429	3556	0	220	3270	0	392	3579	1552	322	3544	1516
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			79				177			105
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		322.0			182.9			243.2			339.7	
Travel Time (s)		23.2			13.2			14.6			20.4	
Confl. Peds. (#/hr)	11		35	35		11	32		11	11		32
Confl. Bikes (#/hr)			1	1								
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	0%	3%	5%	4%	2%	2%	2%	6%	3%	2%
Adj. Flow (vph)	208	861	30	122	411	229	106	989	303	244	915	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	208	891	0	122	640	0	106	989	303	244	915	132
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8			6		6	2		2
Detector Phase	7	4		3	8		1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	30.0	30.0	7.0	30.0	30.0
Minimum Split (s)	11.0	39.5		11.0	39.5		11.0	37.5	37.5	11.0	37.5	37.5
Total Split (s)	12.0	41.0		12.0	41.0		12.0	65.0	65.0	12.0	65.0	65.0
Total Split (%)	9.2%	31.5%		9.2%	31.5%		9.2%	50.0%	50.0%	9.2%	50.0%	50.0%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	3.5		1.0	3.5		1.0	3.0	3.0	1.0	3.0	3.0
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)	4.0	7.5		4.0	7.5		4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	45.0	33.5		45.0	33.5		68.8	57.5	57.5	69.2	57.7	57.7
Actuated g/C Ratio	0.35	0.26		0.35	0.26		0.53	0.44	0.44	0.53	0.44	0.44
v/c Ratio	0.90	0.97		0.71	0.71		0.36	0.62	0.39	0.95	0.58	0.18
Control Delay	71.2	71.0		51.6	43.2		13.6	28.2	9.6	78.9	36.1	14.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.2	71.0		51.6	43.2		13.6	28.2	9.6	78.9	36.1	14.8
LOS	E	E		D	D		B	C	A	E	D	B

Lanes, Volumes, Timings
4: Kennedy Rd & Denison St

Existing Condition - PM Peak Hour
Kennedy Road EA

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		71.1			44.6			23.1			42.0	
Approach LOS		E			D			C			D	
Queue Length 50th (m)	37.3	119.1		20.8	69.5		14.0	106.8	25.4	42.6	88.3	4.5
Queue Length 95th (m)	#77.8	#161.1		#41.4	90.7		11.5	129.1	47.6	#106.7	149.6	35.7
Internal Link Dist (m)		298.0			158.9			219.2			315.7	
Turn Bay Length (m)	60.0			48.0			150.0		39.0	80.0		44.0
Base Capacity (vph)	232	918		171	901		294	1583	785	257	1572	731
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	0.90	0.97		0.71	0.71		0.36	0.62	0.39	0.95	0.58	0.18

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 112 (86%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 43.6

Intersection LOS: D

Intersection Capacity Utilization 90.6%

ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Kennedy Rd & Denison St

12 s		65 s		12 s		41 s	
12 s		65 s		12 s		41 s	

Lanes, Volumes, Timings
5: Kennedy Rd & Milliken Mills HS S Access

Existing Condition - PM Peak Hour
Kennedy Road EA

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Traffic Volume (vph)	0	20	0	1396	1200	20
Future Volume (vph)	0	20	0	1396	1200	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.865			0.998	
Flt Protected						
Satd. Flow (prot)	0	1662	0	3650	3643	0
Flt Permitted						
Satd. Flow (perm)	0	1662	0	3650	3643	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	82.2			339.7	142.9	
Travel Time (s)	5.9			20.4	8.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	21	0	1454	1250	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	21	0	1454	1271	0
Sign Control	Yield			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	43.8%			ICU Level of Service A		
Analysis Period (min)	15					

Lanes, Volumes, Timings

6: Kennedy Rd & Milliken Mills HS N Access/Highglen Ave

Existing Condition - PM Peak Hour

Kennedy Road EA

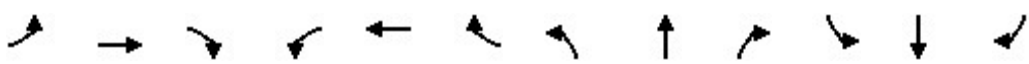
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	58	62	39	45	63	49	1305	69	123	1058	13
Future Volume (vph)	19	58	62	39	45	63	49	1305	69	123	1058	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	53.0		0.0	75.0		0.0	90.0		63.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		0.99	0.99		0.99	1.00				0.94
Frt		0.922			0.912			0.992				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1751	0	1825	1738	0	1825	3548	0	1825	3510	1633
Flt Permitted	0.676			0.629			0.231			0.135		
Satd. Flow (perm)	1297	1751	0	1198	1738	0	441	3548	0	259	3510	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40			51			7				71
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		183.2			282.0			142.9			266.6	
Travel Time (s)		16.5			25.4			8.6			16.0	
Confl. Peds. (#/hr)	1		8	8		1	16		2	2		16
Confl. Bikes (#/hr)							3		4	4		3
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	4%	0%
Adj. Flow (vph)	20	60	65	41	47	66	51	1359	72	128	1102	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	125	0	41	113	0	51	1431	0	128	1102	14
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	30.0		7.0	30.0	30.0
Minimum Split (s)	37.5	37.5		37.5	37.5		11.0	37.0		11.0	37.0	37.0
Total Split (s)	39.0	39.0		39.0	39.0		12.0	79.0		12.0	79.0	79.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%		9.2%	60.8%		9.2%	60.8%	60.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	4.5		3.0	4.5	4.5
All-Red Time (s)	4.0	4.0		4.0	4.0		1.0	2.5		1.0	2.5	2.5
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)	7.5	7.5		7.5	7.5		4.0	7.0		4.0	7.0	7.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	C-Max
Act Effct Green (s)	15.2	15.2		15.2	15.2		98.5	88.4		100.9	91.3	91.3
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.76	0.68		0.78	0.70	0.70
v/c Ratio	0.13	0.52		0.29	0.46		0.12	0.59		0.43	0.45	0.01
Control Delay	49.4	42.6		54.8	34.0		4.3	11.4		12.6	6.2	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	49.4	42.6		54.8	34.0		4.3	11.4		12.6	6.2	0.0
LOS	D	D		D	C		A	B		B	A	A

Lanes, Volumes, Timings

Existing Condition - PM Peak Hour

6: Kennedy Rd & Milliken Mills HS N Access/Highglen Ave

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		43.5			39.6			11.1			6.8	
Approach LOS		D			D			B			A	
Queue Length 50th (m)	4.8	21.2		10.1	15.2		2.1	45.3		3.5	23.4	0.0
Queue Length 95th (m)	11.0	35.3		18.4	29.1		m4.4	203.3		13.5	60.7	m0.0
Internal Link Dist (m)		159.2			258.0			118.9			242.6	
Turn Bay Length (m)	32.0			53.0			75.0			90.0		63.0
Base Capacity (vph)	314	454		290	459		422	2414		304	2466	1096
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	0.06	0.28		0.14	0.25		0.12	0.59		0.42	0.45	0.01

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 16 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 12.3

Intersection LOS: B

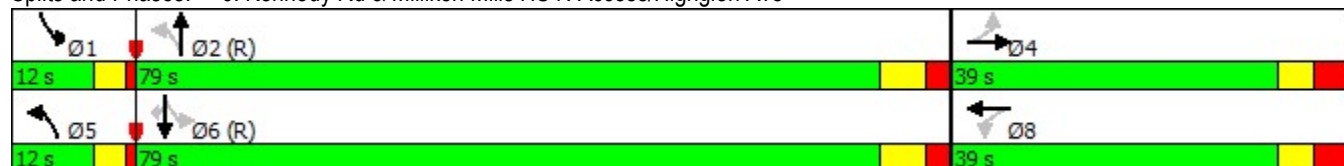
Intersection Capacity Utilization 72.7%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kennedy Rd & Milliken Mills HS N Access/Highglen Ave



Lanes, Volumes, Timings

Existing Condition - PM Peak Hour

7: Kennedy Rd & Milliken Mills Community Centre/Lee Ave

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	4	63	18	20	53	42	1326	42	132	1116	130
Future Volume (vph)	72	4	63	18	20	53	42	1326	42	132	1116	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		37.0	90.0		0.0	72.0		54.0
Storage Lanes	1		0	0		1	1		0	1		1
Taper Length (m)	0.0			0.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	0.99	0.98			0.99	0.98	1.00	1.00				0.97
Frt		0.858				0.850		0.995				0.850
Flt Protected	0.950				0.977		0.950			0.950		
Satd. Flow (prot)	1825	1609	0	0	1877	1633	1825	3560	0	1825	3510	1633
Flt Permitted	0.730				0.816		0.201			0.140		
Satd. Flow (perm)	1387	1609	0	0	1559	1594	386	3560	0	269	3510	1579
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		71				57		5				146
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		87.8			315.9			266.6			285.1	
Travel Time (s)		7.9			28.4			16.0			17.1	
Confl. Peds. (#/hr)	8		9	9		8	5					5
Confl. Bikes (#/hr)							1		3	3		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	4%	0%
Adj. Flow (vph)	81	4	71	20	22	60	47	1490	47	148	1254	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	75	0	0	42	60	47	1537	0	148	1254	146
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	30.0	30.0		30.0	30.0	30.0
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	37.0	37.0		37.0	37.0	37.0
Total Split (s)	35.0	35.0		35.0	35.0	35.0	95.0	95.0		95.0	95.0	95.0
Total Split (%)	26.9%	26.9%		26.9%	26.9%	26.9%	73.1%	73.1%		73.1%	73.1%	73.1%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	3.5	3.5		3.5	3.5	3.5	2.5	2.5		2.5	2.5	2.5
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)	7.0	7.0			7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)	14.9	14.9			14.9	14.9	101.1	101.1		101.1	101.1	101.1
Actuated g/C Ratio	0.11	0.11			0.11	0.11	0.78	0.78		0.78	0.78	0.78
v/c Ratio	0.51	0.30			0.23	0.26	0.16	0.56		0.71	0.46	0.12
Control Delay	63.7	14.7			52.9	15.2	3.8	3.4		31.6	6.3	1.1
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	63.7	14.7			52.9	15.2	3.8	3.5		31.6	6.3	1.1
LOS	E	B			D	B	A	A		C	A	A

Lanes, Volumes, Timings

7: Kennedy Rd & Milliken Mills Community Centre/Lee Ave

Existing Condition - PM Peak Hour

Kennedy Road EA

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		40.1			30.7			3.5			8.2	
Approach LOS		D			C			A			A	
Queue Length 50th (m)	20.2	1.0			10.1	0.7	1.2	28.1		14.6	45.3	0.0
Queue Length 95th (m)	32.7	13.6			19.1	12.0	m3.3	36.6		#70.2	86.7	5.8
Internal Link Dist (m)		63.8			291.9			242.6			261.1	
Turn Bay Length (m)						37.0	90.0			72.0		54.0
Base Capacity (vph)	298	402			335	388	300	2768		209	2728	1260
Starvation Cap Reductn	0	0			0	0	0	36		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	0.27	0.19			0.13	0.15	0.16	0.56		0.71	0.46	0.12

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 8.1

Intersection LOS: A

Intersection Capacity Utilization 94.0%

ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Kennedy Rd & Milliken Mills Community Centre/Lee Ave

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Lanes, Volumes, Timings
8: Kennedy Rd & 14th Ave

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	1200	184	87	607	313	133	1148	120	249	1098	97
Future Volume (vph)	128	1200	184	87	607	313	133	1148	120	249	1098	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	64.0		58.0	50.0		45.0	65.0		60.0	50.0		44.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98			0.98	1.00		0.98			0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1807	3614	1601	1772	3579	1601	1789	3579	1633	1825	3544	1585
Flt Permitted	0.316			0.080			0.086			0.079		
Satd. Flow (perm)	599	3614	1574	149	3579	1567	162	3579	1598	152	3544	1532
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101			203			97			97
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		504.0			494.8			285.1			290.2	
Travel Time (s)		36.3			35.6			17.1			17.4	
Confl. Peds. (#/hr)	7		3	3		7	17		7	7		17
Confl. Bikes (#/hr)			2	2			2		1	1		2
Peak Hour 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
Heavy Vehicles (%)	1%	1%	2%	3%	2%	2%	2%	2%	0%	0%	3%	3%
Adj. Flow (vph)	129	1212	186	88	613	316	134	1160	121	252	1109	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1212	186	88	613	316	134	1160	121	252	1109	98
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	39.5	39.5	11.0	39.5	39.5	11.0	41.5	41.5	11.0	41.5	41.5
Total Split (s)	12.0	58.0	58.0	12.0	58.0	58.0	12.0	54.0	54.0	16.0	58.0	58.0
Total Split (%)	8.6%	41.4%	41.4%	8.6%	41.4%	41.4%	8.6%	38.6%	38.6%	11.4%	41.4%	41.4%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	61.6	50.1	50.1	61.2	49.9	49.9	58.3	46.5	46.5	66.6	50.8	50.8
Actuated g/C Ratio	0.44	0.36	0.36	0.44	0.36	0.36	0.42	0.33	0.33	0.48	0.36	0.36
v/c Ratio	0.39	0.94	0.30	0.57	0.48	0.46	0.82	0.98	0.20	1.14	0.86	0.16
Control Delay	25.1	57.4	15.7	36.6	36.4	13.9	63.2	67.1	10.2	134.3	49.6	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.1	57.4	15.7	36.6	36.4	13.9	63.2	67.1	10.2	134.3	49.6	6.2
LOS	C	E	B	D	D	B	E	E	B	F	D	A

Lanes, Volumes, Timings
8: Kennedy Rd & 14th Ave

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		49.6			29.4			61.9			61.3	
Approach LOS		D			C			E			E	
Queue Length 50th (m)	20.0	169.2	15.8	13.3	68.6	21.7	20.8	167.0	4.5	~66.0	149.7	0.2
Queue Length 95th (m)	32.7	#211.6	34.4	24.7	86.3	48.2	#56.8	#213.3	18.7	#120.8	178.8	12.2
Internal Link Dist (m)		480.0			470.8			261.1			266.2	
Turn Bay Length (m)	64.0		58.0	50.0		45.0	65.0		60.0	50.0		44.0
Base Capacity (vph)	332	1303	632	157	1290	695	163	1188	595	222	1286	617
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.93	0.29	0.56	0.48	0.45	0.82	0.98	0.20	1.14	0.86	0.16

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 16 (11%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 52.2

Intersection LOS: D

Intersection Capacity Utilization 103.7%

ICU Level of Service G

Analysis Period (min) 15

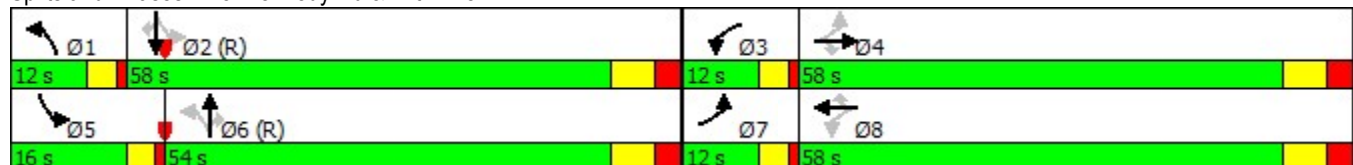
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 8: Kennedy Rd & 14th Ave



Lanes, Volumes, Timings
9: Kennedy Rd & Duffield Dr

Existing Condition - PM Peak Hour
Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	385	131	99	1469	1279	165	
Future Volume (vph)	385	131	99	1469	1279	165	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	65.0	0.0	63.0			52.0	
Storage Lanes	1	1	1			1	
Taper Length (m)	2.5		2.5				
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	
Ped Bike Factor	0.99	0.98	1.00			0.95	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1789	1601	1738	3579	3544	1585	
Flt Permitted	0.950		0.160				
Satd. Flow (perm)	1774	1571	292	3579	3544	1499	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		59				136	
Link Speed (k/h)	50			60	60		
Link Distance (m)	324.2			290.2	340.2		
Travel Time (s)	23.3			17.4	20.4		
Confl. Peds. (#/hr)	6	5	15			15	
Confl. Bikes (#/hr)			1			1	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	
Heavy Vehicles (%)	2%	2%	5%	2%	3%	3%	
Adj. Flow (vph)	389	132	100	1484	1292	167	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	389	132	100	1484	1292	167	
Turn Type	Prot	Perm	Perm	NA	NA	Perm	
Protected Phases	4			6	2		8
Permitted Phases		4	6			2	
Detector Phase	4	4	6	6	2	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	40.0	40.0	40.0	40.0	10.0
Minimum Split (s)	35.0	35.0	47.0	47.0	47.0	47.0	35.0
Total Split (s)	44.0	44.0	86.0	86.0	86.0	86.0	44.0
Total Split (%)	33.8%	33.8%	66.2%	66.2%	66.2%	66.2%	34%
Yellow Time (s)	3.5	3.5	4.5	4.5	4.5	4.5	3.5
All-Red Time (s)	3.5	3.5	2.5	2.5	2.5	2.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max	None
Act Effct Green (s)	32.3	32.3	83.7	83.7	83.7	83.7	
Actuated g/C Ratio	0.25	0.25	0.64	0.64	0.64	0.64	
v/c Ratio	0.87	0.30	0.53	0.64	0.57	0.16	
Control Delay	67.2	22.5	27.3	16.5	20.2	6.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	67.2	22.5	27.3	16.5	20.2	6.2	
LOS	E	C	C	B	C	A	

Lanes, Volumes, Timings
9: Kennedy Rd & Duffield Dr

Existing Condition - PM Peak Hour
Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Approach Delay	55.9			17.2	18.6		
Approach LOS	E			B	B		
Queue Length 50th (m)	94.9	14.6	13.4	117.3	122.5	12.1	
Queue Length 95th (m)	128.9	30.7	37.6	150.5	164.1	m20.0	
Internal Link Dist (m)	300.2			266.2	316.2		
Turn Bay Length (m)	65.0		63.0			52.0	
Base Capacity (vph)	509	489	188	2303	2280	1013	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	23	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.76	0.27	0.53	0.65	0.57	0.16	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 8 (6%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 23.4

Intersection LOS: C

Intersection Capacity Utilization 107.8%

ICU Level of Service G

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kennedy Rd & Duffield Dr



Lanes, Volumes, Timings
10: Kennedy Rd & 407 EB Off-Ramp

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	336	0	301	0	0	0	0	1725	167	0	1173	160
Future Volume (vph)	336	0	301	0	0	0	0	1725	167	0	1173	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		300.0
Storage Lanes	2		1	0		0	0		0	0		1
Taper Length (m)	0.0			0.0			0.0			0.0		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor								1.00				0.96
Frt			0.850					0.987				0.850
Flt Protected	0.950											
Satd. Flow (prot)	3437	0	1541	0	0	0	0	3528	0	0	3579	1633
Flt Permitted	0.950											
Satd. Flow (perm)	3437	0	1541	0	0	0	0	3528	0	0	3579	1571
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82					16				168
Link Speed (k/h)		60			48			60			60	
Link Distance (m)		436.7			245.1			340.2			345.3	
Travel Time (s)		26.2			18.4			20.4			20.7	
Confl. Peds. (#/hr)							7					7
Confl. Bikes (#/hr)							2		3	3		2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	0%	6%	0%	0%	0%	0%	2%	1%	0%	2%	0%
Adj. Flow (vph)	354	0	317	0	0	0	0	1816	176	0	1235	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	354	0	317	0	0	0	0	1992	0	0	1235	168
Turn Type	Prot		Perm					NA			NA	Perm
Protected Phases	4							6			2	
Permitted Phases			4									2
Detector Phase	4		4					6			2	2
Switch Phase												
Minimum Initial (s)	10.0		10.0					15.0			15.0	15.0
Minimum Split (s)	31.5		31.5					34.5			34.5	34.5
Total Split (s)	39.0		39.0					91.0			91.0	91.0
Total Split (%)	30.0%		30.0%					70.0%			70.0%	70.0%
Yellow Time (s)	4.5		4.5					4.5			4.5	4.5
All-Red Time (s)	2.0		2.0					3.0			3.0	3.0
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	0.0
Total Lost Time (s)	6.5		6.5					7.5			7.5	7.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None		None					C-Max			C-Max	C-Max
Act Effct Green (s)	25.5		25.5					90.5			90.5	90.5
Actuated g/C Ratio	0.20		0.20					0.70			0.70	0.70
v/c Ratio	0.53		0.86					0.81			0.50	0.15
Control Delay	48.8		59.1					23.3			6.5	0.6
Queue Delay	0.0		0.0					0.0			0.0	0.0
Total Delay	48.8		59.1					23.3			6.5	0.6
LOS	D		E					C			A	A

Lanes, Volumes, Timings
10: Kennedy Rd & 407 EB Off-Ramp

Existing Condition - PM Peak Hour
Kennedy Road EA

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (m)	
Storage Lanes	
Taper Length (m)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.5
Total Split (s)	39.0
Total Split (%)	30%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	

Lanes, Volumes, Timings
10: Kennedy Rd & 407 EB Off-Ramp

Existing Condition - PM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		53.7						23.3			5.8	
Approach LOS		D						C			A	
Queue Length 50th (m)	42.0		59.8					176.0			76.1	0.0
Queue Length 95th (m)	53.5		89.8					249.8			20.7	0.7
Internal Link Dist (m)		412.7			221.1			316.2			321.3	
Turn Bay Length (m)												300.0
Base Capacity (vph)	859		446					2461			2492	1145
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	0.41		0.71					0.81			0.50	0.15

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 87 (67%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 22.2

Intersection LOS: C

Intersection Capacity Utilization 72.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Kennedy Rd & 407 EB Off-Ramp

	
Ø2 (R)	Ø4
91 s	39 s
	
Ø6 (R)	Ø8
91 s	39 s

Lane Group	Ø8
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: Kennedy Rd & 407 WB Off-Ramp

Existing Condition - PM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	40	0	45	0	1812	75	0	1423	0
Future Volume (vph)	0	0	0	40	0	45	0	1812	75	0	1423	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor									0.98			
Frt						0.850			0.850			
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3372	0	1555	0	3579	1633	0	3579	0
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3372	0	1555	0	3579	1593	0	3579	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)						42			74			
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		370.0			404.8			345.3			162.6	
Travel Time (s)		27.8			24.3			20.7			9.8	
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)							2		4	4		2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	5%	0%	5%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	0	0	0	41	0	46	0	1868	77	0	1467	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	41	0	46	0	1868	77	0	1467	0
Turn Type				Prot		Perm		NA	Perm		NA	
Protected Phases				8				6			2	
Permitted Phases						8			6			
Detector Phase				8		8		6	6		2	
Switch Phase												
Minimum Initial (s)				10.0		10.0		30.0	30.0		30.0	
Minimum Split (s)				32.5		32.5		38.0	38.0		38.0	
Total Split (s)				34.0		34.0		96.0	96.0		96.0	
Total Split (%)				26.2%		26.2%		73.8%	73.8%		73.8%	
Yellow Time (s)				4.5		4.5		4.5	4.5		4.5	
All-Red Time (s)				2.0		2.0		3.5	3.5		3.5	
Lost Time Adjust (s)				0.0		0.0		0.0	0.0		0.0	
Total Lost Time (s)				6.5		6.5		8.0	8.0		8.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None		None		C-Max	C-Max		C-Max	
Act Effct Green (s)				13.2		13.2		107.2	107.2		107.2	
Actuated g/C Ratio				0.10		0.10		0.82	0.82		0.82	
v/c Ratio				0.12		0.24		0.63	0.06		0.50	
Control Delay				51.4		18.8		6.3	1.9		5.8	
Queue Delay				0.0		0.0		0.0	0.0		0.7	
Total Delay				51.4		18.8		6.3	1.9		6.5	
LOS				D		B		A	A		A	
Approach Delay					34.1			6.1			6.5	
Approach LOS					C			A			A	
Queue Length 50th (m)				5.1		1.0		54.4	0.3		51.2	

Lanes, Volumes, Timings
11: Kennedy Rd & 407 WB Off-Ramp

Existing Condition - PM Peak Hour
Kennedy Road EA

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.5
Total Split (s)	34.0
Total Split (%)	26%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	

Lanes, Volumes, Timings
11: Kennedy Rd & 407 WB Off-Ramp

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)				9.4		11.4		138.3	m3.3		113.4	
Internal Link Dist (m)		346.0			380.8			321.3			138.6	
Turn Bay Length (m)												
Base Capacity (vph)				713		362		2951	1326		2951	
Starvation Cap Reductn				0		0		0	0		1003	
Spillback Cap Reductn				0		0		0	0		0	
Storage Cap Reductn				0		0		0	0		0	
Reduced v/c Ratio				0.06		0.13		0.63	0.06		0.75	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 72 (55%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 7.0

Intersection LOS: A

Intersection Capacity Utilization 70.5%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Kennedy Rd & 407 WB Off-Ramp

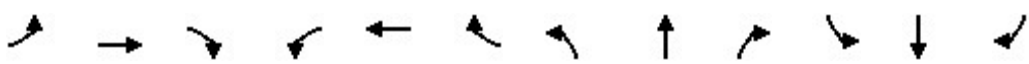
	Ø2 (R)												Ø4
96 s												34 s	
	Ø6 (R)												Ø8
96 s												34 s	

Lane Group	Ø4
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
12: Kennedy Rd & YMCA Blvd/Helen Ave

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	105	244	98	20	42	161	1328	387	42	1213	77
Future Volume (vph)	245	105	244	98	20	42	161	1328	387	42	1213	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	135.0		0.0	132.0		0.0	77.0		100.0	96.0		83.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.98		0.99					0.97	1.00		0.96
Frt		0.895			0.898				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3372	1599	0	1738	1672	0	1690	3579	1617	1772	3614	1361
Flt Permitted	0.616			0.240			0.114			0.151		
Satd. Flow (perm)	2186	1599	0	436	1672	0	203	3579	1571	281	3614	1310
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		78			43				395			79
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		303.2			335.1			162.6			360.1	
Travel Time (s)		27.3			30.2			9.8			21.6	
Confl. Peds. (#/hr)			11	11			8		3	3		8
Confl. Bikes (#/hr)									3	3		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	5%	2%	7%	5%	10%	0%	8%	2%	1%	3%	1%	20%
Adj. Flow (vph)	250	107	249	100	20	43	164	1355	395	43	1238	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	250	356	0	100	63	0	164	1355	395	43	1238	79
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	custom
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4			8			6		6	2		6
Detector Phase	7	4		3	8		1	6	6	2	2	6
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	11.0	38.5		11.0	38.5		11.0	40.0	40.0	40.0	40.0	40.0
Total Split (s)	12.0	40.0		12.0	40.0		12.0	88.0	88.0	76.0	76.0	88.0
Total Split (%)	8.6%	28.6%		8.6%	28.6%		8.6%	62.9%	62.9%	54.3%	54.3%	62.9%
Yellow Time (s)	3.0	3.5		3.0	3.5		3.0	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	4.0		1.0	4.0		1.0	3.5	3.5	3.5	3.5	3.5
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)	4.0	7.5		4.0	7.5		4.0	8.0	8.0	8.0	8.0	8.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	41.2	28.9		35.6	26.8		87.6	83.6	83.6	70.6	70.6	83.6
Actuated g/C Ratio	0.29	0.21		0.25	0.19		0.63	0.60	0.60	0.50	0.50	0.60
v/c Ratio	0.33	0.91		0.54	0.18		0.74	0.63	0.36	0.30	0.68	0.10
Control Delay	36.2	69.1		46.8	19.2		34.0	20.6	2.2	50.9	49.5	16.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	3.9	0.4	0.0	0.0	0.0
Total Delay	36.2	69.1		46.8	19.2		34.0	24.5	2.7	50.9	49.5	16.4
LOS	D	E		D	B		C	C	A	D	D	B

Lanes, Volumes, Timings
12: Kennedy Rd & YMCA Blvd/Helen Ave

Existing Condition - PM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		55.5			36.1			20.8			47.6	
Approach LOS		E			D			C			D	
Queue Length 50th (m)	25.5	76.1		19.5	4.4		18.9	128.7	0.0	9.6	154.1	7.1
Queue Length 95th (m)	35.8	#124.1		33.1	16.4		#41.6	154.3	13.5	m15.6	201.5	m14.5
Internal Link Dist (m)		279.2			311.1			138.6			336.1	
Turn Bay Length (m)	135.0			132.0			77.0		100.0	96.0		83.0
Base Capacity (vph)	758	431		185	421		221	2136	1097	141	1823	814
Starvation Cap Reductn	0	0		0	0		0	680	319	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	0.33	0.83		0.54	0.15		0.74	0.93	0.51	0.30	0.68	0.10

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 27 (19%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 35.7

Intersection LOS: D

Intersection Capacity Utilization 113.2%

ICU Level of Service H

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Kennedy Rd & YMCA Blvd/Helen Ave



Lanes, Volumes, Timings

13: Kennedy Rd & Unionville Gate/South Unionville Ave Dr

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	290	325	264	144	155	109	217	1383	115	46	1054	211
Future Volume (vph)	290	325	264	144	155	109	217	1383	115	46	1054	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	57.0		0.0	83.0		70.0	193.0		98.0	35.0		85.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor									0.98			
Frt			0.850		0.938				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1883	1585	1772	3357	0	1807	3544	1601	1772	3510	1601
Flt Permitted	0.573			0.264			0.071			0.091		
Satd. Flow (perm)	1079	1883	1585	492	3357	0	135	3544	1568	170	3510	1601
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			293		21				121			174
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		264.4			158.5			360.1			256.8	
Travel Time (s)		19.0			11.4			21.6			15.4	
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%	1%	3%	2%	3%	4%	2%
Adj. Flow (vph)	322	361	293	160	172	121	241	1537	128	51	1171	234
Shared Lane Traffic (%)												
Lane Group Flow (vph)	322	361	293	160	293	0	241	1537	128	51	1171	234
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		1	6			2	
Permitted Phases	4		4	8			6		6	2		2
Detector Phase	4	4	4	3	8		1	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0		7.0	32.0	32.0	32.0	32.0	32.0
Minimum Split (s)	39.5	39.5	39.5	11.0	39.5		11.0	39.5	39.5	39.5	39.5	39.5
Total Split (s)	46.0	46.0	46.0	12.0	58.0		30.0	82.0	82.0	52.0	52.0	52.0
Total Split (%)	32.9%	32.9%	32.9%	8.6%	41.4%		21.4%	58.6%	58.6%	37.1%	37.1%	37.1%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0		3.0	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	3.5	3.5	3.5	1.0	3.5		1.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	4.0	7.5		4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	38.5	38.5	38.5	54.0	50.5		78.0	74.5	74.5	52.1	52.1	52.1
Actuated g/C Ratio	0.28	0.28	0.28	0.39	0.36		0.56	0.53	0.53	0.37	0.37	0.37
v/c Ratio	1.09	0.70	0.45	0.61	0.24		0.82	0.82	0.14	0.81	0.90	0.33
Control Delay	124.8	53.9	6.5	40.9	29.6		52.3	24.2	1.2	103.5	40.6	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	124.8	53.9	6.5	40.9	29.6		52.3	24.2	1.2	103.5	40.6	9.6
LOS	F	D	A	D	C		D	C	A	F	D	A
Approach Delay		63.1			33.6			26.2			37.8	

Lanes, Volumes, Timings

13: Kennedy Rd & Unionville Gate/South Unionville Ave Dr

Existing Condition - PM Peak Hour

Kennedy Road EA

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	E			C			C			D		
Queue Length 50th (m)	~99.7	90.0	0.0	29.7	27.4		40.2	192.8	0.4	6.3	76.1	0.0
Queue Length 95th (m)	#158.9	125.2	21.6	46.7	38.7		66.0	223.1	0.8	#41.9	#222.6	26.9
Internal Link Dist (m)	240.4			134.5			336.1			232.8		
Turn Bay Length (m)	57.0			83.0			193.0		98.0	35.0		85.0
Base Capacity (vph)	296	517	648	262	1224		385	1885	891	63	1306	705
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.70	0.45	0.61	0.24		0.63	0.82	0.14	0.81	0.90	0.33

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 71 (51%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 38.0

Intersection LOS: D

Intersection Capacity Utilization 114.3%

ICU Level of Service H

Analysis Period (min) 15

~ 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.

Splits and Phases: 13: Kennedy Rd & Unionville Gate/South Unionville Ave Dr

Ø1	Ø2 (R)	Ø3	Ø4
30 s	52 s	12 s	46 s
Ø6 (R)		Ø8	
82 s		58 s	

Lanes, Volumes, Timings
14: Kennedy Rd & Castan Dr

Existing Condition - PM Peak Hour
Kennedy Road EA

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	38	98	1533	87	114	1146
Future Volume (vph)	38	98	1533	87	114	1146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0	0.0		0.0	42.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt		0.850	0.992			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1772	1601	3550	0	1755	3510
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1772	1601	3550	0	1755	3510
Link Speed (k/h)	40		60			60
Link Distance (m)	247.2		256.8			190.3
Travel Time (s)	22.2		15.4			11.4
Confl. Peds. (#/hr)		1		12	12	
Confl. Bikes (#/hr)				1	1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	2%	2%	2%	4%	4%
Adj. Flow (vph)	42	109	1703	97	127	1273
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	109	1800	0	127	1273
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	65.2%			ICU Level of Service C		
Analysis Period (min)	15					

Lanes, Volumes, Timings

15: Kennedy Rd & Peachtree Mall S Access/Avoca Dr

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	34	112	35	25	34	162	1458	23	29	1065	21
Future Volume (vph)	182	34	112	35	25	34	162	1458	23	29	1065	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		0.0	100.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	0.0			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.98		0.99	0.98		1.00	1.00		1.00	1.00	
Frt		0.885			0.914			0.998			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1632	0	1825	1699	0	1807	3533	0	1825	3493	0
Flt Permitted	0.719			0.588			0.199			0.153		
Satd. Flow (perm)	1335	1632	0	1119	1699	0	378	3533	0	293	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		112			34			2			2	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		109.6			410.4			190.3			150.5	
Travel Time (s)		9.9			36.9			11.4			9.0	
Confl. Peds. (#/hr)	12		9	9		12	8		15	15		8
Peak Hour 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
Heavy Vehicles (%)	2%	0%	3%	0%	0%	3%	1%	3%	5%	0%	4%	10%
Adj. Flow (vph)	184	34	113	35	25	34	164	1473	23	29	1076	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	147	0	35	59	0	164	1496	0	29	1097	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Detector Phase	4	4		8	8		1	6		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	30.0		30.0	30.0	
Minimum Split (s)	39.5	39.5		39.5	39.5		11.0	37.0		37.0	37.0	
Total Split (s)	41.0	41.0		41.0	41.0		14.0	99.0		85.0	85.0	
Total Split (%)	29.3%	29.3%		29.3%	29.3%		10.0%	70.7%		60.7%	60.7%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	4.5		4.5	4.5	
All-Red Time (s)	4.0	4.0		4.0	4.0		1.0	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		4.0	7.0		7.0	7.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Act Effct Green (s)	24.5	24.5		24.5	24.5		104.0	101.0		88.1	88.1	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.74	0.72		0.63	0.63	
v/c Ratio	0.79	0.39		0.18	0.18		0.44	0.59		0.16	0.50	
Control Delay	77.5	16.6		48.3	24.0		5.1	4.1		27.8	29.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	77.5	16.6		48.3	24.0		5.1	4.1		27.8	29.5	
LOS	E	B		D	C		A	A		C	C	
Approach Delay		50.5			33.0			4.2			29.4	

Lanes, Volumes, Timings

15: Kennedy Rd & Peachtree Mall S Access/Avoca Dr

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	D			C			A			C		
Queue Length 50th (m)	49.3	8.3		8.4	5.9		5.7	36.7		4.7	123.0	
Queue Length 95th (m)	70.8	25.7		17.3	17.1		m9.8	m56.0		m11.6	m153.2	
Internal Link Dist (m)		85.6			386.4			166.3				126.5
Turn Bay Length (m)				20.0			100.0			60.0		
Base Capacity (vph)	319	475		267	432		383	2549		184	2199	
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	0.58	0.31		0.13	0.14		0.43	0.59		0.16	0.50	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 64 (46%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 18.6

Intersection LOS: B

Intersection Capacity Utilization 113.1%

ICU Level of Service H

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kennedy Rd & Peachtree Mall S Access/Avoca Dr



Lanes, Volumes, Timings

16: Kennedy Rd & Peachtree Mall N Access/Eton St

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	72	4	0	21	10	1640	33	23	931	183
Future Volume (vph)	0	0	72	4	0	21	10	1640	33	23	931	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	50.0		0.0	62.0		62.0
Storage Lanes	0		1	1		0	1		0	1		1
Taper Length (m)	0.0			0.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.865		0.850			0.997				0.850
Flt Protected				0.950			0.950			0.950		
Satd. Flow (prot)	0	0	1629	1825	1555	0	1825	3532	0	1825	3476	1617
Flt Permitted				0.950			0.950			0.950		
Satd. Flow (perm)	0	0	1629	1825	1555	0	1825	3532	0	1825	3476	1617
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		140.1			268.7			150.5			203.0	
Travel Time (s)		12.6			24.2			9.0			12.2	
Confl. Peds. (#/hr)			1	1			8		14	14		8
Confl. Bikes (#/hr)									1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	0%	0%	5%	0%	3%	4%	0%	5%	1%
Adj. Flow (vph)	0	0	73	4	0	21	10	1657	33	23	940	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	73	4	21	0	10	1690	0	23	940	185
Sign Control		Yield			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 56.4%

ICU Level of Service B

Analysis Period (min) 15

Lanes, Volumes, Timings
17: Kennedy Rd & Highway 7

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	242	1191	172	234	764	137	133	1134	305	124	625	108
Future Volume (vph)	242	1191	172	234	764	137	133	1134	305	124	625	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	78.0		95.0	43.0		87.0	111.0		126.0	100.0		46.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.96			0.98	0.99		0.98			0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1807	3614	1585	1722	3614	1601	1772	3614	1526	1807	3579	1601
Flt Permitted	0.256			0.079			0.291			0.086		
Satd. Flow (perm)	485	3614	1527	143	3614	1563	540	3614	1499	164	3579	1558
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			138			222			129
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		303.4			351.7			203.0			185.7	
Travel Time (s)		15.6			18.1			12.2			11.1	
Confl. Peds. (#/hr)	11		23	23		11	13		5	5		13
Confl. Bikes (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	1%	1%	3%	6%	1%	2%	3%	1%	7%	1%	2%	2%
Adj. Flow (vph)	244	1203	174	236	772	138	134	1145	308	125	631	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	244	1203	174	236	772	138	134	1145	308	125	631	109
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	38.0	38.0	7.0	38.0	38.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	45.5	11.0	44.5	44.5	11.0	44.5	44.5
Total Split (s)	15.0	54.0	54.0	20.0	59.0	59.0	12.0	54.0	54.0	12.0	54.0	54.0
Total Split (%)	10.7%	38.6%	38.6%	14.3%	42.1%	42.1%	8.6%	38.6%	38.6%	8.6%	38.6%	38.6%
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5	2.5	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	61.1	46.6	46.6	70.0	51.5	51.5	58.0	46.5	46.5	58.0	46.5	46.5
Actuated g/C Ratio	0.44	0.33	0.33	0.50	0.37	0.37	0.41	0.33	0.33	0.41	0.33	0.33
v/c Ratio	0.77	1.00	0.29	0.94	0.58	0.21	0.46	0.95	0.48	0.78	0.53	0.18
Control Delay	40.7	72.6	9.4	80.6	37.7	5.2	21.9	53.4	9.8	55.1	36.4	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	72.6	9.4	80.6	37.7	5.2	21.9	53.4	9.8	55.1	36.4	4.1
LOS	D	E	A	F	D	A	C	D	A	E	D	A

Lanes, Volumes, Timings
17: Kennedy Rd & Highway 7

Existing Condition - PM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay	61.0			42.6			42.3			35.0		
Approach LOS	E			D			D			D		
Queue Length 50th (m)	38.1	~175.9	5.9	49.3	90.0	0.0	19.2	170.1	21.3	21.6	76.2	2.6
Queue Length 95th (m)	#63.3	#224.5	22.9	#100.4	110.5	13.5	30.6	#209.5	43.4	#45.9	95.2	10.3
Internal Link Dist (m)	279.4			327.7			179.0			161.7		
Turn Bay Length (m)	78.0		95.0	43.0		87.0	111.0		126.0	100.0		46.0
Base Capacity (vph)	315	1202	603	251	1329	662	294	1200	646	161	1188	603
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	1.00	0.29	0.94	0.58	0.21	0.46	0.95	0.48	0.78	0.53	0.18

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 50 (36%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 47.0

Intersection LOS: D

Intersection Capacity Utilization 103.3%

ICU Level of Service G

Analysis Period (min) 15

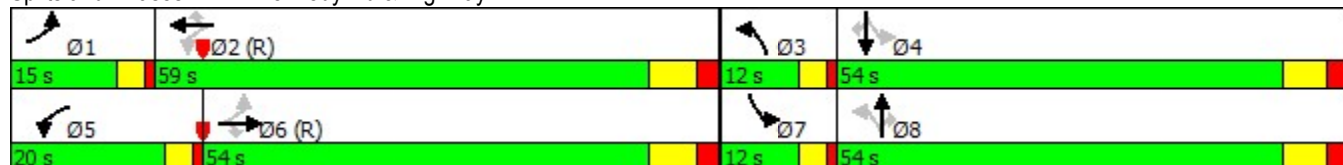
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 17: Kennedy Rd & Highway 7



Lanes, Volumes, Timings
18: Kennedy Rd & Denby Ct/Second St

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	11	1	0	0	13	1620	0	0	872	5
Future Volume (vph)	2	0	11	1	0	0	13	1620	0	0	872	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		0.0	55.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	0.0			0.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.886									0.999	
Flt Protected		0.992			0.950		0.950					
Satd. Flow (prot)	0	1688	0	0	1825	0	1825	3614	0	1921	3575	0
Flt Permitted		0.992			0.950		0.950					
Satd. Flow (perm)	0	1688	0	0	1825	0	1825	3614	0	1921	3575	0
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		173.6			149.5			185.7			258.9	
Travel Time (s)		15.6			13.5			11.1			15.5	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	2%	0%
Adj. Flow (vph)	2	0	11	1	0	0	13	1636	0	0	881	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	0	1	0	13	1636	0	0	886	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 54.8% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings
19: Kennedy Rd & Austin Dr

Existing Condition - PM Peak Hour
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Lane Configurations							
Traffic Volume (vph)	55	260	1524	111	189	821	
Future Volume (vph)	55	260	1524	111	189	821	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	41.0	0.0		37.0	57.0		
Storage Lanes	1	1		1	1		
Taper Length (m)	2.5				2.5		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
Ped Bike Factor				0.97			
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1789	1617	3614	1617	1825	3579	
Flt Permitted	0.950				0.105		
Satd. Flow (perm)	1789	1617	3614	1576	202	3579	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		145		52			
Link Speed (k/h)	40		60			60	
Link Distance (m)	254.1		258.9			94.9	
Travel Time (s)	22.9		15.5			5.7	
Confl. Peds. (#/hr)				2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	
Heavy Vehicles (%)	2%	1%	1%	1%	0%	2%	
Adj. Flow (vph)	56	265	1555	113	193	838	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	56	265	1555	113	193	838	
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA	
Protected Phases	8		6		5	2	4
Permitted Phases		8		6	2		
Detector Phase	8	8	6	6	5	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	30.0	30.0	7.0	30.0	10.0
Minimum Split (s)	33.5	33.5	37.0	37.0	11.0	37.0	33.5
Total Split (s)	35.0	35.0	91.0	91.0	14.0	105.0	35.0
Total Split (%)	25.0%	25.0%	65.0%	65.0%	10.0%	75.0%	25%
Yellow Time (s)	3.5	3.5	4.5	4.5	3.0	4.5	3.5
All-Red Time (s)	3.0	3.0	2.5	2.5	1.0	2.5	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.5	6.5	7.0	7.0	4.0	7.0	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?			Yes	Yes	Yes		
Recall Mode	None	None	C-Max	C-Max	None	C-Max	None
Act Effct Green (s)	17.4	17.4	93.9	93.9	112.1	109.1	
Actuated g/C Ratio	0.12	0.12	0.67	0.67	0.80	0.78	
v/c Ratio	0.25	0.81	0.64	0.11	0.66	0.30	
Control Delay	55.5	44.7	16.5	8.3	21.8	5.3	
Queue Delay	0.0	0.0	0.0	0.0	0.2	1.5	
Total Delay	55.5	44.7	16.5	8.3	21.9	6.8	
LOS	E	D	B	A	C	A	
Approach Delay	46.6		15.9			9.6	

Lanes, Volumes, Timings
19: Kennedy Rd & Austin Dr

Existing Condition - PM Peak Hour
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Approach LOS	D		B		A		
Queue Length 50th (m)	14.3	33.3	91.4	4.2	9.7	29.4	
Queue Length 95th (m)	25.5	60.5	m113.1	m6.2	39.1	51.1	
Internal Link Dist (m)	230.1		234.9			70.9	
Turn Bay Length (m)	41.0			37.0	57.0		
Base Capacity (vph)	364	444	2424	1074	298	2788	
Starvation Cap Reductn	0	0	0	0	4	1692	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.60	0.64	0.11	0.66	0.76	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 91 (65%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 17.0

Intersection LOS: B

Intersection Capacity Utilization 75.5%

ICU Level of Service D

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 19: Kennedy Rd & Austin Dr



Lanes, Volumes, Timings
20: Kennedy Rd & Carlton Rd

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	381	157	142	111	35	130	1292	368	46	690	62
Future Volume (vph)	163	381	157	142	111	35	130	1292	368	46	690	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	48.0		61.0	73.0		0.0	138.0		44.0	140.0		52.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1883	1617	1825	1883	1585	1789	3614	1633	1825	3579	1601
Flt Permitted	0.684			0.172			0.292			0.149		
Satd. Flow (perm)	1309	1883	1584	329	1883	1560	548	3614	1586	286	3579	1544
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			130			94			201			97
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		268.3			267.4			300.5			810.8	
Travel Time (s)		24.1			24.1			18.0			48.6	
Confl. Peds. (#/hr)	3		6	6		3	7		4	4		7
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	1%	0%	2%	3%	2%	1%	0%	0%	2%	2%
Adj. Flow (vph)	166	389	160	145	113	36	133	1318	376	47	704	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	166	389	160	145	113	36	133	1318	376	47	704	63
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	3	8	8	1	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	31.0	31.0	31.0	31.0	31.0
Minimum Split (s)	11.0	38.5	38.5	11.0	38.5	38.5	11.0	38.0	38.0	38.0	38.0	38.0
Total Split (s)	12.0	45.0	45.0	14.0	47.0	47.0	14.0	81.0	81.0	67.0	67.0	67.0
Total Split (%)	8.6%	32.1%	32.1%	10.0%	33.6%	33.6%	10.0%	57.9%	57.9%	47.9%	47.9%	47.9%
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	4.0	4.0	1.0	4.0	4.0	1.0	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	44.8	33.3	33.3	48.5	35.1	35.1	81.4	78.4	78.4	65.1	65.1	65.1
Actuated g/C Ratio	0.32	0.24	0.24	0.35	0.25	0.25	0.58	0.56	0.56	0.46	0.46	0.46
v/c Ratio	0.37	0.87	0.34	0.66	0.24	0.08	0.33	0.65	0.39	0.35	0.42	0.08
Control Delay	34.1	71.1	12.2	45.5	41.9	0.3	16.6	24.0	9.3	15.0	6.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	71.1	12.2	45.5	41.9	0.3	16.6	24.0	9.3	15.0	6.3	0.2
LOS	C	E	B	D	D	A	B	C	A	B	A	A
Approach Delay		49.4			38.6			20.4			6.3	

Lanes, Volumes, Timings
20: Kennedy Rd & Carlton Rd

Existing Condition - PM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	D			D			C			A		
Queue Length 50th (m)	31.4	102.5	6.4	27.1	24.6	0.0	16.5	132.6	24.5	1.0	7.7	0.0
Queue Length 95th (m)	47.5	138.4	24.2	42.0	40.2	0.0	28.0	163.1	48.0	m1.5	9.4	m0.0
Internal Link Dist (m)	244.3			243.4			276.5			786.8		
Turn Bay Length (m)	48.0		61.0	73.0			138.0		44.0	140.0		52.0
Base Capacity (vph)	447	504	519	221	531	507	407	2023	976	133	1664	770
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.77	0.31	0.66	0.21	0.07	0.33	0.65	0.39	0.35	0.42	0.08

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 13 (9%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 24.4

Intersection LOS: C

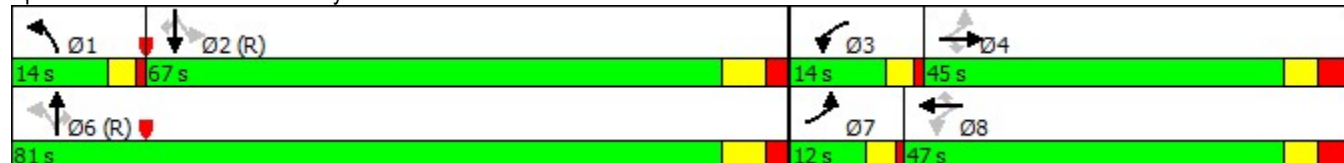
Intersection Capacity Utilization 111.8%

ICU Level of Service H

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Kennedy Rd & Carlton Rd



Lanes, Volumes, Timings
21: Kennedy Rd & The Bridle Trail

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	85	7	45	27	31	10	1368	128	37	727	68
Future Volume (vph)	132	85	7	45	27	31	10	1368	128	37	727	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	23.0		0.0	27.0		0.0	90.0		41.0	120.0		40.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00		0.98			0.96
Frt		0.989			0.920				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1807	1897	0	1825	1749	0	1825	3614	1633	1772	3579	1633
Flt Permitted	0.719			0.697			0.212			0.093		
Satd. Flow (perm)	1358	1897	0	1331	1749	0	406	3614	1595	173	3579	1572
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			2				42			42
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		238.2			161.4			810.8			257.8	
Travel Time (s)		21.4			14.5			48.6			15.5	
Confl. Peds. (#/hr)	6		5	5		6	9		2	2		9
Confl. Bikes (#/hr)	2											2
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	3%	2%	0%
Adj. Flow (vph)	133	86	7	45	27	31	10	1382	129	37	734	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	133	93	0	45	58	0	10	1382	129	37	734	69
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8				4
Permitted Phases	6			2			8		8	4		4
Detector Phase	6	6		2	2		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	35.0	35.0		35.0	35.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	42.0	42.0		42.0	42.0		50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	89.0	89.0		89.0	89.0		51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	63.6%	63.6%		63.6%	63.6%		36.4%	36.4%	36.4%	36.4%	36.4%	36.4%
Yellow Time (s)	4.5	4.5		4.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		4.5	4.5	4.5	4.5	4.5	4.5
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)	7.0	7.0		7.0	7.0		8.0	8.0	8.0	8.0	8.0	8.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)	82.0	82.0		82.0	82.0		43.0	43.0	43.0	43.0	43.0	43.0
Actuated g/C Ratio	0.59	0.59		0.59	0.59		0.31	0.31	0.31	0.31	0.31	0.31
v/c Ratio	0.17	0.08		0.06	0.06		0.08	1.25	0.25	0.70	0.67	0.14
Control Delay	14.0	12.2		12.8	12.2		52.4	170.4	42.7	126.1	62.4	41.9
Queue Delay	0.1	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	12.2		12.8	12.2		52.4	170.5	42.7	126.1	62.4	41.9
LOS	B	B		B	B		D	F	D	F	E	D

Lanes, Volumes, Timings
21: Kennedy Rd & The Bridle Trail

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		13.3			12.5			158.9			63.5	
Approach LOS		B			B			F			E	
Queue Length 50th (m)	16.2	10.1		5.1	6.4		2.6	~256.7	26.8	10.7	112.0	12.6
Queue Length 95th (m)	26.6	18.0		10.7	12.6		m4.4	#300.4	m45.6	#30.9	132.2	27.9
Internal Link Dist (m)		214.2			137.4			786.8			233.8	
Turn Bay Length (m)	23.0			27.0			90.0		41.0	120.0		40.0
Base Capacity (vph)	795	1113		779	1025		124	1110	518	53	1099	511
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	129	0		0	167		0	6	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.08		0.06	0.07		0.08	1.25	0.25	0.70	0.67	0.14

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 39 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.25

Intersection Signal Delay: 111.2

Intersection LOS: F

Intersection Capacity Utilization 79.5%

ICU Level of Service D

Analysis Period (min) 15

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 21: Kennedy Rd & The Bridle Trail



Lanes, Volumes, Timings
22: Kennedy Rd & Birchview Ln

Existing Condition - PM Peak Hour
Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	3	26	31	1490	845	9	
Future Volume (vph)	3	26	31	1490	845	9	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0	105.0			0.0	
Storage Lanes	1	0	1			0	
Taper Length (m)	0.0		2.5				
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	
Ped Bike Factor	0.99		1.00		1.00		
Frt	0.879				0.998		
Flt Protected	0.995		0.950				
Satd. Flow (prot)	1602	0	1755	3614	3567	0	
Flt Permitted	0.995		0.326				
Satd. Flow (perm)	1602	0	602	3614	3567	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	26				2		
Link Speed (k/h)	40			60	60		
Link Distance (m)	142.4			257.8	309.6		
Travel Time (s)	12.8			15.5	18.6		
Confl. Peds. (#/hr)		1	1			1	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	
Heavy Vehicles (%)	0%	4%	4%	1%	2%	12%	
Adj. Flow (vph)	3	26	31	1505	854	9	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	29	0	31	1505	863	0	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4			6	2		8
Permitted Phases			6				
Detector Phase	4		6	6	2		
Switch Phase							
Minimum Initial (s)	10.0		30.0	30.0	30.0		10.0
Minimum Split (s)	31.0		38.0	38.0	37.0		31.0
Total Split (s)	34.0		106.0	106.0	106.0		34.0
Total Split (%)	24.3%		75.7%	75.7%	75.7%		24%
Yellow Time (s)	3.5		4.5	4.5	4.5		3.5
All-Red Time (s)	3.5		2.5	2.5	2.5		3.5
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	7.0		7.0	7.0	7.0		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None		C-Max	C-Max	C-Max		None
Act Effct Green (s)	12.8		122.8	122.8	122.8		
Actuated g/C Ratio	0.09		0.88	0.88	0.88		
v/c Ratio	0.17		0.06	0.47	0.28		
Control Delay	22.6		8.4	18.5	12.9		
Queue Delay	0.0		0.0	0.6	0.0		
Total Delay	22.6		8.4	19.1	12.9		
LOS	C		A	B	B		
Approach Delay	22.6			18.9	12.9		

Lanes, Volumes, Timings
22: Kennedy Rd & Birchview Ln

Existing Condition - PM Peak Hour
Kennedy Road EA



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Approach LOS	C			B	B		
Queue Length 50th (m)	0.8		2.6	222.4	85.5		
Queue Length 95th (m)	9.8		m5.3	m186.2	m121.6		
Internal Link Dist (m)	118.4			233.8	285.6		
Turn Bay Length (m)			105.0				
Base Capacity (vph)	329		528	3170	3129		
Starvation Cap Reductn	0		0	1146	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.09		0.06	0.74	0.28		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 38 (27%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 16.8

Intersection LOS: B

Intersection Capacity Utilization 61.6%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: Kennedy Rd & Birchview Ln



Lanes, Volumes, Timings
23: Kennedy Rd & 16th Ave

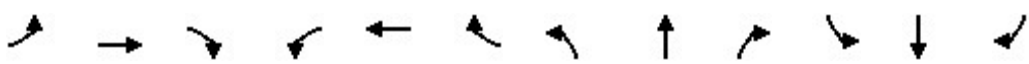
Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	313	1446	145	172	719	61	192	945	287	120	512	162
Future Volume (vph)	313	1446	145	172	719	61	192	945	287	120	512	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	92.0		93.0	70.0		72.0	145.0		70.0	70.0		63.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98			0.97	1.00		0.98			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1807	3614	1633	1807	3579	1633	1807	3614	1617	1807	3579	1601
Flt Permitted	0.249			0.066			0.311			0.107		
Satd. Flow (perm)	472	3614	1606	126	3579	1589	589	3614	1584	204	3579	1564
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			119			97			139			171
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		347.4			311.5			309.6			154.6	
Travel Time (s)		20.8			18.7			18.6			9.3	
Confl. Peds. (#/hr)	12		4	4		12	8		7	7		8
Confl. Bikes (#/hr)	1					1	2					2
Peak Hour Factor	0.90	0.95	0.95	0.90	0.92	0.92	0.90	0.95	0.95	0.90	0.95	0.95
Heavy Vehicles (%)	1%	1%	0%	1%	2%	0%	1%	1%	1%	1%	2%	2%
Adj. Flow (vph)	348	1522	153	191	782	66	213	995	302	133	539	171
Shared Lane Traffic (%)												
Lane Group Flow (vph)	348	1522	153	191	782	66	213	995	302	133	539	171
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	35.0	35.0	7.0	35.0	35.0	7.0	15.0	15.0	7.0	15.0	15.0
Minimum Split (s)	11.0	42.5	42.5	11.0	42.5	42.5	11.0	41.5	41.5	11.0	41.5	41.5
Total Split (s)	15.0	71.0	71.0	12.0	68.0	68.0	12.0	45.0	45.0	12.0	45.0	45.0
Total Split (%)	10.7%	50.7%	50.7%	8.6%	48.6%	48.6%	8.6%	32.1%	32.1%	8.6%	32.1%	32.1%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	78.0	63.5	63.5	72.0	60.5	60.5	49.0	37.5	37.5	49.0	37.5	37.5
Actuated g/C Ratio	0.56	0.45	0.45	0.51	0.43	0.43	0.35	0.27	0.27	0.35	0.27	0.27
v/c Ratio	0.95	0.93	0.19	1.19	0.51	0.09	0.77	1.03	0.57	0.82	0.56	0.31
Control Delay	57.5	47.1	6.8	162.7	30.3	1.8	69.6	101.0	49.1	68.8	43.8	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.5	47.1	6.8	162.7	30.3	1.8	69.6	101.0	49.1	68.8	43.8	5.8
LOS	E	D	A	F	C	A	E	F	D	E	D	A

Lanes, Volumes, Timings
23: Kennedy Rd & 16th Ave

Existing Condition - PM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		45.9			52.8			86.2			40.0	
Approach LOS		D			D			F			D	
Queue Length 50th (m)	50.1	206.0	5.2	~46.8	81.7	0.0	61.1	~158.4	69.7	25.4	68.9	0.8
Queue Length 95th (m)	#101.2	#247.3	17.8	#95.7	100.3	3.8	#94.8	#201.2	98.5	#51.8	87.6	7.2
Internal Link Dist (m)		323.4			287.5			285.6			130.6	
Turn Bay Length (m)	92.0		93.0	70.0		72.0	145.0		70.0	70.0		63.0
Base Capacity (vph)	367	1639	793	160	1546	741	275	968	526	163	958	544
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.93	0.19	1.19	0.51	0.09	0.77	1.03	0.57	0.82	0.56	0.31

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 38 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay: 57.5

Intersection LOS: E

Intersection Capacity Utilization 101.9%

ICU Level of Service G

Analysis Period (min) 15

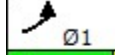
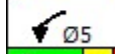
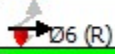
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 23: Kennedy Rd & 16th Ave

							
15 s		68 s		12 s		45 s	
							
12 s		71 s		12 s		45 s	

Lanes, Volumes, Timings
24: Kennedy Rd & Nipigon Ave

Existing Condition - PM Peak Hour
Kennedy Road EA

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	12	1320	8	12	780
Future Volume (vph)	8	12	1320	8	12	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	42.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	0.0				2.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt	0.916		0.999			
Flt Protected	0.981				0.950	
Satd. Flow (prot)	1726	0	3646	0	1825	3650
Flt Permitted	0.981				0.950	
Satd. Flow (perm)	1726	0	3646	0	1825	3650
Link Speed (k/h)	40		60			60
Link Distance (m)	283.6		154.6			173.3
Travel Time (s)	25.5		9.3			10.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	8	13	1375	8	13	813
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	1383	0	13	813
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 46.7% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings
25: Kennedy Rd & Beckett Ave

Existing Condition - PM Peak Hour

Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Lane Configurations							
Traffic Volume (vph)	40	13	1278	56	21	714	
Future Volume (vph)	40	13	1278	56	21	714	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	20.0		55.0	54.0		
Storage Lanes	1	1		1	1		
Taper Length (m)	0.0				2.5		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
Ped Bike Factor	0.99	0.99					
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1825	1633	3614	1633	1825	3579	
Flt Permitted	0.950				0.188		
Satd. Flow (perm)	1811	1611	3614	1633	361	3579	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		14		56			
Link Speed (k/h)	48		60			60	
Link Distance (m)	265.8		173.3			318.0	
Travel Time (s)	19.9		10.4			19.1	
Confl. Peds. (#/hr)	5	1					
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	2%	
Adj. Flow (vph)	42	14	1331	58	22	744	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	42	14	1331	58	22	744	
Turn Type	Prot	Perm	NA	Perm	Perm	NA	
Protected Phases	4		6			2	8
Permitted Phases		4		6	2		
Detector Phase	4	4	6	6	2	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0	30.0	10.0
Minimum Split (s)	35.5	35.5	37.0	37.0	37.0	37.0	35.5
Total Split (s)	37.0	37.0	103.0	103.0	103.0	103.0	37.0
Total Split (%)	26.4%	26.4%	73.6%	73.6%	73.6%	73.6%	26%
Yellow Time (s)	3.5	3.5	4.5	4.5	4.5	4.5	3.5
All-Red Time (s)	4.0	4.0	2.5	2.5	2.5	2.5	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.5	7.5	7.0	7.0	7.0	7.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max	None
Act Effct Green (s)	13.6	13.6	116.8	116.8	116.8	116.8	
Actuated g/C Ratio	0.10	0.10	0.83	0.83	0.83	0.83	
v/c Ratio	0.24	0.08	0.44	0.04	0.07	0.25	
Control Delay	59.1	22.2	2.9	0.2	5.1	4.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	59.1	22.2	2.9	0.2	5.1	4.0	
LOS	E	C	A	A	A	A	
Approach Delay	49.9		2.8			4.0	

Lanes, Volumes, Timings
25: Kennedy Rd & Beckett Ave

Existing Condition - PM Peak Hour
Kennedy Road EA

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Approach LOS	D		A				A
Queue Length 50th (m)	11.3	0.0	19.4	0.2	0.9	19.3	
Queue Length 95th (m)	20.2	6.2	m30.8	m0.2	5.0	47.0	
Internal Link Dist (m)	241.8		149.3			294.0	
Turn Bay Length (m)		20.0		55.0	54.0		
Base Capacity (vph)	384	350	3015	1372	301	2985	
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	0.11	0.04	0.44	0.04	0.07	0.25	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 93 (66%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 4.4

Intersection LOS: A

Intersection Capacity Utilization 61.7%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 25: Kennedy Rd & Beckett Ave

103 s	37 s
103 s	37 s

Lanes, Volumes, Timings
26: Kennedy Rd & Wilfred Murison Ave

Existing Condition - PM Peak Hour
Kennedy Road EA

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	9	1151	24	5	663
Future Volume (vph)	2	9	1151	24	5	663
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	50.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	0.0				2.5	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt	0.890		0.997			
Flt Protected	0.991				0.950	
Satd. Flow (prot)	1426	0	3402	0	1825	3510
Flt Permitted	0.991				0.950	
Satd. Flow (perm)	1426	0	3402	0	1825	3510
Link Speed (k/h)	40		60			60
Link Distance (m)	236.7		318.0			378.3
Travel Time (s)	21.3		19.1			22.7
Confl. Peds. (#/hr)		2				
Confl. Bikes (#/hr)				1	1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	23%	7%	5%	0%	4%
Adj. Flow (vph)	2	9	1187	25	5	684
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	0	1212	0	5	684
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	43.2%			ICU Level of Service A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
27: Kennedy Rd & Bur Oak Ave

Existing Condition - PM Peak Hour
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Lane Configurations							
Traffic Volume (vph)	172	84	906	291	116	543	
Future Volume (vph)	172	84	906	291	116	543	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		52.0	55.0		
Storage Lanes	1	1		1	1		
Taper Length (m)	0.0				2.5		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
Ped Bike Factor	1.00	0.97		0.96	0.99		
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1789	1585	3614	1601	1772	3579	
Flt Permitted	0.950				0.289		
Satd. Flow (perm)	1787	1544	3614	1531	536	3579	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		87		300			
Link Speed (k/h)	40		60			60	
Link Distance (m)	253.8		378.3			302.0	
Travel Time (s)	22.8		22.7			18.1	
Confl. Peds. (#/hr)	1	11		11	11		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	
Heavy Vehicles (%)	2%	3%	1%	2%	3%	2%	
Adj. Flow (vph)	177	87	934	300	120	560	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	177	87	934	300	120	560	
Turn Type	Prot	Perm	NA	Perm	Perm	NA	
Protected Phases	8		6			2	4
Permitted Phases		8		6	2		
Detector Phase	8	8	6	6	2	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0	30.0	10.0
Minimum Split (s)	35.0	35.0	37.5	37.5	37.5	37.5	35.0
Total Split (s)	36.0	36.0	84.0	84.0	84.0	84.0	36.0
Total Split (%)	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%	30%
Yellow Time (s)	3.5	3.5	5.0	5.0	5.0	5.0	3.5
All-Red Time (s)	3.5	3.5	2.5	2.5	2.5	2.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.5	7.5	7.5	7.5	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max	None
Act Effct Green (s)	18.1	18.1	87.4	87.4	87.4	87.4	
Actuated g/C Ratio	0.15	0.15	0.73	0.73	0.73	0.73	
v/c Ratio	0.66	0.28	0.35	0.25	0.31	0.21	
Control Delay	58.7	10.5	7.1	1.4	9.1	3.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	58.7	10.5	7.1	1.4	9.1	3.9	
LOS	E	B	A	A	A	A	
Approach Delay	42.8		5.7			4.8	

Lanes, Volumes, Timings
27: Kennedy Rd & Bur Oak Ave

Existing Condition - PM Peak Hour
Kennedy Road EA



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Approach LOS	D		A		A		
Queue Length 50th (m)	40.2	0.0	35.9	0.0	4.6	10.7	
Queue Length 95th (m)	57.0	12.7	63.2	9.2	18.3	22.6	
Internal Link Dist (m)	229.8		354.3			278.0	
Turn Bay Length (m)				52.0	55.0		
Base Capacity (vph)	432	439	2632	1196	390	2606	
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	0.41	0.20	0.35	0.25	0.31	0.21	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 4 (3%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 9.9

Intersection LOS: A

Intersection Capacity Utilization 82.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 27: Kennedy Rd & Bur Oak Ave



Lanes, Volumes, Timings
28: Kennedy Rd & Angus Glen Blvd

Existing Condition - PM Peak Hour
Kennedy Road EA

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	79	131	873	592	7
Future Volume (vph)	6	79	131	873	592	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0	0.0	90.0			55.0
Storage Lanes	1	1	1			1
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1825	1570	1772	3614	3579	1633
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1825	1570	1772	3614	3579	1633
Link Speed (k/h)	40			60	60	
Link Distance (m)	234.8			302.0	341.0	
Travel Time (s)	21.1			18.1	20.5	
Confl. Peds. (#/hr)			2			2
Confl. Bikes (#/hr)			1			1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	4%	3%	1%	2%	0%
Adj. Flow (vph)	6	81	135	900	610	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	81	135	900	610	7
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.0%			ICU Level of Service A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
29: Kennedy Rd & The Fairways/Castlemore Ave

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	5	22	74	9	33	20	785	132	45	489	12
Future Volume (vph)	8	5	22	74	9	33	20	785	132	45	489	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		64.0	57.0		56.0	50.0		46.0
Storage Lanes	0		0	1		1	1		1	1		1
Taper Length (m)	0.0			0.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.98		0.99	0.98		0.99		0.98	1.00		0.97
Frt		0.914			0.881				0.850			0.850
Flt Protected		0.989		0.950			0.950			0.950		
Satd. Flow (prot)	0	1575	0	1772	1666	0	1825	3579	1633	1772	3579	1633
Flt Permitted		0.927		0.734			0.467			0.340		
Satd. Flow (perm)	0	1474	0	1358	1666	0	892	3579	1592	634	3579	1580
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			34				136			41
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		207.4			193.2			341.0			227.3	
Travel Time (s)		18.7			17.4			20.5			13.6	
Confl. Peds. (#/hr)	8		9	9		8	7		2	2		7
Confl. Bikes (#/hr)			1	1					2	2		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	40%	5%	3%	0%	0%	0%	2%	0%	3%	2%	0%
Adj. Flow (vph)	8	5	23	76	9	34	21	809	136	46	504	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	76	43	0	21	809	136	46	504	12
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6		6	2		2
Detector Phase	4	4		8	8		6	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		33.0	33.0	33.0	33.0	33.0	33.0
Minimum Split (s)	44.5	44.5		44.5	44.5		40.5	40.5	40.5	40.5	40.5	40.5
Total Split (s)	50.0	50.0		50.0	50.0		70.0	70.0	70.0	70.0	70.0	70.0
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%	58.3%	58.3%	58.3%	58.3%
Yellow Time (s)	3.5	3.5		3.5	3.5		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	4.0	4.0		4.0	4.0		2.5	2.5	2.5	2.5	2.5	2.5
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)		7.5		7.5	7.5		7.5	7.5	7.5	7.5	7.5	7.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		16.7		16.7	16.7		93.3	93.3	93.3	93.3	93.3	93.3
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		0.16		0.40	0.16		0.03	0.29	0.11	0.09	0.18	0.01
Control Delay		21.4		50.5	17.0		6.4	5.3	1.1	10.9	8.8	4.4
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		21.4		50.5	17.0		6.4	5.3	1.1	10.9	8.8	4.4
LOS		C		D	B		A	A	A	B	A	A

Lanes, Volumes, Timings
29: Kennedy Rd & The Fairways/Castlemore Ave

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		21.4			38.4			4.7			8.9	
Approach LOS		C			D			A			A	
Queue Length 50th (m)		2.8		17.3	1.9		1.0	24.5	0.1	5.3	32.2	0.1
Queue Length 95th (m)		9.8		25.4	9.8		4.0	37.0	3.8	13.8	51.4	m1.0
Internal Link Dist (m)		183.4			169.2			317.0			203.3	
Turn Bay Length (m)							57.0		56.0	50.0		46.0
Base Capacity (vph)		536		480	612		693	2783	1268	493	2783	1238
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		0.07		0.16	0.07		0.03	0.29	0.11	0.09	0.18	0.01

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 28 (23%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.40

Intersection Signal Delay: 8.8

Intersection LOS: A

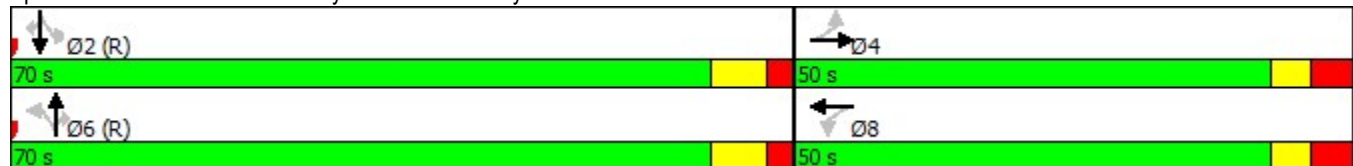
Intersection Capacity Utilization 87.9%

ICU Level of Service E

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 29: Kennedy Rd & The Fairways/Castlemore Ave



Lanes, Volumes, Timings
30: Kennedy Rd & Schoolhouse Rd

Existing Condition - PM Peak Hour
Kennedy Road EA

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	88	86	729	509	4
Future Volume (vph)	15	88	86	729	509	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	0.0		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.884				0.999	
Flt Protected	0.993		0.950			
Satd. Flow (prot)	1686	0	1825	3544	3575	0
Flt Permitted	0.993		0.950			
Satd. Flow (perm)	1686	0	1825	3544	3575	0
Link Speed (k/h)	40			60	60	
Link Distance (m)	115.5			227.3	167.2	
Travel Time (s)	10.4			13.6	10.0	
Confl. Peds. (#/hr)	3	1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Adj. Flow (vph)	15	91	89	752	525	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	106	0	89	752	529	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	35.5%			ICU Level of Service A		
Analysis Period (min)	15					

Lanes, Volumes, Timings
31: Kennedy Rd & Major Mackenzie Dr E

Existing Condition - PM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	1717	215	75	714	30	214	317	157	79	239	25
Future Volume (vph)	34	1717	215	75	714	30	214	317	157	79	239	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		92.0	50.0		160.0	140.0		80.0	50.0		92.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99			0.99	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	3614	1617	1755	3579	1633	1807	3650	1633	1825	3579	1633
Flt Permitted	0.344			0.059			0.480			0.554		
Satd. Flow (perm)	661	3614	1595	109	3579	1611	912	3650	1611	1064	3579	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			157			114			156			114
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		424.7			384.5			167.2			409.3	
Travel Time (s)		21.8			19.8			10.0			24.6	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	1%	4%	2%	0%	1%	0%	0%	0%	2%	0%
Adj. Flow (vph)	35	1770	222	77	736	31	221	327	162	81	246	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	1770	222	77	736	31	221	327	162	81	246	26
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	37.5	37.5	11.0	37.5	37.5	11.0	37.0	37.0	38.5	38.5	38.5
Total Split (s)	12.0	56.0	56.0	12.0	56.0	56.0	12.0	52.0	52.0	40.0	40.0	40.0
Total Split (%)	10.0%	46.7%	46.7%	10.0%	46.7%	46.7%	10.0%	43.3%	43.3%	33.3%	33.3%	33.3%
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5	2.5	1.0	1.0	1.0	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	6.0	6.0	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	75.7	66.5	66.5	77.7	69.2	69.2	32.5	30.5	30.5	17.0	17.0	17.0
Actuated g/C Ratio	0.63	0.55	0.55	0.65	0.58	0.58	0.27	0.25	0.25	0.14	0.14	0.14
v/c Ratio	0.07	0.88	0.23	0.44	0.36	0.03	0.72	0.35	0.31	0.54	0.49	0.08
Control Delay	9.6	31.8	6.6	20.7	16.3	0.1	40.5	27.0	7.0	58.9	49.3	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	31.8	6.6	20.7	16.3	0.1	40.5	27.0	7.0	58.9	49.3	0.5
LOS	A	C	A	C	B	A	D	C	A	E	D	A
Approach Delay		28.7			16.1			26.6			47.9	

Lanes, Volumes, Timings
31: Kennedy Rd & Major Mackenzie Dr E

Existing Condition - PM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			B			C			D		
Queue Length 50th (m)	2.4	180.0	6.7	5.4	47.8	0.0	44.7	34.3	9.1	18.4	29.2	0.0
Queue Length 95th (m)	8.5	#310.4	25.7	20.2	83.0	0.0	47.3	27.0	10.2	29.7	35.5	0.0
Internal Link Dist (m)	400.7			360.5			143.2			385.3		
Turn Bay Length (m)	50.0		92.0	50.0		160.0	140.0		80.0	50.0		92.0
Base Capacity (vph)	498	2001	953	184	2064	977	306	1399	713	288	969	519
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.88	0.23	0.42	0.36	0.03	0.72	0.23	0.23	0.28	0.25	0.05

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 14 (12%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 27.3

Intersection LOS: C

Intersection Capacity Utilization 93.2%

ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 31: Kennedy Rd & Major Mackenzie Dr E



Lanes, Volumes, Timings
98: Kennedy Rd & GO Crossing

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑			↑↑			↑			↑	
Traffic Volume (vph)	0	1174	0	0	1016	0	0	0	0	0	2	0
Future Volume (vph)	0	1174	0	0	1016	0	0	0	0	0	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr t												
Flt Protected												
Satd. Flow (prot)	0	3579	0	0	3579	0	0	1883	0	0	1883	0
Flt Permitted												
Satd. Flow (perm)	0	3579	0	0	3579	0	0	1883	0	0	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			48			48	
Link Distance (m)		282.3			275.8			282.1			250.1	
Travel Time (s)		16.9			16.5			21.2			18.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1276	0	0	1104	0	0	0	0	0	2	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1276	0	0	1104	0	0	0	0	0	2	0
Turn Type		NA			NA						NA	
Protected Phases		2			6			4			8	
Permitted Phases												
Detector Phase		2			6			4			8	
Switch Phase												
Minimum Initial (s)		833.0			833.0			158.0			158.0	
Minimum Split (s)		893.0			893.0			180.0			180.0	
Total Split (s)		900.0			900.0			180.0			180.0	
Total Split (%)		83.3%			83.3%			16.7%			16.7%	
Yellow Time (s)		10.0			10.0			2.0			2.0	
All-Red Time (s)		50.0			50.0			20.0			20.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		60.0			60.0			22.0			22.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max			C-Max			None			None	
Act Effct Green (s)		984.0			984.0						158.0	
Actuated g/C Ratio		0.91			0.91						0.15	
v/c Ratio		0.39			0.34						0.01	
Control Delay		18.2			16.8						394.5	
Queue Delay		0.1			0.1						0.0	
Total Delay		18.2			16.9						394.5	
LOS		B			B						F	
Approach Delay		18.2			16.9						394.5	
Approach LOS		B			B						F	
Queue Length 50th (m)		0.0			0.0						3.9	
Queue Length 95th (m)		496.4			404.2						9.7	
Internal Link Dist (m)		258.3			251.8			258.1			226.1	
Turn Bay Length (m)												
Base Capacity (vph)		3261			3261						275	

Lanes, Volumes, Timings
98: Kennedy Rd & GO Crossing

Existing Condition - PM Peak Hour
Kennedy Road EA

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Starvation Cap Reductn		529			572						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.47			0.41						0.01	

Intersection Summary

Area Type: Other

Cycle Length: 1080

Actuated Cycle Length: 1080

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of 1st Green

Natural Cycle: 1075

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 17.9

Intersection LOS: B

Intersection Capacity Utilization 894.2%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 98: Kennedy Rd & GO Crossing



Lanes, Volumes, Timings
99: Kennedy Rd & GO Crossing

Existing Condition - PM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Traffic Volume (vph)	0	2	0	0	0	0	0	1784	0	0	989	0
Future Volume (vph)	0	2	0	0	0	0	0	1784	0	0	989	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Fr t												
Flt Protected												
Satd. Flow (prot)	0	1883	0	0	1883	0	0	3579	0	0	3579	0
Flt Permitted												
Satd. Flow (perm)	0	1883	0	0	1883	0	0	3579	0	0	3579	0
Right Turn on Red												
Satd. Flow (RTOR)												
Link Speed (k/h)												
Link Distance (m)												
Travel Time (s)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2	0	0	0	0	0	1939	0	0	1075	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	0	0	0	1939	0	0	1075	0
Turn Type												
Protected Phases												
Permitted Phases												
Detector Phase												
Switch Phase												
Minimum Initial (s)												
Minimum Split (s)												
Total Split (s)												
Total Split (%)												
Yellow Time (s)												
All-Red Time (s)												
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode												
Act Effct Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												
LOS												
Approach Delay												
Approach LOS												
Queue Length 50th (m)												
Queue Length 95th (m)												
Internal Link Dist (m)												
Turn Bay Length (m)												
Base Capacity (vph)												

Lanes, Volumes, Timings
99: Kennedy Rd & GO Crossing

Existing Condition - PM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0						1222			1761	
Spillback Cap Reductn		0						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.01						1.24			1.05	

Intersection Summary

Area Type: Other

Cycle Length: 1080

Actuated Cycle Length: 1080

Offset: 180 (17%), Referenced to phase 2:NBT and 6:SBT, Start of 1st Green

Natural Cycle: 1075

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 94.5

Intersection LOS: F

Intersection Capacity Utilization 894.2%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 99: Kennedy Rd & GO Crossing



Lanes, Volumes, Timings
1: Kennedy Rd & Steeles Ave E

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	728	169	189	1762	259	131	805	58	226	989	134
Future Volume (vph)	181	728	169	189	1762	259	131	805	58	226	989	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	92.0		0.0	56.0		0.0	43.0		25.0	166.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.85	1.00
Ped Bike Factor			0.92	0.98		0.90			0.94	0.99		0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	3476	1555	1722	3510	1541	1706	3544	1458	1789	3202	1585
Flt Permitted	0.069			0.228			0.087			0.137		
Satd. Flow (perm)	130	3476	1430	406	3510	1381	156	3544	1369	255	3202	1522
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			176			133			116			116
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		438.0			403.1			543.5			456.9	
Travel Time (s)		26.3			24.2			32.6			27.4	
Confl. Peds. (#/hr)	102		76	76		102	27		48	48		27
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	5%	5%	6%	4%	6%	7%	3%	12%	2%	2%	3%
Adj. Flow (vph)	189	758	176	197	1835	270	136	839	60	235	1030	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	758	176	197	1835	270	136	839	60	235	1030	140
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Minimum Split (s)	11.0	56.0	56.0	11.0	56.0	56.0	11.0	50.0	50.0	11.0	50.0	50.0
Total Split (s)	11.0	65.0	65.0	20.0	74.0	74.0	11.0	53.0	53.0	12.0	54.0	54.0
Total Split (%)	7.3%	43.3%	43.3%	13.3%	49.3%	49.3%	7.3%	35.3%	35.3%	8.0%	36.0%	36.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Act Effect Green (s)	68.0	58.0	58.0	81.0	67.0	67.0	56.0	46.0	46.0	58.0	47.0	47.0
Actuated g/C Ratio	0.45	0.39	0.39	0.54	0.45	0.45	0.37	0.31	0.31	0.39	0.31	0.31
v/c Ratio	1.39	0.56	0.27	0.55	1.17	0.39	1.05	0.77	0.12	1.31	1.03	0.25
Control Delay	242.2	38.1	5.0	24.1	121.9	15.2	125.2	53.0	0.5	202.2	85.4	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	242.2	38.1	5.0	24.1	121.9	15.2	125.2	53.0	0.5	202.2	85.4	10.5
LOS	F	D	A	C	F	B	F	D	A	F	F	B
Approach Delay		67.3			101.0			59.4			97.4	
Approach LOS		E			F			E			F	
Queue Length 50th (m)	~58.2	92.6	0.0	29.6	~341.1	25.6	~27.5	119.7	0.0	~62.2	~191.6	5.0
Queue Length 95th (m)	#108.8	112.9	15.2	44.3	#382.3	48.2	#71.9	144.4	0.0	#117.8	#238.8	21.1
Internal Link Dist (m)		414.0			379.1			519.5			432.9	

Lanes, Volumes, Timings
1: Kennedy Rd & Steeles Ave E

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	92.0			56.0			43.0		25.0	166.0		
Base Capacity (vph)	136	1344	660	359	1567	690	130	1086	500	180	1003	556
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.39	0.56	0.27	0.55	1.17	0.39	1.05	0.77	0.12	1.31	1.03	0.25

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

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

Natural Cycle: 150

Control Type: Pretimed

Maximum v/c Ratio: 1.39

Intersection Signal Delay: 86.4

Intersection LOS: F

Intersection Capacity Utilization 125.4%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

~ 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.

Splits and Phases: 1: Kennedy Rd & Steeles Ave E

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	53 s	20 s	65 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
11 s	54 s	11 s	74 s

Lanes, Volumes, Timings

2041 Future Conditions - AM Peak Hour

2: Kennedy Rd & Clayton Dr/Pacific Mall Access

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	15	39	35	12	43	39	1015	19	361	1483	127
Future Volume (vph)	111	15	39	35	12	43	39	1015	19	361	1483	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	57.0		0.0	0.0		0.0	127.0		0.0	90.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	0.98	0.96		0.96	0.97		1.00	1.00		1.00	0.99	
Frt		0.892			0.884			0.997			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	1600	0	1825	1556	0	1772	4650	0	1789	4637	0
Flt Permitted	0.719			0.720			0.118			0.174		
Satd. Flow (perm)	1312	1600	0	1326	1556	0	219	4650	0	327	4637	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			45			2			14	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		148.7			168.9			456.9			278.1	
Travel Time (s)		13.4			15.2			27.4			16.7	
Confl. Peds. (#/hr)	21		40	40		21	25		15	15		25
Confl. Bikes (#/hr)			2	2			2		3	3		2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	2%	3%	0%	0%	8%	3%	5%	3%	2%	4%	1%
Adj. Flow (vph)	116	16	41	36	13	45	41	1057	20	376	1545	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	116	57	0	36	58	0	41	1077	0	376	1677	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	30.0		7.0	30.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		11.0	37.0		11.0	37.0	
Total Split (s)	45.0	45.0		45.0	45.0		13.0	46.0		39.0	72.0	
Total Split (%)	34.6%	34.6%		34.6%	34.6%		10.0%	35.4%		30.0%	55.4%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	4.5		3.0	4.5	
All-Red Time (s)	3.5	3.5		3.5	3.5		1.0	2.5		1.0	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		4.0	7.0		4.0	7.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	22.2	22.2		22.2	22.2		73.8	63.7		96.8	84.9	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.57	0.49		0.74	0.65	
v/c Ratio	0.52	0.19		0.16	0.19		0.20	0.47		0.70	0.55	
Control Delay	54.7	17.3		42.4	15.8		13.3	26.4		20.8	15.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	54.7	17.3		42.4	15.8		13.3	26.4		20.8	15.4	
LOS	D	B		D	B		B	C		C	B	

Lanes, Volumes, Timings
2: Kennedy Rd & Clayton Dr/Pacific Mall Access

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		42.4			26.0			25.9			16.4	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	28.8	3.7		8.4	3.0		2.0	63.4		32.0	77.3	
Queue Length 95th (m)	41.2	13.5		15.8	13.2		7.6	114.3		79.7	135.4	
Internal Link Dist (m)		124.7			144.9			432.9			254.1	
Turn Bay Length (m)	57.0						127.0			90.0		
Base Capacity (vph)	383	496		387	486		235	2278		639	3033	
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	0.11		0.09	0.12		0.17	0.47		0.59	0.55	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 35 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 21.0

Intersection LOS: C

Intersection Capacity Utilization 84.9%

ICU Level of Service E

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 2: Kennedy Rd & Clayton Dr/Pacific Mall Access



Lanes, Volumes, Timings
3: Kennedy Rd & Corvette Rd

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	3	40	237	25	33	59	1145	44	6	1591	5
Future Volume (vph)	3	3	40	237	25	33	59	1145	44	6	1591	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	71.0		0.0	71.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	0.99	0.98									1.00	
Frt		0.859			0.914			0.995				
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1614	0	1789	1721	0	1738	4647	0	1789	4754	0
Flt Permitted	0.950			0.723			0.046			0.124		
Satd. Flow (perm)	1814	1614	0	1362	1721	0	84	4647	0	234	4754	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			35			4				
Link Speed (k/h)		50			48			60			60	
Link Distance (m)		180.2			153.9			280.0			243.2	
Travel Time (s)		13.0			11.5			16.8			14.6	
Confl. Peds. (#/hr)	4		6				54					54
Confl. Bikes (#/hr)							3					3
Peak Hour Factor	0.81	0.92	0.81	0.92	0.92	0.92	0.81	0.81	0.92	0.92	0.81	0.81
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	5%	5%	2%	2%	3%	2%
Adj. Flow (vph)	4	3	49	258	27	36	73	1414	48	7	1964	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	52	0	258	63	0	73	1462	0	7	1970	0
Turn Type	Split	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4			8		1	6			2	
Permitted Phases				8			6			2		
Detector Phase	4	4		8	8		1	6		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	30.0		30.0	30.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		11.0	37.0		37.0	37.0	
Total Split (s)	38.0	38.0		38.0	38.0		12.0	92.0		80.0	80.0	
Total Split (%)	22.6%	22.6%		22.6%	22.6%		7.1%	54.8%		47.6%	47.6%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	4.5		4.5	4.5	
All-Red Time (s)	3.5	3.5		3.5	3.5		1.0	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		4.0	7.0		7.0	7.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Act Effct Green (s)	14.0	14.0		39.8	39.8		99.6	96.6		84.5	84.5	
Actuated g/C Ratio	0.08	0.08		0.24	0.24		0.59	0.58		0.50	0.50	
v/c Ratio	0.03	0.29		0.80	0.15		0.57	0.55		0.06	0.82	
Control Delay	65.3	21.3		78.5	27.1		41.5	24.2		27.8	40.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	1.7	
Total Delay	65.3	21.3		78.5	27.1		41.5	24.2		27.8	42.1	
LOS	E	C		E	C		D	C		C	D	

Lanes, Volumes, Timings
3: Kennedy Rd & Gorvette Rd

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		24.5			68.4			25.0			42.1	
Approach LOS		C			E			C			D	
Queue Length 50th (m)	1.3	1.0		80.6	7.2		10.3	118.1		1.2	221.7	
Queue Length 95th (m)	4.2	13.5		#147.1	21.8		23.8	130.0		5.0	226.9	
Internal Link Dist (m)		156.2			129.9			256.0			219.2	
Turn Bay Length (m)							71.0			71.0		
Base Capacity (vph)	336	337		322	434		132	2673		117	2389	
Starvation Cap Reductn	0	0		0	0		0	0		0	254	
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	0.15		0.80	0.15		0.55	0.55		0.06	0.92	

Intersection Summary

Area Type: Other

Cycle Length: 168

Actuated Cycle Length: 168

Offset: 96 (57%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 37.3

Intersection LOS: D

Intersection Capacity Utilization 80.5%

ICU Level of Service D

Analysis Period (min) 15

* User Entered Value

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Kennedy Rd & Gorvette Rd



Lanes, Volumes, Timings
4: Kennedy Rd & Denison St/Dennison St

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	221	268	45	111	686	231	83	955	42	471	1582	516
Future Volume (vph)	221	268	45	111	686	231	83	955	42	471	1582	516
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	48.0		0.0	150.0		0.0	80.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor		0.99		0.97	0.97			0.99			0.97	
Frt		0.978			0.962			0.994			0.963	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	3373	0	1807	3302	0	1772	4623	0	1789	4468	0
Flt Permitted	0.104			0.506			0.101			0.092		
Satd. Flow (perm)	200	3373	0	933	3302	0	188	4623	0	173	4468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			35			5			78	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		322.0			182.9			243.2			339.7	
Travel Time (s)		23.2			13.2			14.6			20.4	
Confl. Peds. (#/hr)	86		44	44		86	83		67	67		83
Confl. Bikes (#/hr)							1					1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	0%	5%	4%	1%	2%	7%	3%	5%	0%	2%	3%	1%
Adj. Flow (vph)	273	331	56	137	847	285	102	1179	52	581	1953	637
Shared Lane Traffic (%)												
Lane Group Flow (vph)	273	387	0	137	1132	0	102	1231	0	581	2590	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8			6			2		
Detector Phase	7	4		3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	30.0		7.0	30.0	
Minimum Split (s)	11.0	39.5		11.0	39.5		11.0	37.5		11.0	37.5	
Total Split (s)	14.0	46.0		11.0	43.0		11.0	47.0		26.0	62.0	
Total Split (%)	10.8%	35.4%		8.5%	33.1%		8.5%	36.2%		20.0%	47.7%	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.5		3.0	4.5	
All-Red Time (s)	1.0	3.5		1.0	3.5		1.0	3.0		1.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5		4.0	7.5		4.0	7.5		4.0	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	52.0	38.5		46.0	35.5		50.0	39.5		69.0	54.5	
Actuated g/C Ratio	0.40	0.30		0.35	0.27		0.38	0.30		0.53	0.42	
v/c Ratio	1.33	0.38		0.36	1.22		0.65	0.87		1.59	1.35	
Control Delay	206.0	36.2		28.8	148.6		41.3	50.8		299.9	198.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	206.0	36.2		28.8	148.6		41.3	50.8		299.9	198.1	
LOS	F	D		C	F		D	D		F	F	

Lanes, Volumes, Timings
4: Kennedy Rd & Denison St/Dennison St

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		106.4			135.7			50.1			216.7	
Approach LOS		F			F			D			F	
Queue Length 50th (m)	~73.6	39.7		22.2	~184.4		12.6	116.8		~200.7	~344.9	
Queue Length 95th (m)	#108.2	47.7		32.4	#190.4		22.4	118.4		m#228.7	#314.1	
Internal Link Dist (m)		298.0			158.9			219.2			315.7	
Turn Bay Length (m)	60.0			48.0			150.0			80.0		
Base Capacity (vph)	205	1009		377	927		157	1408		365	1918	
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	1.33	0.38		0.36	1.22		0.65	0.87		1.59	1.35	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.59

Intersection Signal Delay: 154.9

Intersection LOS: F

Intersection Capacity Utilization 110.2%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Kennedy Rd & Denison St/Dennison St



Lanes, Volumes, Timings
5: Kennedy Rd & Milliken Mills HS S Access

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	25	0	1414	2083	20
Future Volume (vph)	0	25	0	1414	2083	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	*0.85	*0.85	0.91
Frt		0.865			0.999	
Flt Protected						
Satd. Flow (prot)	0	1662	0	4899	4894	0
Flt Permitted						
Satd. Flow (perm)	0	1662	0	4899	4894	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	82.2			339.7	142.9	
Travel Time (s)	5.9			20.4	8.6	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	31	0	1746	2572	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	31	0	1746	2597	0
Sign Control	Yield			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 50.7% ICU Level of Service A

Analysis Period (min) 15

* User Entered Value

Lanes, Volumes, Timings

2041 Future Conditions - AM Peak Hour

6: Kennedy Rd & Milliken Mills HS N Access/Highglen Ave

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	105	52	206	156	171	112	1294	21	34	1823	24
Future Volume (vph)	39	105	52	206	156	171	112	1294	21	34	1823	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	53.0		0.0	75.0		0.0	90.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	1.00	0.98		0.97	0.99			1.00			1.00	
Frt		0.951			0.922			0.998			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1795	0	1807	1735	0	1825	4651	0	1825	4697	0
Flt Permitted	0.316			0.394			0.055			0.087		
Satd. Flow (perm)	605	1795	0	729	1735	0	106	4651	0	167	4697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			46			2			2	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		183.2			282.0			142.9			266.6	
Travel Time (s)		16.5			25.4			8.6			16.0	
Confl. Peds. (#/hr)	4		32	32		4	35		9	9		35
Confl. Bikes (#/hr)	5		1	1		5	1		2	2		1
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	5%	8%	0%	4%	0%
Adj. Flow (vph)	48	130	64	254	193	211	138	1598	26	42	2251	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	194	0	254	404	0	138	1624	0	42	2281	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	30.0		7.0	30.0	
Minimum Split (s)	37.5	37.5		11.0	37.5		11.0	37.0		11.0	37.0	
Total Split (s)	39.0	39.0		12.0	51.0		12.0	63.0		16.0	67.0	
Total Split (%)	30.0%	30.0%		9.2%	39.2%		9.2%	48.5%		12.3%	51.5%	
Yellow Time (s)	3.5	3.5		3.0	3.5		3.0	4.5		3.0	4.5	
All-Red Time (s)	4.0	4.0		1.0	4.0		1.0	2.5		1.0	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		4.0	7.5		4.0	7.0		4.0	7.0	
Lead/Lag	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	21.3	21.3		36.8	33.3		83.8	73.1		78.9	68.6	
Actuated g/C Ratio	0.16	0.16		0.28	0.26		0.64	0.56		0.61	0.53	
v/c Ratio	0.48	0.63		0.93	0.85		0.71	0.62		0.22	0.92	
Control Delay	63.0	53.6		80.9	56.1		54.0	11.7		9.0	30.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	63.0	53.6		80.9	56.1		54.0	11.7		9.0	30.5	
LOS	E	D		F	E		D	B		A	C	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		55.5			65.7			15.0			30.1	
Approach LOS		E			E			B			C	
Queue Length 50th (m)	11.3	42.6		54.5	88.7		23.2	35.9		1.7	208.9	
Queue Length 95th (m)	19.9	53.7		62.8	97.6		m25.2	m79.6		m3.1	#219.8	
Internal Link Dist (m)		159.2			258.0			118.9			242.6	
Turn Bay Length (m)	32.0			53.0			75.0			90.0		
Base Capacity (vph)	146	448		273	611		195	2616		260	2480	
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	0.33	0.43		0.93	0.66		0.71	0.62		0.16	0.92	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 35 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 30.7

Intersection LOS: C

Intersection Capacity Utilization 91.9%

ICU Level of Service F

Analysis Period (min) 15

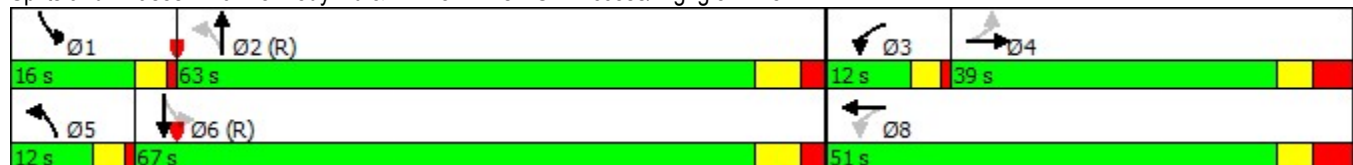
* User Entered Value

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kennedy Rd & Milliken Mills HS N Access/Highglen Ave



Lanes, Volumes, Timings

2041 Future Conditions - AM Peak Hour

7: Kennedy Rd & Milliken Mills Community Centre/Lee Ave

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	6	81	30	33	204	64	1362	13	22	1849	113
Future Volume (vph)	49	6	81	30	33	204	64	1362	13	22	1849	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		37.0	90.0		0.0	72.0		0.0
Storage Lanes	1		0	0		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	1.00	0.99			1.00	0.98		1.00		1.00	1.00	
Frt		0.861				0.850		0.999			0.991	
Flt Protected	0.950				0.977		0.950			0.950		
Satd. Flow (prot)	1755	1631	0	0	1877	1633	1825	4706	0	1722	4666	0
Flt Permitted	0.712				0.801		0.054			0.133		
Satd. Flow (perm)	1310	1631	0	0	1537	1606	104	4706	0	241	4666	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20				62		2			16	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		87.8			315.9			266.6			285.1	
Travel Time (s)		7.9			28.4			16.0			17.1	
Confl. Peds. (#/hr)	3		2	2		3	6		2	2		6
Confl. Bikes (#/hr)									3	3		
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 (%)	4%	0%	0%	0%	0%	0%	0%	4%	0%	6%	4%	1%
Adj. Flow (vph)	53	7	88	33	36	222	70	1480	14	24	2010	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	95	0	0	69	222	70	1494	0	24	2133	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	30.0	30.0		30.0	30.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	37.0	37.0		37.0	37.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	4.5	4.5		4.5	4.5	
All-Red Time (s)	3.5	3.5		3.5	3.5	3.5	2.5	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0			7.0	7.0	7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	18.5	18.5			18.5	18.5	97.5	97.5		97.5	97.5	
Actuated g/C Ratio	0.14	0.14			0.14	0.14	0.75	0.75		0.75	0.75	
v/c Ratio	0.28	0.38			0.32	0.79	0.90	0.42		0.13	0.61	
Control Delay	51.4	42.4			51.9	57.6	97.0	4.3		8.0	9.0	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	51.4	42.4			51.9	57.6	97.0	4.3		8.0	9.0	
LOS	D	D			D	E	F	A		A	A	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		45.6			56.2			8.5			9.0	
Approach LOS		D			E			A			A	
Queue Length 50th (m)	12.3	17.5			16.1	40.4	7.4	21.6		1.5	86.1	
Queue Length 95th (m)	23.4	32.1			28.7	64.4	m#39.7	41.5		5.6	124.5	
Internal Link Dist (m)		63.8			291.9			242.6			261.1	
Turn Bay Length (m)						37.0	90.0			72.0		
Base Capacity (vph)	262	342			307	370	78	3530		180	3504	
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	0.28			0.22	0.60	0.90	0.42		0.13	0.61	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 13.4

Intersection LOS: B

Intersection Capacity Utilization 76.0%

ICU Level of Service D

Analysis Period (min) 15

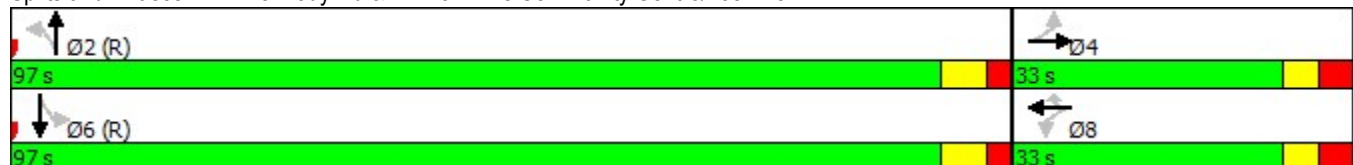
* User Entered Value

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Kennedy Rd & Milliken Mills Community Centre/Lee Ave



Lanes, Volumes, Timings
8: Kennedy Rd & 14th Ave

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	567	163	208	1205	316	224	1292	120	226	1597	108
Future Volume (vph)	102	567	163	208	1205	316	224	1292	120	226	1597	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	64.0		58.0	50.0		45.0	65.0		0.0	50.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor			0.98	1.00		0.98		1.00			1.00	
Frt			0.850			0.850		0.987			0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	3510	1585	1789	3614	1585	1738	4645	0	1789	4654	0
Flt Permitted	0.105			0.231			0.081			0.078		
Satd. Flow (perm)	194	3510	1548	434	3614	1548	148	4645	0	147	4654	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			133		11			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		504.0			494.8			285.1			290.2	
Travel Time (s)		36.3			35.6			17.1			17.4	
Confl. Peds. (#/hr)	8		9	9		8	28		14	14		28
Confl. Bikes (#/hr)	2					2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	3%	2%	1%	3%	5%	4%	2%	2%	4%	4%
Adj. Flow (vph)	111	616	177	226	1310	343	243	1404	130	246	1736	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	616	177	226	1310	343	243	1534	0	246	1853	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		
Detector Phase	7	4	4	3	8	8	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0		7.0	20.0	
Minimum Split (s)	11.0	39.5	39.5	11.0	39.5	39.5	11.0	41.5		11.0	41.5	
Total Split (s)	11.0	44.1	44.1	21.0	54.1	54.1	16.0	56.9		18.0	58.9	
Total Split (%)	7.9%	31.5%	31.5%	15.0%	38.6%	38.6%	11.4%	40.6%		12.9%	42.1%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5		3.0	4.5	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0		1.0	3.0	
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)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5		4.0	7.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	48.7	38.2	38.2	61.1	46.6	46.6	64.9	49.4		68.9	51.4	
Actuated g/C Ratio	0.35	0.27	0.27	0.44	0.33	0.33	0.46	0.35		0.49	0.37	
v/c Ratio	0.77	0.64	0.33	0.67	1.09	0.57	1.19	0.93		1.04	1.08	
Control Delay	59.2	48.9	8.9	35.9	97.7	27.0	157.3	54.5		106.5	89.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	59.2	48.9	8.9	35.9	97.7	27.0	157.3	54.5		106.5	89.3	
LOS	E	D	A	D	F	C	F	D		F	F	

Lanes, Volumes, Timings
8: Kennedy Rd & 14th Ave

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		42.4			77.4			68.6			91.3	
Approach LOS		D			E			E			F	
Queue Length 50th (m)	18.3	80.7	2.7	39.8	~214.2	47.6	~64.5	159.2		~56.4	~224.2	
Queue Length 95th (m)	#44.9	101.6	21.0	59.1	#256.8	79.1	#118.7	#191.1		#110.6	#255.8	
Internal Link Dist (m)		480.0			470.8			261.1			266.2	
Turn Bay Length (m)	64.0		58.0	50.0		45.0	65.0			50.0		
Base Capacity (vph)	145	957	541	353	1202	603	204	1646		236	1713	
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	0.77	0.64	0.33	0.64	1.09	0.57	1.19	0.93		1.04	1.08	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 110 (79%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay: 74.7

Intersection LOS: E

Intersection Capacity Utilization 104.1%

ICU Level of Service G

Analysis Period (min) 15

* User Entered Value

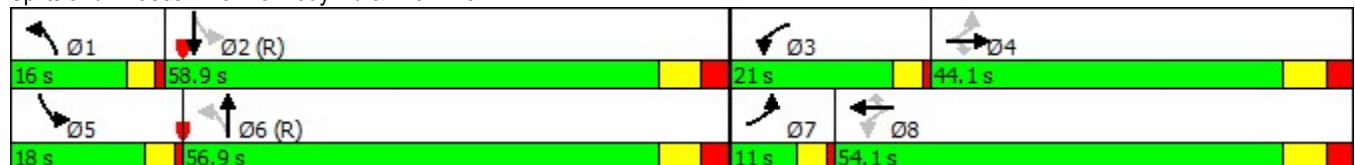
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 8: Kennedy Rd & 14th Ave



Lanes, Volumes, Timings
9: Kennedy Rd & Duffield Dr

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	63	90	347	1361	1843	886	
Future Volume (vph)	63	90	347	1361	1843	886	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	65.0	0.0	63.0			0.0	
Storage Lanes	1	1	1			0	
Taper Length (m)	2.5		2.5				
Lane Util. Factor	1.00	1.00	1.00	*0.85	*0.85	0.91	
Ped Bike Factor	1.00	0.98			0.99		
Frt		0.850			0.951		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1738	1471	1738	4710	4509	0	
Flt Permitted	0.950		0.056				
Satd. Flow (perm)	1731	1443	102	4710	4509	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		98			138		
Link Speed (k/h)	50			60	60		
Link Distance (m)	324.2			290.2	340.2		
Travel Time (s)	23.3			17.4	20.4		
Confl. Peds. (#/hr)	3	5	4			4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	5%	11%	5%	4%	3%	1%	
Adj. Flow (vph)	68	98	377	1479	2003	963	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	68	98	377	1479	2966	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		8
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	10.0	10.0	5.0	40.0	40.0		10.0
Minimum Split (s)	35.0	35.0	9.5	47.0	47.0		35.0
Total Split (s)	35.0	35.0	21.0	95.0	74.0		35.0
Total Split (%)	26.9%	26.9%	16.2%	73.1%	56.9%		27%
Yellow Time (s)	3.5	3.5	3.5	4.5	4.5		3.5
All-Red Time (s)	3.5	3.5	1.0	2.5	2.5		3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	4.5	7.0	7.0		
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	14.1	14.1	104.4	101.9	67.0		
Actuated g/C Ratio	0.11	0.11	0.80	0.78	0.52		
v/c Ratio	0.36	0.40	0.81	0.40	1.24		
Control Delay	57.0	13.6	50.5	5.4	141.8		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	57.0	13.6	50.5	5.4	141.8		
LOS	E	B	D	A	F		
Approach Delay	31.4			14.6	141.8		

Lanes, Volumes, Timings
9: Kennedy Rd & Duffield Dr

2041 Future Conditions - AM Peak Hour

Kennedy Road EA



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Approach LOS	C			B	F		
Queue Length 50th (m)	17.0	0.0	71.1	32.8	~361.0		
Queue Length 95th (m)	27.3	14.5	#173.0	74.4 m	#378.3		
Internal Link Dist (m)	300.2			266.2	316.2		
Turn Bay Length (m)	65.0			63.0			
Base Capacity (vph)	374	387	464	3691	2390		
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	0.18	0.25	0.81	0.40	1.24		

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 90.8

Intersection LOS: F

Intersection Capacity Utilization 100.8%

ICU Level of Service G

Analysis Period (min) 15

* User Entered Value

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Kennedy Rd & Duffield Dr



Lanes, Volumes, Timings
10: Kennedy Rd & 407 EB Off-Ramp

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	318	0	79	0	0	0	0	1290	17	0	2922	200
Future Volume (vph)	318	0	79	0	0	0	0	1290	17	0	2922	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor			0.98								1.00	
Frt			0.850					0.998			0.990	
Flt Protected	0.950											
Satd. Flow (prot)	3161	0	1555	0	0	0	0	4700	0	0	4752	0
Flt Permitted	0.950											
Satd. Flow (perm)	3161	0	1529	0	0	0	0	4700	0	0	4752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			38					3			18	
Link Speed (k/h)		60			48			60			60	
Link Distance (m)		436.7			245.1			340.2			345.9	
Travel Time (s)		26.2			18.4			20.4			20.8	
Confl. Peds. (#/hr)			3	3			3					3
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	12%	0%	5%	0%	0%	0%	0%	4%	6%	0%	2%	0%
Adj. Flow (vph)	349	0	87	0	0	0	0	1418	19	0	3211	220
Shared Lane Traffic (%)												
Lane Group Flow (vph)	349	0	87	0	0	0	0	1437	0	0	3431	0
Turn Type	Prot		Perm					NA			NA	
Protected Phases	4							6			2	
Permitted Phases			4									
Detector Phase	4		4					6			2	
Switch Phase												
Minimum Initial (s)	10.0		10.0					15.0			15.0	
Minimum Split (s)	31.5		31.5					34.5			34.5	
Total Split (s)	32.0		32.0					98.0			98.0	
Total Split (%)	24.6%		24.6%					75.4%			75.4%	
Yellow Time (s)	4.5		4.5					4.5			4.5	
All-Red Time (s)	2.0		2.0					3.0			3.0	
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	
Total Lost Time (s)	6.5		6.5					7.5			7.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None		None					C-Max			C-Max	
Act Effct Green (s)	19.6		19.6					96.4			96.4	
Actuated g/C Ratio	0.15		0.15					0.74			0.74	
v/c Ratio	0.73		0.33					0.41			0.97	
Control Delay	61.7		31.4					13.2			26.5	
Queue Delay	0.0		0.0					0.0			0.0	
Total Delay	61.7		31.4					13.2			26.5	
LOS	E		C					B			C	
Approach Delay		55.7						13.2			26.5	
Approach LOS		E						B			C	
Queue Length 50th (m)	44.5		11.2					77.3			280.8	
Queue Length 95th (m)	57.9		25.7					110.5			#392.1	

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	10.0
Minimum Split (s)	31.5
Total Split (s)	32.0
Total Split (%)	25%
Yellow Time (s)	4.5
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	

Lanes, Volumes, Timings
10: Kennedy Rd & 407 EB Off-Ramp

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (m)		412.7			221.1			316.2			321.9	
Turn Bay Length (m)												
Base Capacity (vph)	620		330					3484			3526	
Starvation Cap Reductn	0		0					0			0	
Spillback Cap Reductn	0		0					0			0	
Storage Cap Reductn	0		0					0			0	
Reduced v/c Ratio	0.56		0.26					0.41			0.97	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 23 (18%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 25.3

Intersection LOS: C

Intersection Capacity Utilization 82.1%

ICU Level of Service E

Analysis Period (min) 15

* User Entered Value

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

Queue shown is maximum after two cycles.

Splits and Phases: 10: Kennedy Rd & 407 EB Off-Ramp

 Ø2 (R)	 Ø4
98 s	32 s
 Ø6 (R)	 Ø8
98 s	32 s

Lane Group	Ø8
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: 407 WB Off-Ramp & Kennedy Rd

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	379	0	1026	0	1430	125	0	2859	0
Future Volume (vph)	0	0	0	379	0	1026	0	1430	125	0	2859	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor								1.00				
Frt						0.850		0.988				
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3471	0	1601	0	4615	0	0	4756	0
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3471	0	1601	0	4615	0	0	4756	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)						39		12				
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		370.0			404.8			345.9			162.6	
Travel Time (s)		27.8			24.3			20.8			9.8	
Confl. Peds. (#/hr)									5	5		
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	5%	0%	0%	3%	0%
Adj. Flow (vph)	0	0	0	457	0	1236	0	1723	151	0	3445	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	457	0	1236	0	1874	0	0	3445	0
Turn Type				Prot		Perm		NA			NA	
Protected Phases				8				6			2	
Permitted Phases						8						
Detector Phase				8		8		6			2	
Switch Phase												
Minimum Initial (s)				10.0		10.0		30.0			30.0	
Minimum Split (s)				32.5		32.5		38.0			38.0	
Total Split (s)				68.0		68.0		72.0			72.0	
Total Split (%)				48.6%		48.6%		51.4%			51.4%	
Yellow Time (s)				4.5		4.5		4.5			4.5	
All-Red Time (s)				2.0		2.0		3.5			3.5	
Lost Time Adjust (s)				0.0		0.0		0.0			0.0	
Total Lost Time (s)				6.5		6.5		8.0			8.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None		None		C-Max			C-Max	
Act Effct Green (s)				61.5		61.5		64.0			64.0	
Actuated g/C Ratio				0.44		0.44		0.46			0.46	
v/c Ratio				0.30		1.70		0.89			1.58	
Control Delay				26.0		350.4		40.7			295.6	
Queue Delay				0.0		0.0		1.2			0.1	
Total Delay				26.0		350.4		41.9			295.7	
LOS				C		F		D			F	
Approach Delay					262.8			41.9			295.7	
Approach LOS					F			D			F	
Queue Length 50th (m)				41.5		~499.5		181.6			~523.8	
Queue Length 95th (m)				49.0		#518.8		178.5			m#304.9	

Lanes, Volumes, Timings
11: 407 WB Off-Ramp & Kennedy Rd

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (m)	346.0			380.8			321.9			138.6		
Turn Bay Length (m)												
Base Capacity (vph)				1524			725			2116		
Starvation Cap Reductn				0			0			82		
Spillback Cap Reductn				0			0			97		
Storage Cap Reductn				0			0			0		
Reduced v/c Ratio				0.30			1.70			0.93		
				1.65								

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

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

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.70

Intersection Signal Delay: 220.0

Intersection LOS: F

Intersection Capacity Utilization 106.1%

ICU Level of Service G

Analysis Period (min) 15

* User Entered Value

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: 407 WB Off-Ramp & Kennedy Rd

	
Ø2 (R)	Ø8
72 s	68 s
	
Ø6 (R)	
72 s	

Lanes, Volumes, Timings
12: Kennedy Rd & YMCA Blvd/Helen Ave

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	  		 	  	
Traffic Volume (vph)	118	27	330	248	101	10	702	1682	112	10	2244	311
Future Volume (vph)	118	27	330	248	101	10	702	1682	112	10	2244	311
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	135.0		0.0	132.0		0.0	77.0		0.0	96.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	1.00	0.98		1.00	1.00			1.00		1.00		
Frt		0.861			0.986			0.991			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2902	1484	0	1807	1834	0	1706	4668	0	1825	4649	0
Flt Permitted	0.682			0.226			0.072			0.092		
Satd. Flow (perm)	2081	1484	0	429	1834	0	129	4668	0	177	4649	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		331			3			11			18	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		303.2			335.1			162.6			360.1	
Travel Time (s)		27.3			30.2			9.8			21.6	
Confl. Peds. (#/hr)	1		5	5		1			9	9		
Confl. Bikes (#/hr)	2					2						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	22%	4%	10%	1%	2%	14%	7%	4%	0%	0%	3%	7%
Adj. Flow (vph)	124	28	347	261	106	11	739	1771	118	11	2362	327
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	375	0	261	117	0	739	1889	0	11	2689	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4			8			6			2		
Detector Phase	7	4		3	8		1	6		2	2	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	30.0		30.0	30.0	
Minimum Split (s)	11.5	38.5		11.5	38.5		11.5	40.0		40.0	40.0	
Total Split (s)	11.5	38.5		13.0	40.0		29.0	88.5		59.5	59.5	
Total Split (%)	8.2%	27.5%		9.3%	28.6%		20.7%	63.2%		42.5%	42.5%	
Yellow Time (s)	3.0	3.5		3.0	3.5		3.0	4.5		4.5	4.5	
All-Red Time (s)	1.0	4.0		1.0	4.0		1.0	3.5		3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5		4.0	7.5		4.0	8.0		8.0	8.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Act Effct Green (s)	27.2	16.2		30.2	17.7		99.3	95.3		51.5	51.5	
Actuated g/C Ratio	0.19	0.12		0.22	0.13		0.71	0.68		0.37	0.37	
v/c Ratio	0.28	0.81		1.44	0.50		1.37	0.59		0.17	1.56	
Control Delay	42.8	23.0		262.9	61.0		202.1	11.6		11.8	273.5	
Queue Delay	0.0	73.7		7.8	0.0		0.0	0.9		0.0	0.3	
Total Delay	42.8	96.7		270.6	61.0		202.1	12.6		11.8	273.9	
LOS	D	F		F	E		F	B		B	F	

Lanes, Volumes, Timings
12: Kennedy Rd & YMCA Blvd/Helen Ave

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		83.3			205.7			65.9			272.8	
Approach LOS		F			F			E			F	
Queue Length 50th (m)	14.7	11.6		~85.2	30.8		~239.6	80.9		0.5	~408.4	
Queue Length 95th (m)	19.6	42.8		#106.6	43.6		m#264.8	m98.2		m0.4	m#264.1	
Internal Link Dist (m)		279.2			311.1			138.6			336.1	
Turn Bay Length (m)	135.0			132.0			77.0			96.0		
Base Capacity (vph)	448	586		181	428		539	3179		65	1721	
Starvation Cap Reductn	0	0		0	0		0	906		0	0	
Spillback Cap Reductn	0	469		188	0		0	0		0	176	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.28	3.21		261.00	0.27		1.37	0.83		0.17	1.74	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 34 (24%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.56

Intersection Signal Delay: 165.8

Intersection LOS: F

Intersection Capacity Utilization 145.3%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

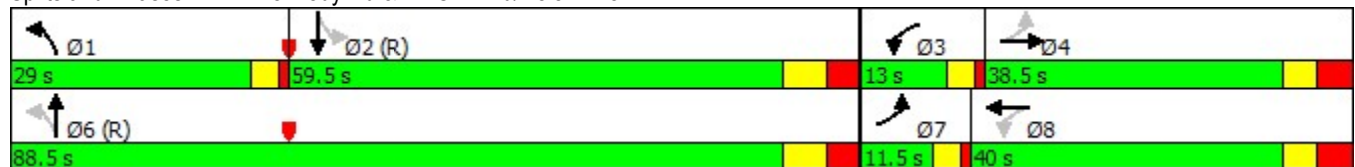
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Kennedy Rd & YMCA Blvd/Helen Ave



Lanes, Volumes, Timings

2041 Future Conditions - AM Peak Hour

13: Kennedy Rd & Unionville Gate/South Unionville Ave Dr

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	90	384	137	391	21	550	1123	59	13	2131	469
Future Volume (vph)	136	90	384	137	391	21	550	1123	59	13	2131	469
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	57.0		0.0	83.0		70.0	193.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor								1.00				
Frt			0.850		0.992			0.993			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1883	1570	1807	3553	0	1755	4639	0	1825	4644	0
Flt Permitted	0.502			0.602			0.067			0.197		
Satd. Flow (perm)	964	1883	1570	1145	3553	0	124	4639	0	378	4644	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			323		4			9			37	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		264.4			158.5			360.1			256.8	
Travel Time (s)		19.0			11.4			21.6			15.4	
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	4%	1%	2%	0%	4%	5%	0%	0%	3%	1%
Adj. Flow (vph)	142	94	400	143	407	22	573	1170	61	14	2220	489
Shared Lane Traffic (%)												
Lane Group Flow (vph)	142	94	400	143	429	0	573	1231	0	14	2709	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		4		3	8		1	6			2	
Permitted Phases	4		4	8			6			2		
Detector Phase	4	4	4	3	8		1	6		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0		7.0	32.0		32.0	32.0	
Minimum Split (s)	39.5	39.5	39.5	11.0	39.5		11.0	39.5		39.5	39.5	
Total Split (s)	39.5	39.5	39.5	11.0	50.5		26.0	89.5		63.5	63.5	
Total Split (%)	28.2%	28.2%	28.2%	7.9%	36.1%		18.6%	63.9%		45.4%	45.4%	
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0		3.0	4.5		4.5	4.5	
All-Red Time (s)	3.5	3.5	3.5	1.0	3.5		1.0	3.0		3.0	3.0	
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)	7.5	7.5	7.5	4.0	7.5		4.0	7.5		7.5	7.5	
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	
Act Effct Green (s)	25.5	25.5	25.5	40.0	36.5		92.0	88.5		56.0	56.0	
Actuated g/C Ratio	0.18	0.18	0.18	0.29	0.26		0.66	0.63		0.40	0.40	
v/c Ratio	0.81	0.27	0.73	0.40	0.46		1.39	0.42		0.09	1.44	
Control Delay	86.3	49.4	18.9	41.0	43.9		231.2	13.6		15.3	230.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	86.3	49.4	18.9	41.0	43.9		231.2	13.6		15.3	230.3	
LOS	F	D	B	D	D		F	B		B	F	
Approach Delay		38.5			43.2			82.7			229.2	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	D			D			F			F		
Queue Length 50th (m)	37.7	22.4	18.4	30.4	51.7		~203.9	46.0		2.5	~406.6	
Queue Length 95th (m)	60.3	37.2	53.6	46.0	64.1		#296.3	73.2		m2.2	#434.2	
Internal Link Dist (m)	240.4			134.5			336.1			232.8		
Turn Bay Length (m)	57.0			83.0			193.0			35.0		
Base Capacity (vph)	220	430	608	360	1094		413	2936		151	1879	
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	0.65	0.22	0.66	0.40	0.39		1.39	0.42		0.09	1.44	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 7 (5%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.44

Intersection Signal Delay: 143.4

Intersection LOS: F

Intersection Capacity Utilization 124.0%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

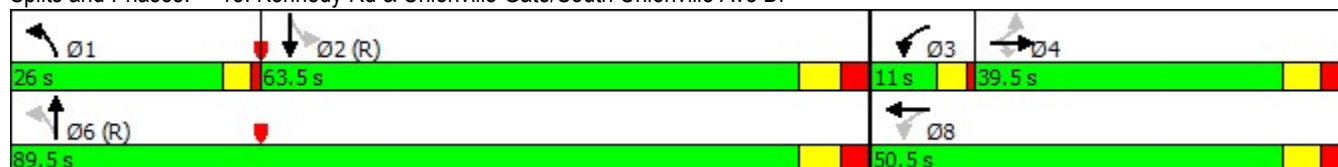
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 13: Kennedy Rd & Unionville Gate/South Unionville Ave Dr



Lanes, Volumes, Timings
14: Kennedy Rd & Castan Dr

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	46	6	1260	76	6	2354
Future Volume (vph)	46	6	1260	76	6	2354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0	0.0		0.0	42.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	*0.85	0.91	1.00	*0.85
Ped Bike Factor						
Frt		0.850	0.991			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1825	1633	4621	0	1825	4756
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1825	1633	4621	0	1825	4756
Link Speed (k/h)	40		60			60
Link Distance (m)	247.2		256.8			190.3
Travel Time (s)	22.2		15.4			11.4
Confl. Peds. (#/hr)				4	4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	5%	6%	0%	3%
Adj. Flow (vph)	48	6	1313	79	6	2452
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	6	1392	0	6	2452
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	55.5%			ICU Level of Service B		
Analysis Period (min)	15					
* User Entered Value						

Lanes, Volumes, Timings

2041 Future Conditions - AM Peak Hour

15: Kennedy Rd & Peachtree Mall S Access/Avoca Dr

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	0	1	1	4	97	18	1187	0	37	2644	124
Future Volume (vph)	66	0	1	1	4	97	18	1187	0	37	2644	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		0.0	100.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	0.98	0.98		1.00	0.97					1.00	1.00	
Frt		0.850			0.856						0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1722	1607	0	1772	1595	0	1789	4622	0	1825	4723	0
Flt Permitted	0.690			0.757			0.038			0.201		
Satd. Flow (perm)	1229	1607	0	1406	1595	0	72	4622	0	385	4723	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		87			94						8	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		109.6			410.4			190.3			150.5	
Travel Time (s)		9.9			36.9			11.4			9.0	
Confl. Peds. (#/hr)	15		3	3		15	3		8	8		3
Confl. Bikes (#/hr)							1					1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	6%	0%	0%	3%	0%	0%	2%	6%	0%	0%	3%	0%
Adj. Flow (vph)	67	0	1	1	4	99	18	1211	0	38	2698	127
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	1	0	1	103	0	18	1211	0	38	2825	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2	2	
Detector Phase	4	4		8	8		1	6		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	30.0		30.0	30.0	
Minimum Split (s)	39.5	39.5		39.5	39.5		11.0	37.0		37.0	37.0	
Total Split (s)	39.8	39.8		39.8	39.8		11.0	100.2		89.2	89.2	
Total Split (%)	28.4%	28.4%		28.4%	28.4%		7.9%	71.6%		63.7%	63.7%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	4.5		4.5	4.5	
All-Red Time (s)	4.0	4.0		4.0	4.0		1.0	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		4.0	7.0		7.0	7.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Act Effct Green (s)	16.2	16.2		16.2	16.2		112.3	109.3		104.9	104.9	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.80	0.78		0.75	0.75	
v/c Ratio	0.47	0.00		0.01	0.39		0.13	0.34		0.13	0.80	
Control Delay	66.3	0.0		47.0	15.5		9.2	6.9		9.8	15.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	66.3	0.0		47.0	15.5		9.2	6.9		9.8	15.7	
LOS	E	A		D	B		A	A		A	B	

Lanes, Volumes, Timings

2041 Future Conditions - AM Peak Hour

15: Kennedy Rd & Peachtree Mall S Access/Avoca Dr

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		65.4			15.8			6.9			15.6	
Approach LOS		E			B			A			B	
Queue Length 50th (m)	18.1	0.0		0.3	2.3		1.3	54.3		1.9	125.0	
Queue Length 95th (m)	29.2	0.0		1.7	17.0		m4.1	72.7		11.0	#348.7	
Internal Link Dist (m)		85.6			386.4			166.3			126.5	
Turn Bay Length (m)				20.0			100.0			60.0		
Base Capacity (vph)	283	437		324	440		143	3608		288	3540	
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	0.00		0.00	0.23		0.13	0.34		0.13	0.80	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 89 (64%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 13.9

Intersection LOS: B

Intersection Capacity Utilization 81.5%

ICU Level of Service D

Analysis Period (min) 15

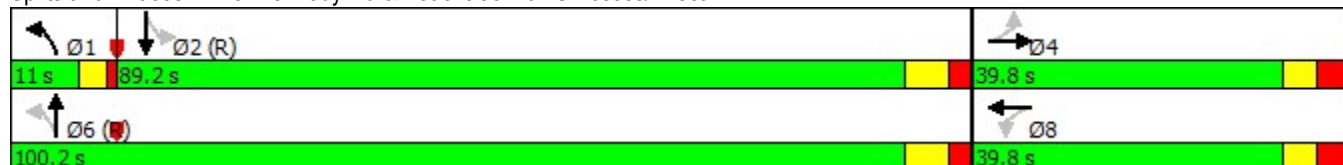
* User Entered Value

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kennedy Rd & Peachtree Mall S Access/Avoca Dr



Lanes, Volumes, Timings

2041 Future Conditions - AM Peak Hour

16: Kennedy Rd & Peachtree Mall N Access/Eton St

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	0	0	10	8	0	23	12	1354	8	9	2788	139
Future Volume (vph)	0	0	10	8	0	23	12	1354	8	9	2788	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	50.0		0.0	62.0		0.0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor												
Frt			0.865		0.850			0.999			0.993	
Flt Protected				0.950			0.950			0.950		
Satd. Flow (prot)	0	0	1662	1825	1633	0	1825	4894	0	1825	4865	0
Flt Permitted				0.950			0.950			0.950		
Satd. Flow (perm)	0	0	1662	1825	1633	0	1825	4894	0	1825	4865	0
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		140.1			268.7			150.5			203.0	
Travel Time (s)		12.6			24.2			9.0			12.2	
Confl. Peds. (#/hr)							7		4	4		7
Confl. Bikes (#/hr)							1		1	1		1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	10	8	0	23	12	1382	8	9	2845	142
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	10	8	23	0	12	1390	0	9	2987	0
Sign Control		Yield			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 73.7%

ICU Level of Service D

Analysis Period (min) 15

* User Entered Value

Lanes, Volumes, Timings
17: Kennedy Rd & Highway 7

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	178	673	127	483	1690	68	169	1046	187	96	2284	228
Future Volume (vph)	178	673	127	483	1690	68	169	1046	187	96	2284	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	78.0		95.0	43.0		87.0	111.0		0.0	100.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor			0.97	0.99		0.98		1.00		1.00	1.00	
Frt			0.850			0.850		0.977			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1722	3380	1570	1738	3544	1541	1755	4462	0	1789	4767	0
Flt Permitted	0.084			0.231			0.077			0.087		
Satd. Flow (perm)	152	3380	1518	420	3544	1508	142	4462	0	164	4767	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			124			94		24			12	
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		303.4			351.7			203.0			185.7	
Travel Time (s)		15.6			18.1			12.2			11.1	
Confl. Peds. (#/hr)	8		19	19		8	11		8	8		11
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	6%	8%	4%	5%	3%	6%	4%	6%	12%	2%	1%	2%
Adj. Flow (vph)	182	687	130	493	1724	69	172	1067	191	98	2331	233
Shared Lane Traffic (%)												
Lane Group Flow (vph)	182	687	130	493	1724	69	172	1258	0	98	2564	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8			4		
Detector Phase	1	6	6	5	2	2	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	38.0	38.0	7.0	38.0	38.0	7.0	10.0		7.0	10.0	
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	45.5	11.0	44.5		11.0	44.5	
Total Split (s)	11.0	55.0	55.0	18.0	62.0	62.0	11.0	59.0		13.0	61.0	
Total Split (%)	7.6%	37.9%	37.9%	12.4%	42.8%	42.8%	7.6%	40.7%		9.0%	42.1%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.5		3.0	4.5	
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5	2.5	1.0	3.0		1.0	3.0	
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)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5		4.0	7.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	58.0	47.5	47.5	69.0	54.5	54.5	62.5	52.0		65.5	53.5	
Actuated g/C Ratio	0.40	0.33	0.33	0.48	0.38	0.38	0.43	0.36		0.45	0.37	
v/c Ratio	1.34	0.62	0.22	1.51	1.29	0.11	1.25	0.78		0.58	1.45	
Control Delay	220.8	44.1	7.3	269.2	175.7	2.7	183.9	44.8		35.9	241.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	220.8	44.1	7.3	269.2	175.7	2.7	183.9	44.8		35.9	241.0	
LOS	F	D	A	F	F	A	F	D		D	F	
Approach Delay		71.5			190.6			61.5			233.4	

Lanes, Volumes, Timings
17: Kennedy Rd & Highway 7

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	E			F			E			F		
Queue Length 50th (m)	~51.7	87.6	1.2	~167.1	~331.6	0.0	~45.0	124.4		15.6	~394.2	
Queue Length 95th (m)	#101.3	108.6	15.7	#264.7	#373.6	5.3	#92.7	144.1		26.9	#421.9	
Internal Link Dist (m)	279.4			327.7			179.0			161.7		
Turn Bay Length (m)	78.0		95.0	43.0		87.0	111.0			100.0		
Base Capacity (vph)	136	1107	580	327	1332	625	138	1614		175	1766	
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	1.34	0.62	0.22	1.51	1.29	0.11	1.25	0.78		0.56	1.45	

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 145

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

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.51

Intersection Signal Delay: 164.9

Intersection LOS: F

Intersection Capacity Utilization 136.3%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

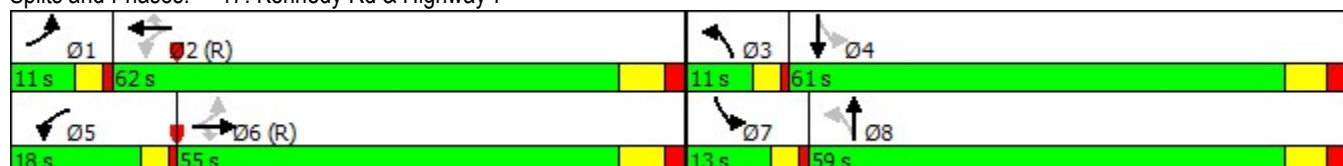
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 17: Kennedy Rd & Highway 7



Lanes, Volumes, Timings
18: Kennedy Rd & Denby Ct/Second St

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕↕↕		↗	↕↕↕	
Traffic Volume (vph)	7	0	19	3	1	0	5	1260	6	0	2723	10
Future Volume (vph)	7	0	19	3	1	0	5	1260	6	0	2723	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		0.0	55.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor												
Frt		0.901						0.999			0.999	
Flt Protected		0.987			0.964		0.950					
Satd. Flow (prot)	0	1648	0	0	1852	0	1825	4657	0	1921	4842	0
Flt Permitted		0.987			0.964		0.950					
Satd. Flow (perm)	0	1648	0	0	1852	0	1825	4657	0	1921	4842	0
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		173.6			149.5			185.7			258.9	
Travel Time (s)		15.6			13.5			11.1			15.5	
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)							1		1	1		1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	0%	5%	25%	0%	1%	20%
Adj. Flow (vph)	7	0	19	3	1	0	5	1286	6	0	2779	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	0	4	0	5	1292	0	0	2789	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 62.8%

ICU Level of Service B

Analysis Period (min) 15

* User Entered Value

Lanes, Volumes, Timings
19: Kennedy Rd & Austin Dr

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Lane Configurations							
Traffic Volume (vph)	118	159	1201	59	208	2629	
Future Volume (vph)	118	159	1201	59	208	2629	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	41.0	0.0		0.0	57.0		
Storage Lanes	1	1		0	1		
Taper Length (m)	2.5				2.5		
Lane Util. Factor	1.00	1.00	*0.85	0.91	1.00	*0.85	
Ped Bike Factor			1.00		1.00		
Frt		0.850	0.993				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1825	1601	4586	0	1807	4850	
Flt Permitted	0.950				0.134		
Satd. Flow (perm)	1825	1601	4586	0	255	4850	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		177	8				
Link Speed (k/h)	40		60			60	
Link Distance (m)	254.1		258.9			97.1	
Travel Time (s)	22.9		15.5			5.8	
Confl. Peds. (#/hr)				1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Heavy Vehicles (%)	0%	2%	6%	5%	1%	1%	
Adj. Flow (vph)	131	177	1334	66	231	2921	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	131	177	1400	0	231	2921	
Turn Type	Prot	Perm	NA		pm+pt	NA	
Protected Phases	8		6		5	2	4
Permitted Phases		8			2		
Detector Phase	8	8	6		5	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	30.0		7.0	30.0	10.0
Minimum Split (s)	33.5	33.5	37.0		11.0	37.0	33.5
Total Split (s)	33.5	33.5	83.5		23.0	106.5	33.5
Total Split (%)	23.9%	23.9%	59.6%		16.4%	76.1%	24%
Yellow Time (s)	3.5	3.5	4.5		3.0	4.5	3.5
All-Red Time (s)	3.0	3.0	2.5		1.0	2.5	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5	7.0		4.0	7.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Recall Mode	None	None	C-Max		None	C-Max	None
Act Effct Green (s)	16.6	16.6	94.1		112.9	109.9	
Actuated g/C Ratio	0.12	0.12	0.67		0.81	0.78	
v/c Ratio	0.61	0.51	0.45		0.69	0.77	
Control Delay	69.3	12.2	12.7		18.8	10.9	
Queue Delay	0.0	0.0	0.0		0.2	43.9	
Total Delay	69.3	12.2	12.7		19.0	54.8	
LOS	E	B	B		B	D	
Approach Delay	36.5		12.7			52.2	

Lanes, Volumes, Timings
19: Kennedy Rd & Austin Dr

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Approach LOS	D		B		D		
Queue Length 50th (m)	35.3	0.0	62.0		11.2	139.6	
Queue Length 95th (m)	51.6	19.6	109.8		40.4	232.0	
Internal Link Dist (m)	230.1		234.9			73.1	
Turn Bay Length (m)	41.0				57.0		
Base Capacity (vph)	351	451	3084		416	3806	
Starvation Cap Reductn	0	0	0		15	1135	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.37	0.39	0.45		0.58	1.09	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 24 (17%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 39.8

Intersection LOS: D

Intersection Capacity Utilization 70.4%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 19: Kennedy Rd & Austin Dr



Lanes, Volumes, Timings
20: Kennedy Rd & Carlton Rd

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	66	85	699	551	123	109	1087	172	26	2039	206
Future Volume (vph)	70	66	85	699	551	123	109	1087	172	26	2039	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	48.0		61.0	73.0		0.0	138.0		0.0	140.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	1.00		0.99	1.00		0.98		1.00		1.00	1.00	
Frt			0.850			0.850		0.980			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1706	1746	1601	1825	1902	1601	1690	4608	0	1825	4725	0
Flt Permitted	0.129			0.628			0.066			0.126		
Satd. Flow (perm)	231	1746	1580	1205	1902	1569	117	4608	0	242	4725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125			94		27			13	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		268.3			267.4			297.2			810.8	
Travel Time (s)		24.1			24.1			17.8			48.6	
Confl. Peds. (#/hr)	6		1	1		6	1		1	1		1
Confl. Bikes (#/hr)							1					1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	10%	2%	0%	1%	2%	8%	4%	3%	0%	2%	2%
Adj. Flow (vph)	78	73	94	777	612	137	121	1208	191	29	2266	229
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	73	94	777	612	137	121	1399	0	29	2495	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8		8	6			2		
Detector Phase	7	4	4	3	8	8	1	6		2	2	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	31.0		31.0	31.0	
Minimum Split (s)	11.5	38.5	38.5	11.5	38.5	38.5	11.5	38.0		38.0	38.0	
Total Split (s)	11.5	38.5	38.5	26.0	53.0	53.0	11.5	75.5		64.0	64.0	
Total Split (%)	8.2%	27.5%	27.5%	18.6%	37.9%	37.9%	8.2%	53.9%		45.7%	45.7%	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	4.5		4.5	4.5	
All-Red Time (s)	1.0	4.0	4.0	1.0	4.0	4.0	1.0	2.5		2.5	2.5	
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)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max		C-Max	C-Max	
Act Effct Green (s)	41.9	31.0	31.0	60.5	45.6	45.6	71.5	68.5		57.0	57.0	
Actuated g/C Ratio	0.30	0.22	0.22	0.43	0.33	0.33	0.51	0.49		0.41	0.41	
v/c Ratio	0.53	0.19	0.21	1.26	0.99	0.24	0.84	0.62		0.30	1.29	
Control Delay	39.3	45.9	4.0	161.5	80.2	13.3	68.2	27.0		48.5	173.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	39.3	45.9	4.0	161.5	80.2	13.3	68.2	27.0		48.5	173.4	
LOS	D	D	A	F	F	B	E	C		D	F	

Lanes, Volumes, Timings
20: Kennedy Rd & Carlton Rd

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		27.7			115.6			30.3			171.9	
Approach LOS		C			F			C			F	
Queue Length 50th (m)	12.7	16.6	0.0	~268.8	168.7	8.3	17.8	106.6		6.4	~339.4	
Queue Length 95th (m)	23.1	30.5	7.4	#344.6	#245.2	24.1	#53.5	123.0		m11.8	#382.2	
Internal Link Dist (m)		244.3			243.4			273.2			786.8	
Turn Bay Length (m)	48.0		61.0	73.0			138.0			140.0		
Base Capacity (vph)	148	386	447	618	619	574	144	2268		98	1931	
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	0.53	0.19	0.21	1.26	0.99	0.24	0.84	0.62		0.30	1.29	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 42 (30%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.29

Intersection Signal Delay: 114.1

Intersection LOS: F

Intersection Capacity Utilization 120.5%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

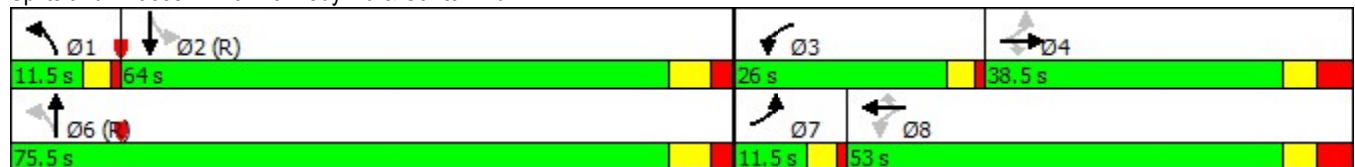
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Kennedy Rd & Carlton Rd



Lanes, Volumes, Timings
21: Kennedy Rd & The Bridle Trail

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	30	10	113	115	80	20	1218	33	27	2165	269
Future Volume (vph)	80	30	10	113	115	80	20	1218	33	27	2165	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	23.0		0.0	27.0		0.0	90.0		0.0	120.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	1.00				0.99						0.99	
Frt		0.963			0.939			0.996			0.983	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1358	0	1825	1651	0	1722	4879	0	1825	4748	0
Flt Permitted	0.446			0.730			0.039			0.167		
Satd. Flow (perm)	854	1358	0	1402	1651	0	71	4879	0	321	4748	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			26			4			24	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		238.2			161.4			810.8			257.8	
Travel Time (s)		21.4			14.5			48.6			15.5	
Confl. Peds. (#/hr)	4					4	17					17
Confl. Bikes (#/hr)	1					1						1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	37%	34%	0%	13%	2%	6%	0%	0%	0%	1%	0%
Adj. Flow (vph)	83	31	10	118	120	83	21	1269	34	28	2255	280
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	41	0	118	203	0	21	1303	0	28	2535	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Detector Phase	4	4		8	8		6	6		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		35.0	35.0		35.0	35.0	
Minimum Split (s)	50.0	50.0		50.0	50.0		49.0	49.0		49.0	49.0	
Total Split (s)	51.0	51.0		51.0	51.0		89.0	89.0		89.0	89.0	
Total Split (%)	36.4%	36.4%		36.4%	36.4%		63.6%	63.6%		63.6%	63.6%	
Yellow Time (s)	3.5	3.5		3.5	3.5		4.5	4.5		4.5	4.5	
All-Red Time (s)	4.5	4.5		4.5	4.5		2.5	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	8.0	8.0		8.0	8.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	23.3	23.3		23.3	23.3		101.7	101.7		101.7	101.7	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.73	0.73		0.73	0.73	
v/c Ratio	0.58	0.18		0.51	0.69		0.41	0.37		0.12	0.73	
Control Delay	67.5	42.5		58.2	57.9		34.0	4.0		10.2	11.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	67.5	42.5		58.2	57.9		34.0	4.0		10.2	11.5	
LOS	E	D		E	E		C	A		B	B	

Lanes, Volumes, Timings
21: Kennedy Rd & The Bridle Trail

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		59.2			58.0			4.4			11.5	
Approach LOS		E			E			A			B	
Queue Length 50th (m)	22.0	8.9		30.8	47.9		0.7	19.2		1.9	103.8	
Queue Length 95th (m)	33.4	16.5		42.2	61.8		m1.9	27.9		m4.9	121.1	
Internal Link Dist (m)		214.2			137.4			786.8			233.8	
Turn Bay Length (m)	23.0			27.0			90.0			120.0		
Base Capacity (vph)	262	420		430	525		51	3543		233	3454	
Starvation Cap Reductn	0	0		0	0		0	0		0	12	
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	0.32	0.10		0.27	0.39		0.41	0.37		0.12	0.74	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 57 (41%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 14.2

Intersection LOS: B

Intersection Capacity Utilization 89.6%

ICU Level of Service E

Analysis Period (min) 15

* User Entered Value

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 21: Kennedy Rd & The Bridle Trail



Lanes, Volumes, Timings
22: Kennedy Rd & Birchview Ln

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	19	40	8	1363	2451	3	
Future Volume (vph)	19	40	8	1363	2451	3	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0	105.0			0.0	
Storage Lanes	1	0	1			0	
Taper Length (m)	2.5		2.5				
Lane Util. Factor	1.00	1.00	1.00	*0.85	*0.85	0.91	
Frt	0.909						
Flt Protected	0.984		0.950				
Satd. Flow (prot)	1644	0	1587	4710	4803	0	
Flt Permitted	0.984		0.035				
Satd. Flow (perm)	1644	0	58	4710	4803	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	8						
Link Speed (k/h)	40			60	60		
Link Distance (m)	142.4			257.8	309.6		
Travel Time (s)	12.8			15.5	18.6		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Heavy Vehicles (%)	14%	0%	15%	4%	2%	0%	
Adj. Flow (vph)	20	42	8	1420	2553	3	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	62	0	8	1420	2556	0	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4			6	2		8
Permitted Phases			6				
Detector Phase	4		6	6	2		
Switch Phase							
Minimum Initial (s)	10.0		30.0	30.0	30.0		10.0
Minimum Split (s)	31.0		37.0	37.0	37.0		31.0
Total Split (s)	32.0		108.0	108.0	108.0		32.0
Total Split (%)	22.9%		77.1%	77.1%	77.1%		23%
Yellow Time (s)	3.5		4.5	4.5	4.5		3.5
All-Red Time (s)	3.5		2.5	2.5	2.5		3.5
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	7.0		7.0	7.0	7.0		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None		C-Max	C-Max	C-Max		None
Act Effct Green (s)	13.2		117.6	117.6	117.6		
Actuated g/C Ratio	0.09		0.84	0.84	0.84		
v/c Ratio	0.39		0.16	0.36	0.63		
Control Delay	57.1		8.9	1.7	6.5		
Queue Delay	0.0		0.0	0.0	0.1		
Total Delay	57.1		8.9	1.7	6.6		
LOS	E		A	A	A		
Approach Delay	57.1			1.7	6.6		
Approach LOS	E			A	A		
Queue Length 50th (m)	14.6		0.2	22.1	81.8		

Lanes, Volumes, Timings
22: Kennedy Rd & Birchview Ln

2041 Future Conditions - AM Peak Hour
Kennedy Road EA



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Queue Length 95th (m)	26.6		m0.4	9.6	160.9		
Internal Link Dist (m)	118.4			233.8	285.6		
Turn Bay Length (m)			105.0				
Base Capacity (vph)	300		49	3957	4035		
Starvation Cap Reductn	0		0	0	437		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.21		0.16	0.36	0.71		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 73 (52%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 5.7

Intersection LOS: A

Intersection Capacity Utilization 67.4%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: Kennedy Rd & Birchview Ln

 Ø2 (R)  108 s  Ø6 (R)  108 s	 Ø4  32 s  Ø8  32 s
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Lanes, Volumes, Timings
23: Kennedy Rd & 16th Ave

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	378	661	197	486	1980	68	216	1080	118	169	1732	630
Future Volume (vph)	378	661	197	486	1980	68	216	1080	118	169	1732	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	92.0		93.0	70.0		72.0	145.0		0.0	70.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor			0.97	1.00		0.97		1.00			0.99	
Frt			0.850			0.850		0.985			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	3544	1601	1807	3614	1570	1755	4632	0	1825	4585	0
Flt Permitted	0.094			0.192			0.087			0.080		
Satd. Flow (perm)	175	3544	1560	364	3614	1527	161	4632	0	154	4585	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149			120		12			66	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		347.4			311.5			309.6			151.8	
Travel Time (s)		20.8			18.7			18.6			9.1	
Confl. Peds. (#/hr)	12		10	10		12	7		4	4		7
Confl. Bikes (#/hr)	1		1	1		1						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	2%	1%	1%	4%	4%	4%	4%	0%	2%	2%
Adj. Flow (vph)	394	689	205	506	2063	71	225	1125	123	176	1804	656
Shared Lane Traffic (%)												
Lane Group Flow (vph)	394	689	205	506	2063	71	225	1248	0	176	2460	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8			4		
Detector Phase	1	6	6	5	2	2	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	35.0	35.0	7.0	35.0	35.0	7.0	15.0		7.0	15.0	
Minimum Split (s)	11.0	42.5	42.5	11.0	42.5	42.5	11.0	41.5		11.0	41.5	
Total Split (s)	17.0	50.0	50.0	30.0	63.0	63.0	12.0	53.0		17.0	58.0	
Total Split (%)	11.3%	33.3%	33.3%	20.0%	42.0%	42.0%	8.0%	35.3%		11.3%	38.7%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5		3.0	4.5	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0		1.0	3.0	
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)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5		4.0	7.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	None	
Act Effct Green (s)	59.0	42.5	42.5	76.0	55.5	55.5	57.4	45.9		65.8	50.5	
Actuated g/C Ratio	0.39	0.28	0.28	0.51	0.37	0.37	0.38	0.31		0.44	0.34	
v/c Ratio	1.90	0.69	0.37	1.17	1.54	0.11	1.54	0.88		0.85	1.55	
Control Delay	450.5	52.0	14.7	126.7	281.6	0.7	299.3	57.0		67.1	284.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	450.5	52.0	14.7	126.7	281.6	0.7	299.3	57.0		67.1	284.3	
LOS	F	D	B	F	F	A	F	E		E	F	

Lanes, Volumes, Timings
23: Kennedy Rd & 16th Ave

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		168.0			244.4			94.0			269.8	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~163.6	96.5	12.5	~140.2	~452.5	0.0	~77.7	137.8		34.8	~400.3	
Queue Length 95th (m)	#229.3	118.5	34.3	#210.2	#492.4	0.9	#131.4	158.8		#74.8	#428.3	
Internal Link Dist (m)		323.4			287.5			285.6			127.8	
Turn Bay Length (m)	92.0		93.0	70.0		72.0	145.0			70.0		
Base Capacity (vph)	207	1004	548	434	1337	640	146	1424		212	1587	
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	1.90	0.69	0.37	1.17	1.54	0.11	1.54	0.88		0.83	1.55	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

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

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.90

Intersection Signal Delay: 212.9

Intersection LOS: F

Intersection Capacity Utilization 154.5%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

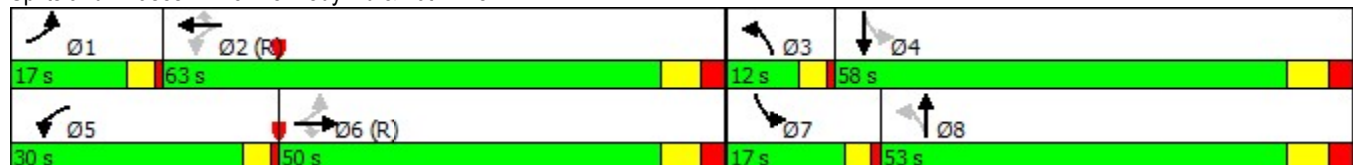
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 23: Kennedy Rd & 16th Ave



Lanes, Volumes, Timings
24: Kennedy Rd & Nipogen Ave

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	W	T
Traffic Volume (vph)	13	16	1476	15	12	2693
Future Volume (vph)	13	16	1476	15	12	2693
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	42.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Frt	0.926		0.999			
Flt Protected	0.978				0.950	
Satd. Flow (prot)	1706	0	5137	0	1789	5142
Flt Permitted	0.978				0.950	
Satd. Flow (perm)	1706	0	5137	0	1789	5142
Link Speed (k/h)	48		60			60
Link Distance (m)	184.7		151.8			175.9
Travel Time (s)	13.9		9.1			10.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	17	1604	16	13	2927
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	0	1620	0	13	2927
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 62.0% ICU Level of Service B
Analysis Period (min) 15

Lanes, Volumes, Timings
25: Kennedy Rd & Beckett Ave

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	34	79	206	45	45	16	1309	8	4	2617	136
Future Volume (vph)	140	34	79	206	45	45	16	1309	8	4	2617	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	54.0		0.0	54.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor					0.99							
Frt		0.895			0.923			0.999			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1686	0	1825	1739	0	1789	4661	0	1825	4769	0
Flt Permitted	0.692			0.661			0.041			0.128		
Satd. Flow (perm)	1303	1686	0	1270	1739	0	77	4661	0	246	4769	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			34			1			11	
Link Speed (k/h)		48			48			60			60	
Link Distance (m)		172.3			265.8			175.9			318.0	
Travel Time (s)		12.9			19.9			10.6			19.1	
Confl. Peds. (#/hr)						5						
Peak Hour Factor	0.92	0.92	0.92	0.89	0.92	0.89	0.92	0.89	0.89	0.89	0.89	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	5%	4%	0%	2%	2%
Adj. Flow (vph)	152	37	86	231	49	51	17	1471	9	4	2940	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	123	0	231	100	0	17	1480	0	4	3088	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Detector Phase	4	4		8	8		6	6		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0		30.0	30.0	
Minimum Split (s)	35.5	35.5		35.5	35.5		37.0	37.0		37.0	37.0	
Total Split (s)	38.0	38.0		38.0	38.0		102.0	102.0		102.0	102.0	
Total Split (%)	27.1%	27.1%		27.1%	27.1%		72.9%	72.9%		72.9%	72.9%	
Yellow Time (s)	3.5	3.5		3.5	3.5		4.5	4.5		4.5	4.5	
All-Red Time (s)	4.0	4.0		4.0	4.0		2.5	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	28.1	28.1		28.1	28.1		97.4	97.4		97.4	97.4	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.70	0.70		0.70	0.70	
v/c Ratio	0.58	0.36		0.91	0.27		0.32	0.46		0.02	0.93	
Control Delay	59.7	49.5		91.1	31.9		28.4	10.3		8.0	25.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	59.7	49.5		91.1	31.9		28.4	10.3		8.0	25.4	
LOS	E	D		F	C		C	B		A	C	
Approach Delay		55.1			73.2			10.5			25.3	

Lanes, Volumes, Timings
25: Kennedy Rd & Beckett Ave

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	E			E			B			C		
Queue Length 50th (m)	37.6	28.3		61.7	15.0		1.8	70.0		0.3	281.9	
Queue Length 95th (m)	61.0	47.1		#103.8	31.2		9.4	78.8		1.7	301.7	
Internal Link Dist (m)	148.3			241.8			151.9			294.0		
Turn Bay Length (m)	30.0			30.0			54.0			54.0		
Base Capacity (vph)	283	369		276	405		53	3242		170	3320	
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	0.54	0.33		0.84	0.25		0.32	0.46		0.02	0.93	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 37 (26%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 25.7

Intersection LOS: C

Intersection Capacity Utilization 84.6%

ICU Level of Service E

Analysis Period (min) 15

* User Entered Value

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

Queue shown is maximum after two cycles.

Splits and Phases: 25: Kennedy Rd & Beckett Ave

			
Ø2 (R)			Ø4
102 s			38 s
			
Ø6 (R)			Ø8
102 s			38 s

Lanes, Volumes, Timings
26: Kennedy Rd & Wilfred Murison Ave

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↑↑↑		↔	↑↑↑	
Traffic Volume (vph)	93	24	173	32	32	13	38	1351	4	1	2736	31
Future Volume (vph)	93	24	173	32	32	13	38	1351	4	1	2736	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	50.0		0.0	50.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor												
Frt		0.919			0.976						0.999	
Flt Protected		0.984			0.978		0.950			0.950		
Satd. Flow (prot)	0	1703	0	0	1820	0	1789	4622	0	1659	4752	0
Flt Permitted		0.984			0.978		0.950			0.950		
Satd. Flow (perm)	0	1703	0	0	1820	0	1789	4622	0	1659	4752	0
Link Speed (k/h)		48			40			60			60	
Link Distance (m)		211.4			236.7			318.0			378.3	
Travel Time (s)		15.9			21.3			19.1			22.7	
Confl. Peds. (#/hr)				1		3			1	1		
Confl. Bikes (#/hr)									3	3		
Peak Hour Factor	0.92	0.92	0.92	0.76	0.92	0.76	0.92	0.76	0.76	0.76	0.76	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	6%	0%	10%	3%	2%
Adj. Flow (vph)	101	26	188	42	35	17	41	1778	5	1	3600	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	315	0	0	94	0	41	1783	0	1	3634	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 80.4%

ICU Level of Service D

Analysis Period (min) 15

* User Entered Value

Lanes, Volumes, Timings
27: Kennedy Rd & Bur Oak Ave

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Lane Configurations							
Traffic Volume (vph)	669	283	1236	237	205	2080	
Future Volume (vph)	669	283	1236	237	205	2080	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		0.0	55.0		
Storage Lanes	1	1		0	1		
Taper Length (m)	2.5				2.5		
Lane Util. Factor	1.00	1.00	*0.85	0.91	1.00	*0.85	
Ped Bike Factor	1.00	0.94	0.99				
Frt		0.850	0.976				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1825	1555	4549	0	1772	4756	
Flt Permitted	0.950				0.083		
Satd. Flow (perm)	1823	1464	4549	0	155	4756	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		214	33				
Link Speed (k/h)	40		60			60	
Link Distance (m)	253.8		378.3			302.0	
Travel Time (s)	22.8		22.7			18.1	
Confl. Peds. (#/hr)	1	37		12	12		
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	
Heavy Vehicles (%)	0%	5%	4%	6%	3%	3%	
Adj. Flow (vph)	880	372	1626	312	270	2737	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	880	372	1938	0	270	2737	
Turn Type	Prot	Perm	NA		pm+pt	NA	
Protected Phases	8		6		5	2	4
Permitted Phases		8			2		
Detector Phase	8	8	6		5	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	30.0		5.0	30.0	10.0
Minimum Split (s)	35.0	35.0	37.5		9.5	37.5	35.0
Total Split (s)	54.0	54.0	51.0		15.0	66.0	54.0
Total Split (%)	45.0%	45.0%	42.5%		12.5%	55.0%	45%
Yellow Time (s)	3.5	3.5	5.0		3.5	5.0	3.5
All-Red Time (s)	3.5	3.5	2.5		1.0	2.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.5		4.5	7.5	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Recall Mode	None	None	C-Max		None	C-Max	None
Act Effct Green (s)	47.0	47.0	43.5		61.5	58.5	
Actuated g/C Ratio	0.39	0.39	0.36		0.51	0.49	
v/c Ratio	1.23	0.53	1.16		1.23	1.18	
Control Delay	149.8	14.2	114.3		169.7	114.5	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	149.8	14.2	114.3		169.7	114.5	
LOS	F	B	F		F	F	
Approach Delay	109.5		114.3			119.4	

Lanes, Volumes, Timings
27: Kennedy Rd & Bur Oak Ave

2041 Future Conditions - AM Peak Hour
Kennedy Road EA



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Approach LOS	F		F			F	
Queue Length 50th (m)	~256.1	26.4	~210.7		~63.4	~296.5	
Queue Length 95th (m)	#252.2	35.9	#178.8		#87.6	#240.9	
Internal Link Dist (m)	229.8		354.3			278.0	
Turn Bay Length (m)					55.0		
Base Capacity (vph)	714	703	1670		220	2318	
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	1.23	0.53	1.16		1.23	1.18	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.23

Intersection Signal Delay: 115.8

Intersection LOS: F

Intersection Capacity Utilization 93.6%

ICU Level of Service F

Analysis Period (min) 15

* User Entered Value

~ 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.

Splits and Phases: 27: Kennedy Rd & Bur Oak Ave



Lanes, Volumes, Timings
28: Kennedy Rd & Angus Glen Blvd

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	218	86	1616	1812	3
Future Volume (vph)	5	218	86	1616	1812	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0	0.0	90.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	*0.85	*0.85	0.91
Ped Bike Factor						
Frt		0.850				
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1825	1570	1644	4756	4755	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1825	1570	1644	4756	4755	0
Link Speed (k/h)	40			60	60	
Link Distance (m)	234.8			302.0	341.0	
Travel Time (s)	21.1			18.1	20.5	
Confl. Peds. (#/hr)			6			6
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	0%	4%	11%	3%	3%	17%
Adj. Flow (vph)	7	287	113	2126	2384	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	287	113	2126	2388	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	55.2%			ICU Level of Service B		
Analysis Period (min)	15					
* User Entered Value						

Lanes, Volumes, Timings
29: Kennedy Rd & The Fairways/Castlemore Ave

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕↕↕		↕	↕↕↕	
Traffic Volume (vph)	48	18	9	45	6	493	5	1604	90	240	1684	25
Future Volume (vph)	48	18	9	45	6	493	5	1604	90	240	1684	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		64.0	57.0		0.0	50.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor		1.00		1.00	0.98		1.00	1.00			1.00	
Frt		0.984			0.852			0.992			0.998	
Flt Protected		0.969		0.950			0.950			0.950		
Satd. Flow (prot)	0	1756	0	1825	1587	0	1573	4713	0	1825	4747	0
Flt Permitted		0.095		0.735			0.078			0.071		
Satd. Flow (perm)	0	172	0	1407	1587	0	129	4713	0	136	4747	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			255			8			3	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		207.4			193.2			341.0			227.3	
Travel Time (s)		18.7			17.4			20.5			13.6	
Confl. Peds. (#/hr)	8		4	4		8	1		5	5		1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	15%	4%	0%	10%	1%	16%	3%	2%	0%	3%	0%
Adj. Flow (vph)	55	21	10	52	7	567	6	1844	103	276	1936	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	86	0	52	574	0	6	1947	0	276	1965	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8			6			2		
Detector Phase	4	4		8	8		6	6		5	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		33.0	33.0		5.0	33.0	
Minimum Split (s)	44.5	44.5		44.5	44.5		40.5	40.5		9.5	40.5	
Total Split (s)	44.8	44.8		44.8	44.8		56.0	56.0		19.2	75.2	
Total Split (%)	37.3%	37.3%		37.3%	37.3%		46.7%	46.7%		16.0%	62.7%	
Yellow Time (s)	3.5	3.5		3.5	3.5		5.0	5.0		3.5	5.0	
All-Red Time (s)	4.0	4.0		4.0	4.0		2.5	2.5		1.0	2.5	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.5		7.5	7.5		7.5	7.5		4.5	7.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Act Effct Green (s)		34.4		34.4	34.4		51.6	51.6		73.6	70.6	
Actuated g/C Ratio		0.29		0.29	0.29		0.43	0.43		0.61	0.59	
v/c Ratio		1.62		0.13	0.90		0.11	0.96		0.96	0.70	
Control Delay		379.4		30.8	40.8		43.4	54.5		35.9	13.8	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		379.4		30.8	40.8		43.4	54.5		35.9	13.8	
LOS		F		C	D		D	D		D	B	
Approach Delay		379.4			39.9			54.5			16.5	

Lanes, Volumes, Timings
29: Kennedy Rd & The Fairways/Castlemore Ave

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		F			D			D			B	
Queue Length 50th (m)		~27.2		8.8	75.9		1.2	~160.8		42.9	137.8	
Queue Length 95th (m)		#58.1		17.8	#128.3		m1.7	m142.5		m38.8	m125.8	
Internal Link Dist (m)		183.4			169.2			317.0			203.3	
Turn Bay Length (m)							57.0			50.0		
Base Capacity (vph)		57		437	669		55	2029		290	2794	
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		1.51		0.12	0.86		0.11	0.96		0.95	0.70	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.62

Intersection Signal Delay: 41.0

Intersection LOS: D

Intersection Capacity Utilization 124.1%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 29: Kennedy Rd & The Fairways/Castlemore Ave



Lanes, Volumes, Timings
30: Kennedy Rd & Schoolhouse Rd

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	32	155	2061	1867	14
Future Volume (vph)	26	32	155	2061	1867	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	*0.85	0.91
Frt	0.925				0.999	
Flt Protected	0.978		0.950			
Satd. Flow (prot)	1638	0	1825	5092	4795	0
Flt Permitted	0.978		0.950			
Satd. Flow (perm)	1638	0	1825	5092	4795	0
Link Speed (k/h)	40			60	60	
Link Distance (m)	115.5			227.3	167.2	
Travel Time (s)	10.4			13.6	10.0	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	11%	0%	3%	2%	10%
Adj. Flow (vph)	30	37	178	2369	2146	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	0	178	2369	2162	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	58.4%			ICU Level of Service B		
Analysis Period (min)	15					
* User Entered Value						

Lanes, Volumes, Timings
31: Kennedy Rd & Major Mackenzie Dr E

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	804	515	262	1871	201	413	1517	299	101	1034	182
Future Volume (vph)	55	804	515	262	1871	201	413	1517	299	101	1034	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		92.0	50.0		160.0	140.0		0.0	50.0		92.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.85	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00		0.99						0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1738	3510	1633	1772	3579	1570	1772	3171	1601	1789	3544	1601
Flt Permitted	0.113			0.101			0.098			0.113		
Satd. Flow (perm)	207	3510	1610	188	3579	1548	183	3171	1601	213	3544	1580
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			213			155			177			155
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		424.7			384.5			167.2			409.3	
Travel Time (s)		21.8			19.8			10.0			24.6	
Confl. Peds. (#/hr)	2		2	2		2	1					1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	5%	4%	0%	3%	2%	4%	3%	3%	2%	2%	3%	2%
Adj. Flow (vph)	63	924	592	301	2151	231	475	1744	344	116	1189	209
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	924	592	301	2151	231	475	1744	344	116	1189	209
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	7.0	15.0	15.0	7.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	11.0	37.5	37.5	11.0	37.0	37.0	9.5	38.5	38.5
Total Split (s)	43.0	43.0	43.0	15.0	58.0	58.0	19.0	51.0	51.0	11.0	43.0	43.0
Total Split (%)	35.8%	35.8%	35.8%	12.5%	48.3%	48.3%	15.8%	42.5%	42.5%	9.2%	35.8%	35.8%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.5	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	1.0	2.5	2.5	1.0	1.0	1.0	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	4.0	7.5	7.5	4.0	6.0	6.0	4.5	7.5	7.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	35.5	35.5	35.5	54.0	50.5	50.5	58.0	45.0	45.0	45.0	35.5	35.5
Actuated g/C Ratio	0.30	0.30	0.30	0.45	0.42	0.42	0.48	0.38	0.38	0.38	0.30	0.30
v/c Ratio	1.03	0.89	0.95	1.31	1.43	0.31	1.66	1.47	0.48	0.70	1.13	0.36
Control Delay	169.3	52.2	51.8	195.8	226.3	9.0	325.9	240.1	10.6	43.7	111.7	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	169.3	52.2	51.8	195.8	226.3	9.0	325.9	240.1	10.6	43.7	111.7	11.6
LOS	F	D	D	F	F	A	F	F	B	D	F	B
Approach Delay		56.7			204.1			225.2			92.7	

Lanes, Volumes, Timings
31: Kennedy Rd & Major Mackenzie Dr E

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	E			F			F			F		
Queue Length 50th (m)	~15.9	109.4	95.2	~74.7	~360.5	10.7	~144.4	~336.6	35.8	14.8	~171.4	9.3
Queue Length 95th (m)	#42.3	#129.9	#155.2	#123.1	#382.1	25.5 m	#162.2 m	#358.1	m42.1	#32.6	#201.3	26.1
Internal Link Dist (m)	400.7			360.5			143.2			385.3		
Turn Bay Length (m)	50.0		92.0	50.0		160.0	140.0			50.0		92.0
Base Capacity (vph)	61	1038	626	229	1506	741	287	1189	711	165	1048	576
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.89	0.95	1.31	1.43	0.31	1.66	1.47	0.48	0.70	1.13	0.36

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.66

Intersection Signal Delay: 162.5

Intersection LOS: F

Intersection Capacity Utilization 137.8%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

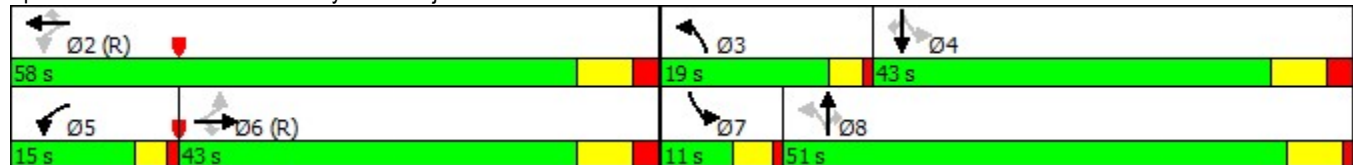
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 31: Kennedy Rd & Major Mackenzie Dr E



Lanes, Volumes, Timings
98: Kennedy Rd & GO Crossing

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑			↑↑↑			↑			↑	
Traffic Volume (vph)	0	1169	0	0	1868	0	0	2	0	0	0	0
Future Volume (vph)	0	1169	0	0	1868	0	0	2	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr t												
Flt Protected												
Satd. Flow (prot)	0	5142	0	0	5142	0	0	1883	0	0	1883	0
Flt Permitted												
Satd. Flow (perm)	0	5142	0	0	5142	0	0	1883	0	0	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			48			48	
Link Distance (m)		278.1			280.0			305.4			314.2	
Travel Time (s)		16.7			16.8			22.9			23.6	
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
Adj. Flow (vph)	0	1271	0	0	2030	0	0	2	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1271	0	0	2030	0	0	2	0	0	0	0
Turn Type		NA			NA			NA				
Protected Phases		2			6			4			8	
Permitted Phases												
Detector Phase		2			6			4			8	
Switch Phase												
Minimum Initial (s)		833.0			833.0			158.0			158.0	
Minimum Split (s)		893.0			893.0			180.0			180.0	
Total Split (s)		900.0			900.0			180.0			180.0	
Total Split (%)		83.3%			83.3%			16.7%			16.7%	
Yellow Time (s)		10.0			10.0			2.0			2.0	
All-Red Time (s)		50.0			50.0			20.0			20.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		60.0			60.0			22.0			22.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max			C-Max			Max			Max	
Act Effct Green (s)		840.0			840.0			158.0				
Actuated g/C Ratio		0.78			0.78			0.15				
v/c Ratio		0.32			0.51			0.01				
Control Delay		35.7			44.6			394.5				
Queue Delay		16.9			47.9			0.0				
Total Delay		52.5			92.5			394.5				
LOS		D			F			F				
Approach Delay		52.5			92.5			394.5				
Approach LOS		D			F			F				
Queue Length 50th (m)		305.6			607.1			3.9				
Queue Length 95th (m)		295.6			567.8			9.7				
Internal Link Dist (m)		254.1			256.0			281.4			290.2	
Turn Bay Length (m)												
Base Capacity (vph)		3999			3999			275				

Lanes, Volumes, Timings
98: Kennedy Rd & GO Crossing

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Starvation Cap Reductn		2743			2196			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		1.01			1.13			0.01				

Intersection Summary

Area Type: Other

Cycle Length: 1080

Actuated Cycle Length: 1080

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

Natural Cycle: 1075

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 77.3

Intersection LOS: E

Intersection Capacity Utilization 894.2%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 98: Kennedy Rd & GO Crossing



Lanes, Volumes, Timings
99: Kennedy Rd & GO Crossing

2041 Future Conditions - AM Peak Hour

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑↑↑			↑↑↑	
Traffic Volume (vph)	0	0	0	0	2	0	0	1360	0	0	2823	0
Future Volume (vph)	0	0	0	0	2	0	0	1360	0	0	2823	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Fr t												
Flt Protected												
Satd. Flow (prot)	0	1883	0	0	1883	0	0	5142	0	0	5142	0
Flt Permitted												
Satd. Flow (perm)	0	1883	0	0	1883	0	0	5142	0	0	5142	0
Right Turn on Red	Yes Yes Yes Yes											
Satd. Flow (RTOR)												
Link Speed (k/h)	48 48 60 60											
Link Distance (m)	245.9 224.5 97.1 297.2											
Travel Time (s)	18.4 16.8 5.8 17.8											
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	2	0	0	1478	0	0	3068	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	2	0	0	1478	0	0	3068	0
Turn Type	NA NA NA											
Protected Phases	4 8 2 6											
Permitted Phases												
Detector Phase	4 8 2 6											
Switch Phase												
Minimum Initial (s)	158.0 158.0 833.0 833.0											
Minimum Split (s)	180.0 180.0 893.0 893.0											
Total Split (s)	180.0 180.0 900.0 900.0											
Total Split (%)	16.7% 16.7% 83.3% 83.3%											
Yellow Time (s)	2.0 2.0 10.0 10.0											
All-Red Time (s)	20.0 20.0 50.0 50.0											
Lost Time Adjust (s)	0.0 0.0 0.0 0.0											
Total Lost Time (s)	22.0 22.0 60.0 60.0											
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max Max C-Max C-Max											
Act Effct Green (s)	158.0 158.0 840.0 840.0											
Actuated g/C Ratio	0.15 0.15 0.78 0.78											
v/c Ratio	0.01 0.01 0.37 0.77											
Control Delay	394.5 394.5 37.7 67.8											
Queue Delay	0.0 0.0 49.3 46.8											
Total Delay	394.5 394.5 87.0 114.5											
LOS	F F F F											
Approach Delay	394.5 394.5 87.0 114.5											
Approach LOS	F F F F											
Queue Length 50th (m)	3.9 3.9 375.3 1376.6											
Queue Length 95th (m)	9.7 9.7 359.8 1214.3											
Internal Link Dist (m)	221.9 200.5 73.1 273.2											
Turn Bay Length (m)												
Base Capacity (vph)	275 275 3999 3999											

Lanes, Volumes, Timings
99: Kennedy Rd & GO Crossing

2041 Future Conditions - AM Peak Hour
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn					0			2763			1441	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.01			1.20			1.20	

Intersection Summary

Area Type: Other

Cycle Length: 1080

Actuated Cycle Length: 1080

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

Natural Cycle: 1075

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 105.7

Intersection LOS: F

Intersection Capacity Utilization 894.2%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 99: Kennedy Rd & GO Crossing



Lanes, Volumes, Timings
1: Kennedy Rd & Steeles Ave E

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	1576	294	141	754	190	166	1052	212	457	975	208
Future Volume (vph)	194	1576	294	141	754	190	166	1052	212	457	975	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	92.0		0.0	56.0		0.0	43.0		25.0	166.0		0.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	0.95	1.00	1.00	*0.85	1.00
Ped Bike Factor	0.98		0.82		0.98		0.99		0.84			0.94
Fr't			0.850		0.970				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1807	3510	1601	1807	4773	0	1772	3579	1498	1807	3202	1555
Flt Permitted	0.148			0.082			0.089			0.082		
Satd. Flow (perm)	277	3510	1308	156	4773	0	165	3579	1265	156	3202	1463
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			151		44				116			142
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		438.0			403.1			543.5			456.9	
Travel Time (s)		26.3			24.2			32.6			27.4	
Confl. Peds. (#/hr)	98		186	186		98	47		143	143		47
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 (%)	1%	4%	2%	1%	5%	2%	3%	2%	9%	1%	2%	5%
Adj. Flow (vph)	211	1713	320	153	820	207	180	1143	230	497	1060	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	1713	320	153	1027	0	180	1143	230	497	1060	226
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Minimum Split (s)	11.0	55.0	55.0	11.0	55.0		11.0	51.0	51.0	11.0	51.0	51.0
Total Split (s)	19.0	64.0	64.0	11.0	56.0		19.0	52.0	52.0	23.0	56.0	56.0
Total Split (%)	12.7%	42.7%	42.7%	7.3%	37.3%		12.7%	34.7%	34.7%	15.3%	37.3%	37.3%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0		1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0		4.0	7.0	7.0	4.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	71.0	57.0	57.0	59.0	49.0		63.0	45.0	45.0	71.0	49.0	49.0
Actuated g/C Ratio	0.47	0.38	0.38	0.39	0.33		0.42	0.30	0.30	0.47	0.33	0.33
v/c Ratio	0.74	1.29	0.54	1.11	0.65		0.78	1.07	0.50	1.76	1.01	0.39
Control Delay	40.7	172.6	22.1	139.3	43.4		58.6	96.0	24.9	386.0	80.9	16.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	172.6	22.1	139.3	43.4		58.6	96.0	24.9	386.0	80.9	16.4
LOS	D	F	C	F	D		E	F	C	F	F	B
Approach Delay		138.7			55.8			81.1			157.7	
Approach LOS		F			E			F			F	
Queue Length 50th (m)	36.8	~339.5	38.6	~34.3	91.8		35.9	~196.7	27.3	~203.9	~190.8	17.9
Queue Length 95th (m)	#61.7	#381.3	69.3	#81.5	107.6		#72.3	#239.2	54.1	#273.9	#241.9	41.1
Internal Link Dist (m)		414.0			379.1			519.5			432.9	

Lanes, Volumes, Timings
1: Kennedy Rd & Steeles Ave E

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)	92.0			56.0			43.0		25.0	166.0		
Base Capacity (vph)	284	1333	590	138	1588		230	1073	460	282	1045	573
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.74	1.29	0.54	1.11	0.65		0.78	1.07	0.50	1.76	1.01	0.39

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

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

Natural Cycle: 150

Control Type: Pretimed

Maximum v/c Ratio: 1.76

Intersection Signal Delay: 116.0

Intersection LOS: F

Intersection Capacity Utilization 131.7%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

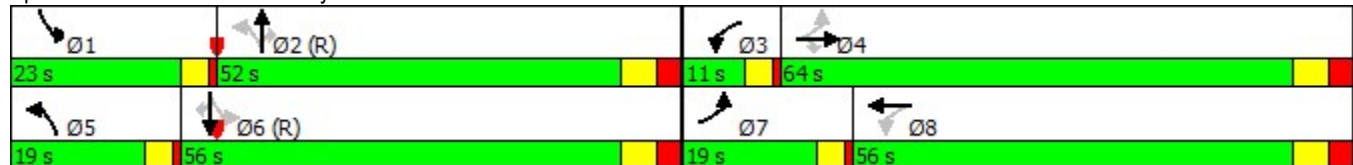
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Kennedy Rd & Steeles Ave E



Lanes, Volumes, Timings
2: Kennedy Rd & Clayton Dr/Pacific Mall Access

2041 HOV Future Kennedy PM

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	104	210	164	75	203	123	1499	79	341	1115	71
Future Volume (vph)	145	104	210	164	75	203	123	1499	79	341	1115	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	57.0		0.0	0.0		0.0	127.0		0.0	90.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			0.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	0.99	0.95		0.97	0.98		0.99	1.00			1.00	
Frt		0.900			0.891			0.992			0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	1621	0	1789	1657	0	1825	4763	0	1789	4619	0
Flt Permitted	0.390			0.331			0.184			0.089		
Satd. Flow (perm)	722	1621	0	602	1657	0	351	4763	0	168	4619	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		97			129			7			9	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		148.7			168.9			456.9			281.0	
Travel Time (s)		13.4			15.2			27.4			16.9	
Confl. Peds. (#/hr)	12		62	62		12	23		12	12		23
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%	2%	1%	2%	0%	2%	0%	2%	0%	2%	5%	0%
Adj. Flow (vph)	158	113	228	178	82	221	134	1629	86	371	1212	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	341	0	178	303	0	134	1715	0	371	1289	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	30.0		7.0	30.0	
Minimum Split (s)	42.0	42.0		42.0	42.0		11.0	37.0		11.0	37.0	
Total Split (s)	52.0	52.0		52.0	52.0		13.0	48.0		20.0	55.0	
Total Split (%)	43.3%	43.3%		43.3%	43.3%		10.8%	40.0%		16.7%	45.8%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	4.5		3.0	4.5	
All-Red Time (s)	3.5	3.5		3.5	3.5		1.0	2.5		1.0	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		4.0	7.0		4.0	7.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	33.0	33.0		33.0	33.0		52.7	41.0		76.0	60.4	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.44	0.34		0.63	0.50	
v/c Ratio	0.80	0.66		1.08	0.55		0.52	1.05		0.76	0.55	
Control Delay	66.5	32.1		133.3	23.0		20.8	75.6		42.1	23.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	66.5	32.1		133.3	23.0		20.8	75.6		42.1	23.4	
LOS	E	C		F	C		C	E		D	C	
Approach Delay		43.0			63.8			71.7			27.6	

Lanes, Volumes, Timings
2: Kennedy Rd & Clayton Dr/Pacific Mall Access

2041 HOV Future Kennedy PM

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	D			E			E			C		
Queue Length 50th (m)	34.1	50.6		~45.3	34.0		11.9	~172.5		64.5	80.9	
Queue Length 95th (m)	53.7	71.1		#76.0	53.1		25.6	#204.6		#150.2	114.8	
Internal Link Dist (m)		124.7			144.9			432.9			257.0	
Turn Bay Length (m)	57.0						127.0			90.0		
Base Capacity (vph)	270	668		225	702		270	1631		485	2328	
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	0.59	0.51		0.79	0.43		0.50	1.05		0.76	0.55	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 51.3

Intersection LOS: D

Intersection Capacity Utilization 107.8%

ICU Level of Service G

Analysis Period (min) 15

* User Entered Value

~ 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.

Splits and Phases: 2: Kennedy Rd & Clayton Dr/Pacific Mall Access



Lanes, Volumes, Timings
3: Kennedy Rd & Corvette Rd

2041 HOV Future Kennedy PM

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	25	115	44	3	6	103	1777	237	33	1495	46
Future Volume (vph)	143	25	115	44	3	6	103	1777	237	33	1495	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	71.0		0.0	71.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	0.0			2.5			2.5			0.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	1.00	0.98									1.00	
Frt		0.878			0.895			0.982			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	1624	0	1789	1686	0	1789	4716	0	1789	4728	0
Flt Permitted	0.950			0.663			0.086			0.054		
Satd. Flow (perm)	1766	1624	0	1249	1686	0	162	4716	0	102	4728	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		116			7			20			3	
Link Speed (k/h)		50			48			60			60	
Link Distance (m)		180.2			169.9			277.1			243.2	
Travel Time (s)		13.0			12.7			16.6			14.6	
Confl. Peds. (#/hr)	2		6				15					15
Peak Hour Factor	0.96	0.92	0.96	0.92	0.92	0.92	0.96	0.96	0.92	0.92	0.96	0.96
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%
Adj. Flow (vph)	149	27	120	48	3	7	107	1851	258	36	1557	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	149	147	0	48	10	0	107	2109	0	36	1605	0
Turn Type	Split	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4			8		1	6			2	
Permitted Phases				8			6			2		
Detector Phase	4	4		8	8		1	6		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	30.0		30.0	30.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		11.0	37.0		37.0	37.0	
Total Split (s)	37.0	37.0		37.0	37.0		22.0	94.0		72.0	72.0	
Total Split (%)	22.0%	22.0%		22.0%	22.0%		13.1%	56.0%		42.9%	42.9%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	4.5		4.5	4.5	
All-Red Time (s)	3.5	3.5		3.5	3.5		1.0	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		4.0	7.0		7.0	7.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Act Effct Green (s)	20.2	20.2		15.2	15.2		118.0	115.0		100.4	100.4	
Actuated g/C Ratio	0.12	0.12		0.09	0.09		0.70	0.68		0.60	0.60	
v/c Ratio	0.70	0.49		0.43	0.06		0.50	0.65		0.59	0.57	
Control Delay	87.5	22.7		81.3	39.1		19.8	19.3		72.8	25.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.3		0.0	0.2	
Total Delay	87.5	22.7		81.3	39.1		19.8	19.6		72.8	25.7	
LOS	F	C		F	D		B	B		E	C	
Approach Delay		55.3			74.0			19.7			26.7	

Lanes, Volumes, Timings
3: Kennedy Rd & Gorvette Rd

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	E			E			B			C		
Queue Length 50th (m)	49.0	9.5		15.8	1.0		10.4	144.5		7.1	120.8	
Queue Length 95th (m)	69.3	30.1		27.4	6.8		28.9	256.3		#37.2	212.7	
Internal Link Dist (m)	156.2			145.9			253.1			219.2		
Turn Bay Length (m)							71.0			71.0		
Base Capacity (vph)	316	385		223	306		288	3235		61	2827	
Starvation Cap Reductn	0	0		0	0		0	468		0	484	
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	0.47	0.38		0.22	0.03		0.37	0.76		0.59	0.69	

Intersection Summary

Area Type: Other

Cycle Length: 168

Actuated Cycle Length: 168

Offset: 89 (53%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 25.7

Intersection LOS: C

Intersection Capacity Utilization 108.1%

ICU Level of Service G

Analysis Period (min) 15

* User Entered Value

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Kennedy Rd & Gorvette Rd



Lanes, Volumes, Timings
4: Kennedy Rd & Denison St

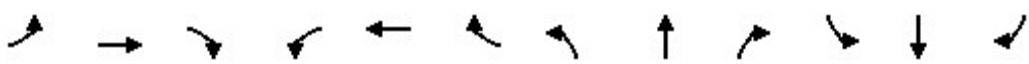
2041 HOV Future Kennedy PM

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	827	29	117	395	369	102	1488	291	474	1352	230
Future Volume (vph)	307	827	29	117	395	369	102	1488	291	474	1352	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	48.0		0.0	150.0		0.0	80.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	1.00	1.00		0.99	0.99		1.00	1.00			0.99	
Frt		0.995			0.928			0.975			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	3556	0	1772	3202	0	1789	4660	0	1722	4622	0
Flt Permitted	0.114			0.129			0.093			0.085		
Satd. Flow (perm)	214	3556	0	239	3202	0	175	4660	0	154	4622	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			172			30			29	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		322.0			182.9			243.2			339.7	
Travel Time (s)		23.2			13.2			14.6			20.4	
Confl. Peds. (#/hr)	11		35	35		11	32		11	11		32
Confl. Bikes (#/hr)			1	1								
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	0%	3%	5%	4%	2%	2%	2%	6%	3%	2%
Adj. Flow (vph)	320	861	30	122	411	384	106	1550	303	494	1408	240
Shared Lane Traffic (%)												
Lane Group Flow (vph)	320	891	0	122	795	0	106	1853	0	494	1648	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4			8			6			2		
Detector Phase	7	4		3	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	30.0		7.0	30.0	
Minimum Split (s)	11.0	39.5		11.0	39.5		11.0	37.5		11.0	37.5	
Total Split (s)	16.0	44.5		11.0	39.5		11.0	50.5		24.0	63.5	
Total Split (%)	12.3%	34.2%		8.5%	30.4%		8.5%	38.8%		18.5%	48.8%	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.5		3.0	4.5	
All-Red Time (s)	1.0	3.5		1.0	3.5		1.0	3.0		1.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5		4.0	7.5		4.0	7.5		4.0	7.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	50.6	36.1		41.6	31.1		53.5	43.0		71.4	56.9	
Actuated g/C Ratio	0.39	0.28		0.32	0.24		0.41	0.33		0.55	0.44	
v/c Ratio	1.40	0.90		0.77	0.89		0.67	1.19		1.47	0.81	
Control Delay	232.4	57.9		59.0	49.8		42.5	129.2		255.7	49.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	232.4	57.9		59.0	49.8		42.5	129.2		255.7	49.1	
LOS	F	E		E	D		D	F		F	D	

Lanes, Volumes, Timings
4: Kennedy Rd & Denison St

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		104.0			51.1			124.5			96.7	
Approach LOS		F			D			F			F	
Queue Length 50th (m)	~92.0	114.4		20.1	83.2		12.7	~222.5		~162.3	159.0	
Queue Length 95th (m)	#150.3	#147.3		#43.5	#114.6		#34.3	#254.3		#228.5	189.9	
Internal Link Dist (m)		298.0			158.9			219.2			315.7	
Turn Bay Length (m)	60.0			48.0			150.0			80.0		
Base Capacity (vph)	228	1014		158	917		158	1561		336	2038	
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	1.40	0.88		0.77	0.87		0.67	1.19		1.47	0.81	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 112 (86%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.47

Intersection Signal Delay: 100.1

Intersection LOS: F

Intersection Capacity Utilization 122.2%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

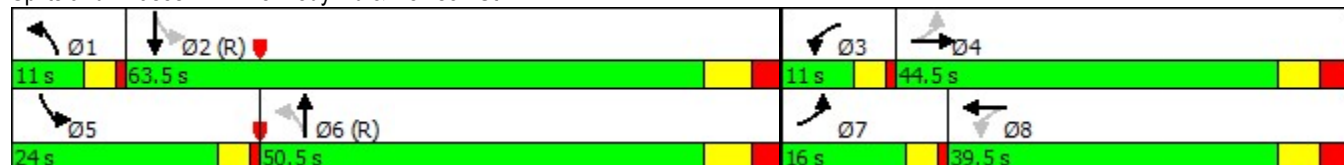
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Kennedy Rd & Denison St



Lanes, Volumes, Timings
5: Kennedy Rd & Milliken Mills HS S Access

2041 HOV Future Kennedy PM
Kennedy Road EA

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	  	
Traffic Volume (vph)	0	20	0	1901	1996	20
Future Volume (vph)	0	20	0	1901	1996	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	*0.85	*0.85	0.91
Frt		0.865			0.998	
Flt Protected						
Satd. Flow (prot)	0	1662	0	4899	4889	0
Flt Permitted						
Satd. Flow (perm)	0	1662	0	4899	4889	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	82.2			339.7	142.9	
Travel Time (s)	5.9			20.4	8.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	21	0	1980	2079	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	21	0	1980	2100	0
Sign Control	Yield			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.0% ICU Level of Service A

Analysis Period (min) 15

* User Entered Value

Lanes, Volumes, Timings

2041 HOV Future Kennedy PM

6: Kennedy Rd & Milliken Mills HS N Access/Highglen Ave

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	58	82	63	45	86	51	1896	77	133	1799	13
Future Volume (vph)	21	58	82	63	45	86	51	1896	77	133	1799	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	32.0		0.0	53.0		0.0	75.0		0.0	90.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	1.00	0.99		0.99	0.99			1.00			1.00	
Frt		0.912			0.901			0.994			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1729	0	1825	1716	0	1825	4772	0	1825	4705	0
Flt Permitted	0.587			0.557			0.075			0.048		
Satd. Flow (perm)	1126	1729	0	1061	1716	0	144	4772	0	92	4705	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			69			6			1	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		183.2			282.0			142.9			266.6	
Travel Time (s)		16.5			25.4			8.6			16.0	
Confl. Peds. (#/hr)	1		8	8		1	16		2	2		16
Confl. Bikes (#/hr)							3		4	4		3
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	4%	0%
Adj. Flow (vph)	22	60	85	66	47	90	53	1975	80	139	1874	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	145	0	66	137	0	53	2055	0	139	1888	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	30.0		7.0	30.0	
Minimum Split (s)	37.5	37.5		37.5	37.5		11.0	37.0		11.0	37.0	
Total Split (s)	38.0	38.0		38.0	38.0		11.0	74.0		18.0	81.0	
Total Split (%)	29.2%	29.2%		29.2%	29.2%		8.5%	56.9%		13.8%	62.3%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	4.5		3.0	4.5	
All-Red Time (s)	4.0	4.0		4.0	4.0		1.0	2.5		1.0	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		4.0	7.0		4.0	7.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	15.6	15.6		15.6	15.6		95.4	85.3		102.3	91.0	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.73	0.66		0.79	0.70	
v/c Ratio	0.16	0.58		0.52	0.52		0.27	0.66		0.65	0.57	
Control Delay	50.1	42.3		66.0	32.4		9.2	8.9		49.7	7.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	50.1	42.3		66.0	32.4		9.2	8.9		49.7	7.7	
LOS	D	D		E	C		A	A		D	A	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		43.4			43.3			8.9			10.5	
Approach LOS		D			D			A			B	
Queue Length 50th (m)	5.3	23.4		16.6	16.7		1.7	36.4		17.4	92.7	
Queue Length 95th (m)	11.9	38.7		27.3	31.9		m2.1	m135.1		35.5	154.7	
Internal Link Dist (m)		159.2			258.0			118.9			242.6	
Turn Bay Length (m)	32.0			53.0			75.0			90.0		
Base Capacity (vph)	264	444		248	455		197	3131		260	3294	
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	0.08	0.33		0.27	0.30		0.27	0.66		0.53	0.57	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 16 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 12.5

Intersection LOS: B

Intersection Capacity Utilization 88.1%

ICU Level of Service E

Analysis Period (min) 15

* User Entered Value

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kennedy Rd & Milliken Mills HS N Access/Highglen Ave

					
18 s		74 s		38 s	
					
11 s		81 s		38 s	

Lanes, Volumes, Timings

2041 HOV Future Kennedy PM

7: Kennedy Rd & Milliken Mills Community Centre/Lee Ave

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	4	79	26	20	61	45	2041	50	132	1687	130
Future Volume (vph)	72	4	79	26	20	61	45	2041	50	132	1687	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		37.0	90.0		0.0	72.0		0.0
Storage Lanes	1		0	0		1	1		0	1		0
Taper Length (m)	0.0			0.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	0.99	0.98			0.99	0.98	1.00	1.00			1.00	
Frt		0.856				0.850		0.996			0.989	
Flt Protected	0.950				0.972		0.950			0.950		
Satd. Flow (prot)	1825	1605	0	0	1867	1633	1825	4783	0	1825	4660	0
Flt Permitted	0.724				0.772		0.076			0.044		
Satd. Flow (perm)	1375	1605	0	0	1473	1594	146	4783	0	85	4660	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26				71		4			20	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		87.8			315.9			266.6			285.1	
Travel Time (s)		7.9			28.4			16.0			17.1	
Confl. Peds. (#/hr)	8		9	9		8	5					5
Confl. Bikes (#/hr)							1		3	3		1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	4%	0%
Adj. Flow (vph)	81	4	89	29	22	69	51	2293	56	148	1896	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	93	0	0	51	69	51	2349	0	148	2042	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	30.0	30.0		5.0	30.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	37.0	37.0		9.5	37.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	81.1	81.1		15.9	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	62.4%	62.4%		12.2%	74.6%	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	4.5	4.5		3.5	4.5	
All-Red Time (s)	3.5	3.5		3.5	3.5	3.5	2.5	2.5		1.0	2.5	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0			7.0	7.0	7.0	7.0		4.5	7.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None		None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)	15.0	15.0			15.0	15.0	86.4	86.4		103.5	101.0	
Actuated g/C Ratio	0.12	0.12			0.12	0.12	0.66	0.66		0.80	0.78	
v/c Ratio	0.51	0.45			0.30	0.28	0.53	0.74		0.73	0.56	
Control Delay	63.8	43.6			54.9	12.7	31.5	10.8		48.5	7.1	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	63.8	43.6			54.9	12.7	31.5	10.8		48.5	7.1	
LOS	E	D			D	B	C	B		D	A	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		53.0			30.6			11.3			9.9	
Approach LOS		D			C			B			A	
Queue Length 50th (m)	20.2	16.4			12.4	0.0	2.8	51.5		20.0	62.5	
Queue Length 95th (m)	32.8	29.7			22.4	11.6	m9.1	105.6		#48.6	112.7	
Internal Link Dist (m)		63.8			291.9			242.6			261.1	
Turn Bay Length (m)						37.0	90.0			72.0		
Base Capacity (vph)	275	341			294	375	97	3178		225	3625	
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	0.29	0.27			0.17	0.18	0.53	0.74		0.66	0.56	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 12.6

Intersection LOS: B

Intersection Capacity Utilization 91.5%

ICU Level of Service F

Analysis Period (min) 15

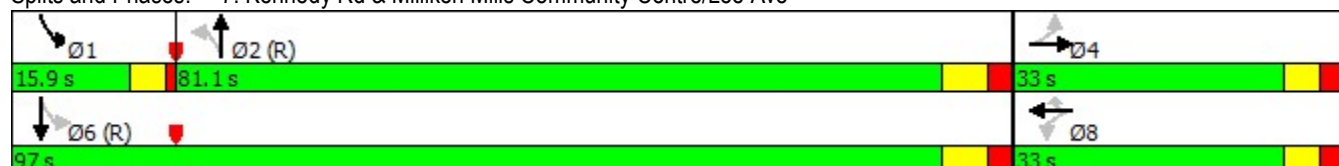
* User Entered Value

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Kennedy Rd & Milliken Mills Community Centre/Lee Ave



Lanes, Volumes, Timings
8: Kennedy Rd & 14th Ave

2041 HOV Future Kennedy PM

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  			  	
Traffic Volume (vph)	128	1206	218	136	677	365	205	1843	217	341	1769	112
Future Volume (vph)	128	1206	218	136	677	365	205	1843	217	341	1769	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	64.0		58.0	50.0		45.0	65.0		0.0	50.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	1.00		0.98			0.98		1.00			1.00	
Frt			0.850			0.850		0.984			0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1807	3614	1601	1772	3579	1601	1789	4725	0	1825	4704	0
Flt Permitted	0.218			0.099			0.076			0.071		
Satd. Flow (perm)	414	3614	1573	185	3579	1567	143	4725	0	136	4704	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			108			213		15			8	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		504.0			494.8			285.1			290.2	
Travel Time (s)		36.3			35.6			17.1			17.4	
Confl. Peds. (#/hr)	7		3	3		7	17		7	7		17
Confl. Bikes (#/hr)			2	2			2		1	1		2
Peak Hour 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
Heavy Vehicles (%)	1%	1%	2%	3%	2%	2%	2%	2%	0%	0%	3%	3%
Adj. Flow (vph)	129	1218	220	137	684	369	207	1862	219	344	1787	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1218	220	137	684	369	207	2081	0	344	1900	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		
Detector Phase	7	4	4	3	8	8	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0		7.0	20.0	
Minimum Split (s)	11.0	39.5	39.5	11.0	39.5	39.5	11.0	41.5		11.0	41.5	
Total Split (s)	12.0	49.0	49.0	11.0	48.0	48.0	16.0	60.0		20.0	64.0	
Total Split (%)	8.6%	35.0%	35.0%	7.9%	34.3%	34.3%	11.4%	42.9%		14.3%	45.7%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5		3.0	4.5	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0		1.0	3.0	
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)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5		4.0	7.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
Act Effct Green (s)	53.0	41.5	41.5	51.0	40.5	40.5	68.0	52.5		76.0	56.5	
Actuated g/C Ratio	0.38	0.30	0.30	0.36	0.29	0.29	0.49	0.38		0.54	0.40	
v/c Ratio	0.55	1.14	0.41	0.94	0.66	0.61	0.99	1.17		1.29	1.00	
Control Delay	37.0	117.8	21.9	92.0	47.4	22.2	95.0	121.4		191.1	61.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	37.0	117.8	21.9	92.0	47.4	22.2	95.0	121.4		191.1	61.6	
LOS	D	F	C	F	D	C	F	F		F	E	

Lanes, Volumes, Timings
8: Kennedy Rd & 14th Ave

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		97.7			44.7			119.0			81.4	
Approach LOS		F			D			F			F	
Queue Length 50th (m)	22.9	~206.3	23.8	24.5	87.8	36.8	41.2	~268.0		~104.4	203.6	
Queue Length 95th (m)	37.5	#248.6	47.4	#63.0	109.1	70.7	#92.2	#298.9		#165.6	#244.6	
Internal Link Dist (m)		480.0			470.8			261.1			266.2	
Turn Bay Length (m)	64.0		58.0	50.0		45.0	65.0			50.0		
Base Capacity (vph)	236	1071	542	146	1035	604	210	1781		266	1903	
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	0.55	1.14	0.41	0.94	0.66	0.61	0.99	1.17		1.29	1.00	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 16 (11%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.29

Intersection Signal Delay: 90.7

Intersection LOS: F

Intersection Capacity Utilization 119.4%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

~ 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.

Splits and Phases: 8: Kennedy Rd & 14th Ave



Lanes, Volumes, Timings
9: Kennedy Rd & Duffield Dr

2041 HOV Future Kennedy PM
Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	620	417	137	1975	1762	165	
Future Volume (vph)	620	417	137	1975	1762	165	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	65.0	0.0	63.0			0.0	
Storage Lanes	1	1	1			0	
Taper Length (m)	2.5		2.5				
Lane Util. Factor	1.00	1.00	1.00	*0.85	*0.85	0.91	
Ped Bike Factor	0.99	0.98			1.00		
Frt		0.850			0.987		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1789	1601	1738	4803	4672	0	
Flt Permitted	0.950		0.065				
Satd. Flow (perm)	1774	1571	119	4803	4672	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		140			14		
Link Speed (k/h)	50			60	60		
Link Distance (m)	324.2			290.2	340.2		
Travel Time (s)	23.3			17.4	20.4		
Confl. Peds. (#/hr)	6	5	15			15	
Confl. Bikes (#/hr)			1			1	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	
Heavy Vehicles (%)	2%	2%	5%	2%	3%	3%	
Adj. Flow (vph)	626	421	138	1995	1780	167	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	626	421	138	1995	1947	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		8
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	10.0	10.0	5.0	40.0	40.0		10.0
Minimum Split (s)	35.0	35.0	9.5	47.0	47.0		35.0
Total Split (s)	54.0	54.0	12.6	76.0	63.4		54.0
Total Split (%)	41.5%	41.5%	9.7%	58.5%	48.8%		42%
Yellow Time (s)	3.5	3.5	3.5	4.5	4.5		3.5
All-Red Time (s)	3.5	3.5	1.0	2.5	2.5		3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	4.5	7.0	7.0		
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	46.7	46.7	71.8	69.3	56.6		
Actuated g/C Ratio	0.36	0.36	0.55	0.53	0.44		
v/c Ratio	0.98	0.64	0.82	0.78	0.95		
Control Delay	71.4	27.7	60.1	27.0	42.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	71.4	27.7	60.1	27.0	42.4		
LOS	E	C	E	C	D		

Lanes, Volumes, Timings
9: Kennedy Rd & Duffield Dr

2041 HOV Future Kennedy PM
Kennedy Road EA

							
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Approach Delay	53.8			29.1	42.4		
Approach LOS	D			C	D		
Queue Length 50th (m)	156.6	59.9	19.4	155.4	190.7		
Queue Length 95th (m)	#231.8	96.0	#55.2	176.3	#225.2		
Internal Link Dist (m)	300.2			266.2	316.2		
Turn Bay Length (m)	65.0		63.0				
Base Capacity (vph)	646	657	168	2562	2041		
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	0.97	0.64	0.82	0.78	0.95		

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 39.2

Intersection LOS: D

Intersection Capacity Utilization 95.2%

ICU Level of Service F

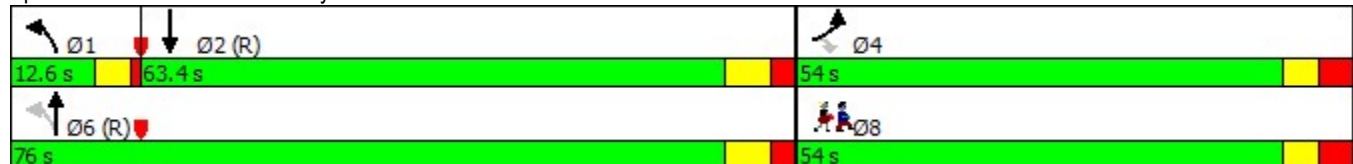
Analysis Period (min) 15

* User Entered Value

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

Queue shown is maximum after two cycles.

Splits and Phases: 9: Kennedy Rd & Duffield Dr



Lanes, Volumes, Timings
10: Kennedy Rd & 407 EB Off-Ramp

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	336	0	301	0	0	0	0	2862	167	0	1432	361
Future Volume (vph)	336	0	301	0	0	0	0	2862	167	0	1432	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor								1.00			0.99	
Frt			0.850					0.992			0.970	
Flt Protected	0.950											
Satd. Flow (prot)	3437	0	1541	0	0	0	0	4761	0	0	4642	0
Flt Permitted	0.950											
Satd. Flow (perm)	3437	0	1541	0	0	0	0	4761	0	0	4642	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			57					15			94	
Link Speed (k/h)		60			48			60			60	
Link Distance (m)		436.7			245.1			340.2			345.3	
Travel Time (s)		26.2			18.4			20.4			20.7	
Confl. Peds. (#/hr)							7					7
Confl. Bikes (#/hr)							2		3	3		2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	0%	6%	0%	0%	0%	0%	2%	1%	0%	2%	0%
Adj. Flow (vph)	354	0	317	0	0	0	0	3013	176	0	1507	380
Shared Lane Traffic (%)												
Lane Group Flow (vph)	354	0	317	0	0	0	0	3189	0	0	1887	0
Turn Type	Prot		Perm					NA			NA	
Protected Phases	4							6			2	
Permitted Phases			4									
Detector Phase	4		4					6			2	
Switch Phase												
Minimum Initial (s)	10.0		10.0					15.0			15.0	
Minimum Split (s)	31.5		31.5					34.5			34.5	
Total Split (s)	33.0		33.0					97.0			97.0	
Total Split (%)	25.4%		25.4%					74.6%			74.6%	
Yellow Time (s)	4.5		4.5					4.5			4.5	
All-Red Time (s)	2.0		2.0					3.0			3.0	
Lost Time Adjust (s)	0.0		0.0					0.0			0.0	
Total Lost Time (s)	6.5		6.5					7.5			7.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None		None					C-Max			C-Max	
Act Effct Green (s)	25.1		25.1					90.9			90.9	
Actuated g/C Ratio	0.19		0.19					0.70			0.70	
v/c Ratio	0.53		0.92					0.96			0.58	
Control Delay	50.1		74.8					22.8			5.9	
Queue Delay	0.0		0.0					0.0			0.0	
Total Delay	50.1		74.8					22.8			5.9	
LOS	D		E					C			A	
Approach Delay		61.8						22.8			5.9	
Approach LOS		E						C			A	
Queue Length 50th (m)	41.8		66.5					182.5			88.9	

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	8
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.5
Total Split (s)	33.0
Total Split (%)	25%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	

Lanes, Volumes, Timings
10: Kennedy Rd & 407 EB Off-Ramp

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)	57.0		#118.1					m#197.6			0.0	
Internal Link Dist (m)		412.7			221.1			316.2			321.3	
Turn Bay Length (m)												
Base Capacity (vph)	700		359					3333			3274	
Starvation Cap Reductn	0		0					0			0	
Spillback Cap Reductn	0		0					0			0	
Storage Cap Reductn	0		0					0			0	
Reduced v/c Ratio	0.51		0.88					0.96			0.58	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 87 (67%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 21.8

Intersection LOS: C

Intersection Capacity Utilization 78.2%

ICU Level of Service D

Analysis Period (min) 15

* User Entered Value

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

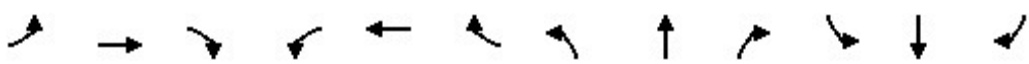
Splits and Phases: 10: Kennedy Rd & 407 EB Off-Ramp

	Ø2 (R)			Ø4
97 s			33 s	
	Ø6 (R)			Ø8
97 s			33 s	

Lane Group	Ø8
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: Kennedy Rd & 407 WB Off-Ramp

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	40	0	45	0	2854	86	0	2104	0
Future Volume (vph)	0	0	0	40	0	45	0	2854	86	0	2104	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor								1.00				
Frt						0.850		0.996				
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	3372	0	1555	0	4783	0	0	4803	0
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	3372	0	1555	0	4783	0	0	4803	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)						42		7				
Link Speed (k/h)		48			60			60			60	
Link Distance (m)		370.0			404.8			345.3			162.6	
Travel Time (s)		27.8			24.3			20.7			9.8	
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)							2		4	4		2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	5%	0%	5%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	0	0	0	41	0	46	0	2942	89	0	2169	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	41	0	46	0	3031	0	0	2169	0
Turn Type				Prot		Perm		NA			NA	
Protected Phases				8				6			2	
Permitted Phases						8						
Detector Phase				8		8		6			2	
Switch Phase												
Minimum Initial (s)				10.0		10.0		30.0			30.0	
Minimum Split (s)				32.5		32.5		38.0			38.0	
Total Split (s)				32.6		32.6		97.4			97.4	
Total Split (%)				25.1%		25.1%		74.9%			74.9%	
Yellow Time (s)				4.5		4.5		4.5			4.5	
All-Red Time (s)				2.0		2.0		3.5			3.5	
Lost Time Adjust (s)				0.0		0.0		0.0			0.0	
Total Lost Time (s)				6.5		6.5		8.0			8.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				None		None		C-Max			C-Max	
Act Effct Green (s)				13.2		13.2		107.2			107.2	
Actuated g/C Ratio				0.10		0.10		0.82			0.82	
v/c Ratio				0.12		0.24		0.77			0.55	
Control Delay				51.4		18.8		10.3			6.1	
Queue Delay				0.0		0.0		0.0			0.5	
Total Delay				51.4		18.8		10.3			6.6	
LOS				D		B		B			A	
Approach Delay					34.1			10.3			6.6	
Approach LOS					C			B			A	
Queue Length 50th (m)				5.1		1.0		150.9			60.5	

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (k/h)	
Link Distance (m)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.5
Total Split (s)	32.6
Total Split (%)	25%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	

Lanes, Volumes, Timings
11: Kennedy Rd & 407 WB Off-Ramp

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)				9.4		11.4		157.4			127.7	
Internal Link Dist (m)		346.0			380.8			321.3			138.6	
Turn Bay Length (m)												
Base Capacity (vph)				676		345		3945			3960	
Starvation Cap Reductn				0		0		0			1169	
Spillback Cap Reductn				0		0		0			0	
Storage Cap Reductn				0		0		0			0	
Reduced v/c Ratio				0.06		0.13		0.77			0.78	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 72 (55%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 9.2

Intersection LOS: A

Intersection Capacity Utilization 77.5%

ICU Level of Service D

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 11: Kennedy Rd & 407 WB Off-Ramp

 Ø2 (R)	 Ø4
97.4 s	32.6 s
 Ø6 (R)	 Ø8
97.4 s	32.6 s

Lane Group	Ø4
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

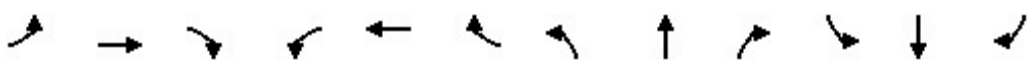
Lanes, Volumes, Timings
12: Kennedy Rd & YMCA Blvd/Helen Ave

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	  		 	  	
Traffic Volume (vph)	495	131	897	113	22	42	432	2078	387	42	2372	140
Future Volume (vph)	495	131	897	113	22	42	432	2078	387	42	2372	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	135.0		0.0	132.0		0.0	77.0		0.0	96.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor		0.98						1.00			1.00	
Frt		0.869			0.901			0.976			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3372	1533	0	1738	1674	0	1690	4674	0	1772	4752	0
Flt Permitted	0.639			0.118			0.081			0.088		
Satd. Flow (perm)	2268	1533	0	216	1674	0	144	4674	0	164	4752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		252			13			34			6	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		303.2			335.1			162.6			360.1	
Travel Time (s)		27.3			30.2			9.8			21.6	
Confl. Peds. (#/hr)			11	11			8		3	3		8
Confl. Bikes (#/hr)									3	3		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	5%	2%	7%	5%	10%	0%	8%	2%	1%	3%	1%	20%
Adj. Flow (vph)	505	134	915	115	22	43	441	2120	395	43	2420	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	505	1049	0	115	65	0	441	2515	0	43	2563	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4			8			6			2		
Detector Phase	7	4		3	8		1	6		2	2	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	30.0		30.0	30.0	
Minimum Split (s)	11.0	38.5		11.0	38.5		11.0	40.0		40.0	40.0	
Total Split (s)	12.0	50.0		12.0	50.0		23.0	78.0		55.0	55.0	
Total Split (%)	8.6%	35.7%		8.6%	35.7%		16.4%	55.7%		39.3%	39.3%	
Yellow Time (s)	3.0	3.5		3.0	3.5		3.0	4.5		4.5	4.5	
All-Red Time (s)	1.0	4.0		1.0	4.0		1.0	3.5		3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.5		4.0	7.5		4.0	8.0		8.0	8.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Act Effct Green (s)	54.8	42.5		44.8	36.0		74.0	70.0		47.0	47.0	
Actuated g/C Ratio	0.39	0.30		0.32	0.26		0.53	0.50		0.34	0.34	
v/c Ratio	0.49	1.64		0.74	0.15		1.55	1.07		0.78	1.60	
Control Delay	32.2	319.9		57.2	29.2		293.5	73.7		115.5	306.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	13.9		0.0	0.0	
Total Delay	32.2	319.9		57.2	29.2		293.5	87.6		115.5	306.4	
LOS	C	F		E	C		F	F		F	F	

Lanes, Volumes, Timings
12: Kennedy Rd & YMCA Blvd/Helen Ave

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay	226.4			47.1			118.3			303.2		
Approach LOS	F			D			F			F		
Queue Length 50th (m)	49.1	~370.1		19.8	10.4		~155.8	~299.9		10.7	~399.9	
Queue Length 95th (m)	63.2	#450.5		#35.8	21.9		#221.6	#328.5		#34.8	#428.2	
Internal Link Dist (m)	279.2			311.1			138.6			336.1		
Turn Bay Length (m)	135.0			132.0			77.0			96.0		
Base Capacity (vph)	1029	640		156	517		285	2354		55	1599	
Starvation Cap Reductn	0	0		0	0		0	416		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	0.49	1.64		0.74	0.13		1.55	1.30		0.78	1.60	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 27 (19%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.64

Intersection Signal Delay: 205.6

Intersection LOS: F

Intersection Capacity Utilization 166.2%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

~ 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.

Splits and Phases: 12: Kennedy Rd & YMCA Blvd/Helen Ave



Lanes, Volumes, Timings

2041 HOV Future Kennedy PM

13: Kennedy Rd & Unionville Gate/South Unionville Ave Dr

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	496	360	793	170	186	109	545	2026	115	46	1844	378
Future Volume (vph)	496	360	793	170	186	109	545	2026	115	46	1844	378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	57.0		0.0	83.0		70.0	193.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	*0.85	0.91	1.00	*0.85	0.91
Frt			0.850		0.945			0.992			0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1883	1585	1772	3382	0	1807	4721	0	1772	4603	0
Flt Permitted	0.507			0.256			0.075			0.081		
Satd. Flow (perm)	955	1883	1585	477	3382	0	143	4721	0	151	4603	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			369		5			8			28	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		264.4			158.5			360.1			256.8	
Travel Time (s)		19.0			11.4			21.6			15.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%	1%	3%	2%	3%	4%	2%
Adj. Flow (vph)	551	400	881	189	207	121	606	2251	128	51	2049	420
Shared Lane Traffic (%)												
Lane Group Flow (vph)	551	400	881	189	328	0	606	2379	0	51	2469	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8			6			2		
Detector Phase	7	4	4	3	8		1	6		2	2	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	7.0	10.0		7.0	32.0		32.0	32.0	
Minimum Split (s)	9.5	39.5	39.5	11.0	39.5		11.0	39.5		39.5	39.5	
Total Split (s)	10.0	46.0	46.0	10.0	51.5		31.0	88.0		57.0	57.0	
Total Split (%)	6.7%	30.8%	30.8%	6.7%	34.4%		20.7%	58.9%		38.1%	38.1%	
Yellow Time (s)	3.5	4.0	4.0	3.0	4.0		3.0	4.5		4.5	4.5	
All-Red Time (s)	1.0	3.5	3.5	1.0	3.5		1.0	3.0		3.0	3.0	
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)	4.5	7.5	7.5	4.0	7.5		4.0	7.5		7.5	7.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	
Act Effct Green (s)	52.5	44.0	44.0	53.5	44.0		84.0	80.5		49.5	49.5	
Actuated g/C Ratio	0.35	0.29	0.29	0.36	0.29		0.56	0.54		0.33	0.33	
v/c Ratio	1.51	0.72	1.21	0.85	0.33		1.59	0.93		1.04	1.60	
Control Delay	274.8	55.9	134.8	70.4	41.7		311.8	40.2		189.8	306.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	274.8	55.9	134.8	70.4	41.7		311.8	40.2		189.8	306.8	
LOS	F	E	F	E	D		F	D		F	F	
Approach Delay		159.7			52.2			95.3			304.4	
Approach LOS		F			D			F			F	
Queue Length 50th (m)	~226.1	106.7	~237.2	38.4	39.5		~240.1	249.1		~16.0	~409.8	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)	#296.8	144.9	#316.9	#74.3	53.3		#314.2	275.5		#44.9	#437.6	
Internal Link Dist (m)		240.4			134.5			336.1			232.8	
Turn Bay Length (m)	57.0			83.0			193.0			35.0		
Base Capacity (vph)	366	554	726	222	998		380	2545		49	1542	
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	1.51	0.72	1.21	0.85	0.33		1.59	0.93		1.04	1.60	

Intersection Summary

Area Type: Other

Cycle Length: 149.5

Actuated Cycle Length: 149.5

Offset: 71 (47%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.60

Intersection Signal Delay: 174.6

Intersection LOS: F

Intersection Capacity Utilization 129.9%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

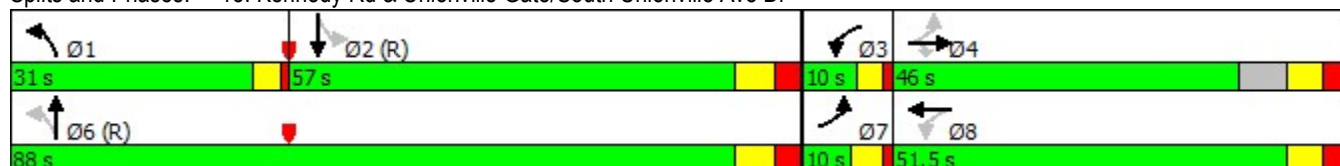
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 13: Kennedy Rd & Unionville Gate/South Unionville Ave Dr



Lanes, Volumes, Timings
14: Kennedy Rd & Castan Dr

2041 HOV Future Kennedy PM
Kennedy Road EA

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	98	2180	250	114	2069
Future Volume (vph)	85	98	2180	250	114	2069
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0	0.0		0.0	42.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	*0.85	0.91	1.00	*0.85
Ped Bike Factor						
Frt		0.850	0.985			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1772	1601	4731	0	1755	4710
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1772	1601	4731	0	1755	4710
Link Speed (k/h)	40		60			60
Link Distance (m)	247.2		256.8			190.3
Travel Time (s)	22.2		15.4			11.4
Confl. Peds. (#/hr)		1		12	12	
Confl. Bikes (#/hr)				1	1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	2%	2%	2%	4%	4%
Adj. Flow (vph)	94	109	2422	278	127	2299
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	109	2700	0	127	2299
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 69.1% ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

Lanes, Volumes, Timings

2041 HOV Future Kennedy PM

15: Kennedy Rd & Peachtree Mall S Access/Avoca Dr

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	34	112	35	25	55	162	2388	23	49	1975	41
Future Volume (vph)	293	34	112	35	25	55	162	2388	23	49	1975	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		0.0	100.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	0.0			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	0.99	0.98		0.99	0.98			1.00			1.00	
Frt		0.885			0.896			0.999			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1632	0	1825	1654	0	1807	4748	0	1825	4687	0
Flt Permitted	0.704			0.624			0.048			0.051		
Satd. Flow (perm)	1307	1632	0	1188	1654	0	91	4748	0	98	4687	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		113			6			2			3	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		109.6			410.4			190.3			150.5	
Travel Time (s)		9.9			36.9			11.4			9.0	
Confl. Peds. (#/hr)	12		9	9		12	8		15	15		8
Peak Hour 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
Heavy Vehicles (%)	2%	0%	3%	0%	0%	3%	1%	3%	5%	0%	4%	10%
Adj. Flow (vph)	296	34	113	35	25	56	164	2412	23	49	1995	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	296	147	0	35	81	0	164	2435	0	49	2036	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		1	6			2	
Permitted Phases	4			8			6			2		
Detector Phase	4	4		8	8		1	6		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	30.0		30.0	30.0	
Minimum Split (s)	39.5	39.5		39.5	39.5		11.0	37.0		37.0	37.0	
Total Split (s)	42.0	42.0		42.0	42.0		13.0	98.0		85.0	85.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		9.3%	70.0%		60.7%	60.7%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.0	4.5		4.5	4.5	
All-Red Time (s)	4.0	4.0		4.0	4.0		1.0	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		4.0	7.0		7.0	7.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Act Effect Green (s)	33.4	33.4		33.4	33.4		95.1	92.1		78.6	78.6	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.68	0.66		0.56	0.56	
v/c Ratio	0.95	0.31		0.12	0.20		0.92	0.78		0.91	0.77	
Control Delay	91.6	14.0		42.5	40.4		83.4	19.3		112.0	47.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	91.6	14.0		42.5	40.4		83.4	19.3		112.0	47.6	
LOS	F	B		D	D		F	B		F	D	
Approach Delay		65.8			41.0			23.4			49.1	

Lanes, Volumes, Timings
15: Kennedy Rd & Peachtree Mall S Access/Avoca Dr

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	E			D			C			D		
Queue Length 50th (m)	80.4	7.3		7.6	16.5		29.6	178.0		13.4	211.8	
Queue Length 95th (m)	#135.0	25.1		17.1	30.7		#75.2	198.1		m#17.3	m198.3	
Internal Link Dist (m)		85.6			386.4			166.3			126.5	
Turn Bay Length (m)				20.0			100.0			60.0		
Base Capacity (vph)	322	487		292	412		178	3122		54	2631	
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	0.92	0.30		0.12	0.20		0.92	0.78		0.91	0.77	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 64 (46%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 37.6

Intersection LOS: D

Intersection Capacity Utilization 118.7%

ICU Level of Service H

Analysis Period (min) 15

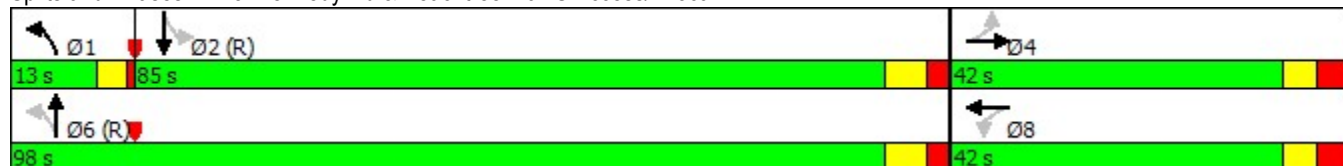
* User Entered Value

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

Queue shown is maximum after two cycles.

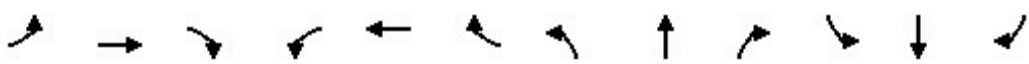
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Kennedy Rd & Peachtree Mall S Access/Avoca Dr



Lanes, Volumes, Timings
16: Kennedy Rd & Peachtree Mall N Access/Eton St

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	72	4	0	27	10	2706	33	29	1846	183
Future Volume (vph)	0	0	72	4	0	27	10	2706	33	29	1846	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	50.0		0.0	62.0		0.0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (m)	0.0			0.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor												
Frt			0.865		0.850			0.998			0.986	
Flt Protected				0.950			0.950			0.950		
Satd. Flow (prot)	0	0	1629	1825	1555	0	1825	4746	0	1825	4616	0
Flt Permitted				0.950			0.950			0.950		
Satd. Flow (perm)	0	0	1629	1825	1555	0	1825	4746	0	1825	4616	0
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		140.1			268.7			150.5			203.0	
Travel Time (s)		12.6			24.2			9.0			12.2	
Confl. Peds. (#/hr)			1	1			8		14	14		8
Confl. Bikes (#/hr)									1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	2%	0%	0%	5%	0%	3%	4%	0%	5%	1%
Adj. Flow (vph)	0	0	73	4	0	27	10	2733	33	29	1865	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	73	4	27	0	10	2766	0	29	2050	0
Sign Control		Yield			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 63.0% ICU Level of Service B

Analysis Period (min) 15

* User Entered Value

Lanes, Volumes, Timings
17: Kennedy Rd & Highway 7

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  			  	
Traffic Volume (vph)	397	1445	257	290	1135	183	264	2011	407	222	1385	287
Future Volume (vph)	397	1445	257	290	1135	183	264	2011	407	222	1385	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	78.0		95.0	43.0		87.0	111.0		0.0	100.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor			0.96			0.98		1.00			1.00	
Frt			0.850			0.850		0.975			0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1807	3614	1585	1722	3614	1601	1772	4668	0	1807	4656	0
Flt Permitted	0.086			0.092			0.079			0.084		
Satd. Flow (perm)	164	3614	1527	167	3614	1563	147	4668	0	160	4656	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			153			142		30			30	
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		303.4			351.7			203.0			185.7	
Travel Time (s)		15.6			18.1			12.2			11.1	
Confl. Peds. (#/hr)	11		23	23		11	13		5	5		13
Confl. Bikes (#/hr)							1					1
Peak Hour 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
Heavy Vehicles (%)	1%	1%	3%	6%	1%	2%	3%	1%	7%	1%	2%	2%
Adj. Flow (vph)	401	1460	260	293	1146	185	267	2031	411	224	1399	290
Shared Lane Traffic (%)												
Lane Group Flow (vph)	401	1460	260	293	1146	185	267	2442	0	224	1689	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8			4		
Detector Phase	1	6	6	5	2	2	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	38.0	38.0	7.0	38.0	38.0	7.0	10.0		7.0	10.0	
Minimum Split (s)	11.0	45.5	45.5	11.0	45.5	45.5	11.0	44.5		11.0	44.5	
Total Split (s)	18.0	54.0	54.0	15.0	51.0	51.0	16.0	58.0		13.0	55.0	
Total Split (%)	12.9%	38.6%	38.6%	10.7%	36.4%	36.4%	11.4%	41.4%		9.3%	39.3%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	4.5		3.0	4.5	
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5	2.5	1.0	3.0		1.0	3.0	
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)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5		4.0	7.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	64.0	46.5	46.5	58.0	43.5	43.5	66.0	50.5		60.0	47.5	
Actuated g/C Ratio	0.46	0.33	0.33	0.41	0.31	0.31	0.47	0.36		0.43	0.34	
v/c Ratio	1.68	1.22	0.43	1.53	1.02	0.32	1.28	1.43		1.29	1.06	
Control Delay	350.1	145.6	16.7	292.9	79.6	11.5	176.5	228.2		194.9	76.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	350.1	145.6	16.7	292.9	79.6	11.5	176.5	228.2		194.9	76.1	
LOS	F	F	B	F	E	B	F	F		F	E	

Lanes, Volumes, Timings
17: Kennedy Rd & Highway 7

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		168.5			110.3			223.1			90.0	
Approach LOS		F			F			F			F	
Queue Length 50th (m)	~145.7	~259.9	21.5	~97.6	~176.7	8.5	~75.6	~361.9		~59.7	~154.9	
Queue Length 95th (m)	#209.8	#302.5	46.4	#155.3	#218.7	26.9 m	#117.1	#390.7		#111.4	#206.1	
Internal Link Dist (m)		279.4			327.7			179.0			161.7	
Turn Bay Length (m)	78.0		95.0	43.0		87.0	111.0			100.0		
Base Capacity (vph)	239	1200	609	191	1122	583	208	1702		174	1599	
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	1.68	1.22	0.43	1.53	1.02	0.32	1.28	1.43		1.29	1.06	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 50 (36%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.68

Intersection Signal Delay: 156.9

Intersection LOS: F

Intersection Capacity Utilization 135.5%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

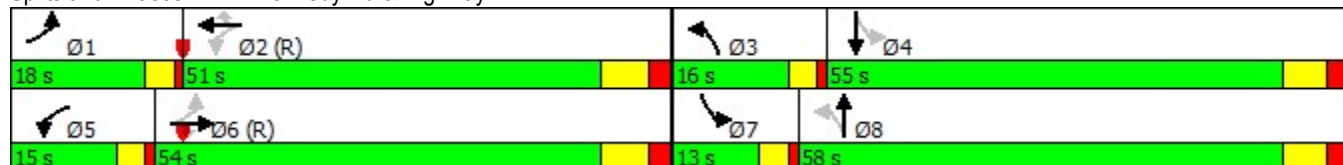
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Kennedy Rd & Highway 7



Lanes, Volumes, Timings
18: Kennedy Rd & Denby Ct/Second St

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	11	2	0	0	13	2949	0	0	1914	8
Future Volume (vph)	4	0	11	2	0	0	13	2949	0	0	1914	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		0.0	55.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	0.0			0.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor												
Frt		0.901									0.999	
Flt Protected		0.987			0.950		0.950					
Satd. Flow (prot)	0	1708	0	0	1825	0	1825	4850	0	1921	4798	0
Flt Permitted		0.987			0.950		0.950					
Satd. Flow (perm)	0	1708	0	0	1825	0	1825	4850	0	1921	4798	0
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		173.6			149.5			185.7			258.9	
Travel Time (s)		15.6			13.5			11.1			15.5	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	2%	0%
Adj. Flow (vph)	4	0	11	2	0	0	13	2979	0	0	1933	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	2	0	13	2979	0	0	1941	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 67.0%	ICU Level of Service C											
Analysis Period (min) 15												
* User Entered Value												

Lanes, Volumes, Timings
19: Kennedy Rd & Austin Dr

2041 HOV Future Kennedy PM
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Lane Configurations							
Traffic Volume (vph)	141	328	2731	205	212	1833	
Future Volume (vph)	141	328	2731	205	212	1833	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	41.0	0.0		0.0	57.0		
Storage Lanes	1	1		0	1		
Taper Length (m)	2.5				2.5		
Lane Util. Factor	1.00	1.00	*0.85	0.91	1.00	*0.85	
Ped Bike Factor			1.00				
Frt		0.850	0.990				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1789	1617	4793	0	1825	4803	
Flt Permitted	0.950				0.045		
Satd. Flow (perm)	1789	1617	4793	0	86	4803	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		139	14				
Link Speed (k/h)	40		60			60	
Link Distance (m)	254.1		258.9			99.3	
Travel Time (s)	22.9		15.5			6.0	
Confl. Peds. (#/hr)				2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	
Heavy Vehicles (%)	2%	1%	1%	1%	0%	2%	
Adj. Flow (vph)	144	335	2787	209	216	1870	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	144	335	2996	0	216	1870	
Turn Type	Prot	Perm	NA		pm+pt	NA	
Protected Phases	8		6		5	2	4
Permitted Phases		8			2		
Detector Phase	8	8	6		5	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	30.0		7.0	30.0	10.0
Minimum Split (s)	33.5	33.5	37.0		11.0	37.0	33.5
Total Split (s)	34.0	34.0	90.0		16.0	106.0	34.0
Total Split (%)	24.3%	24.3%	64.3%		11.4%	75.7%	24%
Yellow Time (s)	3.5	3.5	4.5		3.0	4.5	3.5
All-Red Time (s)	3.0	3.0	2.5		1.0	2.5	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5	7.0		4.0	7.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Recall Mode	None	None	C-Max		None	C-Max	None
Act Effct Green (s)	22.5	22.5	84.7		107.0	104.0	
Actuated g/C Ratio	0.16	0.16	0.60		0.76	0.74	
v/c Ratio	0.50	0.89	1.03		0.84	0.52	
Control Delay	58.7	58.6	49.4		66.0	8.7	
Queue Delay	0.0	0.0	0.0		0.0	6.1	
Total Delay	58.7	58.6	49.4		66.0	14.9	
LOS	E	E	D		E	B	
Approach Delay	58.6		49.4			20.2	



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Approach LOS	E		D			C	
Queue Length 50th (m)	36.3	55.1	~229.8		42.9	80.7	
Queue Length 95th (m)	56.4	#95.9	m125.1		#98.8	100.1	
Internal Link Dist (m)	230.1		234.9			75.3	
Turn Bay Length (m)	41.0				57.0		
Base Capacity (vph)	351	429	2904		256	3569	
Starvation Cap Reductn	0	0	0		0	1643	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.41	0.78	1.03		0.84	0.97	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 91 (65%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 39.2

Intersection LOS: D

Intersection Capacity Utilization 92.0%

ICU Level of Service F

Analysis Period (min) 15

* User Entered Value

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 19: Kennedy Rd & Austin Dr



Lanes, Volumes, Timings
20: Kennedy Rd & Carlton Rd

2041 HOV Future Kennedy PM

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	389	180	164	111	40	151	2361	618	94	1592	89
Future Volume (vph)	182	389	180	164	111	40	151	2361	618	94	1592	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	48.0		61.0	73.0		0.0	138.0		0.0	140.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	1.00		0.98	1.00		0.98		0.99			1.00	
Frt			0.850			0.850		0.969			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1883	1617	1825	1883	1585	1789	4681	0	1825	4755	0
Flt Permitted	0.684			0.130			0.058			0.055		
Satd. Flow (perm)	1309	1883	1584	249	1883	1560	109	4681	0	106	4755	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			106			94		72			8	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		268.3			267.4			294.7			810.8	
Travel Time (s)		24.1			24.1			17.7			48.6	
Confl. Peds. (#/hr)	3		6	6		3	7		4	4		7
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	1%	0%	2%	3%	2%	1%	0%	0%	2%	2%
Adj. Flow (vph)	186	397	184	167	113	41	154	2409	631	96	1624	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	186	397	184	167	113	41	154	3040	0	96	1715	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8		8	6			2		
Detector Phase	7	4	4	3	8	8	1	6		2	2	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	31.0		31.0	31.0	
Minimum Split (s)	11.0	38.5	38.5	11.0	38.5	38.5	11.0	38.0		38.0	38.0	
Total Split (s)	11.0	38.5	38.5	11.0	38.5	38.5	11.0	90.5		79.5	79.5	
Total Split (%)	7.9%	27.5%	27.5%	7.9%	27.5%	27.5%	7.9%	64.6%		56.8%	56.8%	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	4.5		4.5	4.5	
All-Red Time (s)	1.0	4.0	4.0	1.0	4.0	4.0	1.0	2.5		2.5	2.5	
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)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max		C-Max	C-Max	
Act Effct Green (s)	41.2	30.7	30.7	41.2	30.7	30.7	86.8	83.8		72.5	72.5	
Actuated g/C Ratio	0.29	0.22	0.22	0.29	0.22	0.22	0.62	0.60		0.52	0.52	
v/c Ratio	0.45	0.96	0.43	1.10	0.27	0.10	0.99	1.07		1.78	0.70	
Control Delay	41.4	89.7	23.2	140.5	47.4	0.5	100.3	68.5		438.4	61.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8		0.0	0.0	
Total Delay	41.4	89.7	23.2	140.5	47.4	0.5	100.3	73.3		438.4	61.4	
LOS	D	F	C	F	D	A	F	E		F	E	
Approach Delay		62.0			89.8			74.6			81.4	

Lanes, Volumes, Timings
20: Kennedy Rd & Carlton Rd

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	E			F			E			F		
Queue Length 50th (m)	38.7	109.4	17.9	~38.7	26.1	0.0	~26.0	~364.4		~40.7	196.4	
Queue Length 95th (m)	59.3	#171.5	40.5	#80.1	43.8	0.0	#72.2	#389.5		m#71.8	212.8	
Internal Link Dist (m)	244.3			243.4			270.7			786.8		
Turn Bay Length (m)	48.0		61.0	73.0			138.0			140.0		
Base Capacity (vph)	410	416	433	152	416	418	155	2829		54	2466	
Starvation Cap Reductn	0	0	0	0	0	0	0	29		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	0.45	0.95	0.42	1.10	0.27	0.10	0.99	1.09		1.78	0.70	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 13 (9%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.78

Intersection Signal Delay: 75.8

Intersection LOS: E

Intersection Capacity Utilization 137.1%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Kennedy Rd & Carlton Rd



Lanes, Volumes, Timings
21: Kennedy Rd & The Bridle Trail

2041 HOV Future Kennedy PM

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	85	8	65	27	49	10	2396	134	58	1706	84
Future Volume (vph)	167	85	8	65	27	49	10	2396	134	58	1706	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	23.0		0.0	27.0		0.0	90.0		0.0	120.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor	0.99	1.00		0.99	0.99		1.00	1.00			1.00	
Frt		0.987			0.911			0.992			0.993	
Flt Protected	0.950			0.950	0.996		0.950			0.950		
Satd. Flow (prot)	1807	1893	0	1734	1637	0	1825	4808	0	1772	4764	0
Flt Permitted	0.700			0.696	0.979		0.064			0.049		
Satd. Flow (perm)	1322	1893	0	1263	1608	0	123	4808	0	91	4764	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			3			10			8	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		238.2			161.4			810.8			257.8	
Travel Time (s)		21.4			14.5			48.6			15.5	
Confl. Peds. (#/hr)	6		5	5		6	9		2	2		9
Confl. Bikes (#/hr)	2											2
Peak Hour 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
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	3%	2%	0%
Adj. Flow (vph)	169	86	8	66	27	49	10	2420	135	59	1723	85
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	169	94	0	59	83	0	10	2555	0	59	1808	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Detector Phase	4	4		8	8		6	6		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		35.0	35.0		35.0	35.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		42.0	42.0		42.0	42.0	
Total Split (s)	51.0	51.0		51.0	51.0		89.0	89.0		89.0	89.0	
Total Split (%)	36.4%	36.4%		36.4%	36.4%		63.6%	63.6%		63.6%	63.6%	
Yellow Time (s)	3.5	3.5		3.5	3.5		4.5	4.5		4.5	4.5	
All-Red Time (s)	4.5	4.5		4.5	4.5		2.5	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	8.0	8.0		8.0	8.0		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		C-Max	C-Max	
Act Effct Green (s)	43.0	43.0		43.0	43.0		82.0	82.0		82.0	82.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.59	0.59		0.59	0.59	
v/c Ratio	0.42	0.16		0.15	0.17		0.14	0.91		1.11	0.65	
Control Delay	42.4	35.2		36.7	35.3		10.7	12.7		189.8	26.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	42.4	35.2		36.7	35.3		10.7	12.7		189.8	26.2	
LOS	D	D		D	D		B	B		F	C	

Lanes, Volumes, Timings
21: Kennedy Rd & The Bridle Trail

2041 HOV Future Kennedy PM
Kennedy Road EA

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		39.8			35.9			12.7			31.3	
Approach LOS		D			D			B			C	
Queue Length 50th (m)	37.2	18.4		12.5	17.0		0.6	67.5		~19.2	192.8	
Queue Length 95th (m)	59.0	32.5		24.6	31.0		m0.7	m63.4		#49.8	71.8	
Internal Link Dist (m)		214.2			137.4			786.8			233.8	
Turn Bay Length (m)	23.0			27.0			90.0			120.0		
Base Capacity (vph)	406	583		387	495		72	2820		53	2793	
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	0.42	0.16		0.15	0.17		0.14	0.91		1.11	0.65	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 39 (28%), Referenced to phase 2:SBTL, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 22.0

Intersection LOS: C

Intersection Capacity Utilization 88.5%

ICU Level of Service E

Analysis Period (min) 15

* User Entered Value

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 21: Kennedy Rd & The Bridle Trail



Lanes, Volumes, Timings
22: Kennedy Rd & Birchview Ln

2041 HOV Future Kennedy PM
Kennedy Road EA

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Lane Configurations							
Traffic Volume (vph)	3	30	31	2513	1858	11	
Future Volume (vph)	3	30	31	2513	1858	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0	105.0			0.0	
Storage Lanes	1	0	1			0	
Taper Length (m)	0.0		2.5				
Lane Util. Factor	1.00	1.00	1.00	*0.85	*0.85	0.91	
Ped Bike Factor	0.99				1.00		
Frt	0.877				0.999		
Flt Protected	0.995		0.950				
Satd. Flow (prot)	1597	0	1755	4850	4795	0	
Flt Permitted	0.995		0.086				
Satd. Flow (perm)	1597	0	159	4850	4795	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	30				1		
Link Speed (k/h)	40			60	60		
Link Distance (m)	142.4			257.8	309.6		
Travel Time (s)	12.8			15.5	18.6		
Confl. Peds. (#/hr)		1	1			1	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	
Heavy Vehicles (%)	0%	4%	4%	1%	2%	12%	
Adj. Flow (vph)	3	30	31	2538	1877	11	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	33	0	31	2538	1888	0	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4			6	2		8
Permitted Phases			6				
Detector Phase	4		6	6	2		
Switch Phase							
Minimum Initial (s)	10.0		30.0	30.0	30.0		10.0
Minimum Split (s)	31.0		38.0	38.0	37.0		31.0
Total Split (s)	31.0		109.0	109.0	109.0		31.0
Total Split (%)	22.1%		77.9%	77.9%	77.9%		22%
Yellow Time (s)	3.5		4.5	4.5	4.5		3.5
All-Red Time (s)	3.5		2.5	2.5	2.5		3.5
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	7.0		7.0	7.0	7.0		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None		C-Max	C-Max	C-Max		None
Act Effct Green (s)	12.8		122.8	122.8	122.8		
Actuated g/C Ratio	0.09		0.88	0.88	0.88		
v/c Ratio	0.19		0.22	0.60	0.45		
Control Delay	21.7		3.1	1.2	9.7		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	21.7		3.1	1.3	9.7		
LOS	C		A	A	A		
Approach Delay	21.7			1.3	9.7		

Lanes, Volumes, Timings
22: Kennedy Rd & Birchview Ln

2041 HOV Future Kennedy PM
Kennedy Road EA



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø8
Approach LOS	C			A	A		
Queue Length 50th (m)	0.8		0.6	20.3	119.2		
Queue Length 95th (m)	10.3		m0.8	24.2	m106.6		
Internal Link Dist (m)	118.4			233.8	285.6		
Turn Bay Length (m)			105.0				
Base Capacity (vph)	298		139	4254	4206		
Starvation Cap Reductn	0		0	258	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.11		0.22	0.64	0.45		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 38 (27%), Referenced to phase 2:SBT and 6:NBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 5.0

Intersection LOS: A

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: Kennedy Rd & Birchview Ln

↓ Ø2 (R)	↑ Ø4
109 s	31 s
↑ Ø6 (R)	↑ Ø8
109 s	31 s

Lanes, Volumes, Timings
23: Kennedy Rd & 16th Ave

2041 HOV Future Kennedy PM

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  			  	
Traffic Volume (vph)	503	1977	210	260	921	116	242	1764	402	302	1365	367
Future Volume (vph)	503	1977	210	260	921	116	242	1764	402	302	1365	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	92.0		93.0	70.0		72.0	145.0		0.0	70.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor			0.98			0.97		1.00			1.00	
Frt			0.850			0.850		0.972			0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1807	3614	1633	1807	3579	1633	1807	4697	0	1807	4626	0
Flt Permitted	0.084			0.092			0.090			0.088		
Satd. Flow (perm)	160	3614	1606	175	3579	1589	171	4697	0	167	4626	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			111			129		34			45	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		347.4			311.5			309.6			150.2	
Travel Time (s)		20.8			18.7			18.6			9.0	
Confl. Peds. (#/hr)	12		4	4		12	8		7	7		8
Confl. Bikes (#/hr)	1					1	2					2
Peak Hour Factor	0.90	0.95	0.95	0.90	0.92	0.92	0.90	0.95	0.95	0.90	0.95	0.95
Heavy Vehicles (%)	1%	1%	0%	1%	2%	0%	1%	1%	1%	1%	2%	2%
Adj. Flow (vph)	559	2081	221	289	1001	126	269	1857	423	336	1437	386
Shared Lane Traffic (%)												
Lane Group Flow (vph)	559	2081	221	289	1001	126	269	2280	0	336	1823	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8			4		
Detector Phase	1	6	6	5	2	2	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	35.0	35.0	7.0	35.0	35.0	7.0	15.0		7.0	15.0	
Minimum Split (s)	11.0	42.5	42.5	11.0	42.5	42.5	11.0	41.5		11.0	41.5	
Total Split (s)	23.0	61.0	61.0	13.0	51.0	51.0	13.0	52.0		14.0	53.0	
Total Split (%)	16.4%	43.6%	43.6%	9.3%	36.4%	36.4%	9.3%	37.1%		10.0%	37.9%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5		3.0	4.5	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0		1.0	3.0	
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)	4.0	7.5	7.5	4.0	7.5	7.5	4.0	7.5		4.0	7.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	70.0	53.5	53.5	56.0	43.5	43.5	57.0	44.5		59.0	45.5	
Actuated g/C Ratio	0.50	0.38	0.38	0.40	0.31	0.31	0.41	0.32		0.42	0.32	
v/c Ratio	1.84	1.51	0.32	1.66	0.90	0.22	1.55	1.50		1.80	1.19	
Control Delay	419.5	264.3	16.1	347.6	58.0	6.2	296.5	255.6		407.2	128.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	419.5	264.3	16.1	347.6	58.0	6.2	296.5	255.6		407.2	128.0	
LOS	F	F	B	F	E	A	F	F		F	F	

Lanes, Volumes, Timings
23: Kennedy Rd & 16th Ave

2041 HOV Future Kennedy PM
Kennedy Road EA

																								
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR												
Approach Delay		275.5			112.5			259.9			171.4													
Approach LOS		F			F			F			F													
Queue Length 50th (m)	~218.9	~420.3	20.1	~99.4	139.7	0.0	~86.1	~340.7		~125.8	~235.7													
Queue Length 95th (m)	#289.4	#461.2	40.4	#157.1	#176.2	13.8	#142.4	#369.0		#186.8	#261.4													
Internal Link Dist (m)		323.4			287.5			285.6			126.2													
Turn Bay Length (m)	92.0		93.0	70.0		72.0	145.0			70.0														
Base Capacity (vph)	303	1381	682	174	1112	582	174	1516		187	1533													
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	1.84	1.51	0.32	1.66	0.90	0.22	1.55	1.50		1.80	1.19													

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 38 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.84

Intersection Signal Delay: 220.4

Intersection LOS: F

Intersection Capacity Utilization 148.1%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

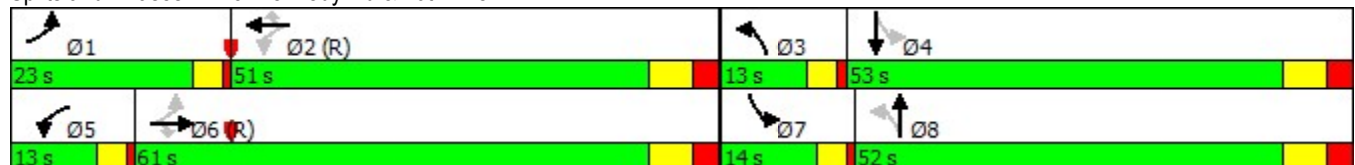
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 23: Kennedy Rd & 16th Ave



Lanes, Volumes, Timings
24: Kennedy Rd & Nipogen Ave

2041 HOV Future Kennedy PM
Kennedy Road EA

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		  			  
Traffic Volume (vph)	10	18	2452	9	24	2002
Future Volume (vph)	10	18	2452	9	24	2002
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		0.0	42.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Frt	0.913		0.999			
Flt Protected	0.983				0.950	
Satd. Flow (prot)	1690	0	5137	0	1789	5142
Flt Permitted	0.983				0.950	
Satd. Flow (perm)	1690	0	5137	0	1789	5142
Link Speed (k/h)	48		60			60
Link Distance (m)	207.8		150.2			177.5
Travel Time (s)	15.6		9.0			10.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	20	2665	10	26	2176
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	0	2675	0	26	2176
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	57.6%			ICU Level of Service B		
Analysis Period (min)	15					

Lanes, Volumes, Timings
25: Kennedy Rd & Beckett Ave

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	45	16	40	34	13	79	2494	57	38	1777	140
Future Volume (vph)	121	45	16	40	34	13	79	2494	57	38	1777	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	30.0		0.0	54.0		0.0	54.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor				0.99	1.00							
Frt		0.961			0.959			0.997			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1810	0	1825	1809	0	1789	4837	0	1825	4750	0
Flt Permitted	0.724			0.714			0.066			0.038		
Satd. Flow (perm)	1364	1810	0	1362	1809	0	124	4837	0	73	4750	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			6			5			20	
Link Speed (k/h)		48			48			60			60	
Link Distance (m)		151.1			265.8			177.5			318.0	
Travel Time (s)		11.3			19.9			10.7			19.1	
Confl. Peds. (#/hr)				5		1						
Peak Hour Factor	0.92	0.92	0.92	0.96	0.92	0.96	0.92	0.96	0.96	0.96	0.96	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	1%	0%	0%	2%	2%
Adj. Flow (vph)	132	49	17	42	37	14	86	2598	59	40	1851	152
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	66	0	42	51	0	86	2657	0	40	2003	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Detector Phase	4	4		8	8		6	6		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		30.0	30.0		30.0	30.0	
Minimum Split (s)	35.5	35.5		35.5	35.5		37.0	37.0		37.0	37.0	
Total Split (s)	35.6	35.6		35.6	35.6		104.4	104.4		104.4	104.4	
Total Split (%)	25.4%	25.4%		25.4%	25.4%		74.6%	74.6%		74.6%	74.6%	
Yellow Time (s)	3.5	3.5		3.5	3.5		4.5	4.5		4.5	4.5	
All-Red Time (s)	4.0	4.0		4.0	4.0		2.5	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.5	7.5		7.5	7.5		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	19.1	19.1		19.1	19.1		106.4	106.4		106.4	106.4	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.76	0.76		0.76	0.76	
v/c Ratio	0.71	0.26		0.23	0.20		0.91	0.72		0.73	0.55	
Control Delay	77.1	45.1		54.0	46.8		39.9	7.4		81.4	8.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.3		0.0	0.0	
Total Delay	77.1	45.1		54.0	46.8		39.9	7.7		81.4	8.2	
LOS	E	D		D	D		D	A		F	A	
Approach Delay		66.5			50.1			8.7			9.6	

Lanes, Volumes, Timings
25: Kennedy Rd & Beckett Ave

2041 HOV Future Kennedy PM
Kennedy Road EA

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	E						D					
Queue Length 50th (m)	35.6	13.8		10.6	11.2		11.7	39.6		5.1	77.4	
Queue Length 95th (m)	54.0	26.2		20.6	22.2		m2.2	m23.1		#19.5	116.3	
Internal Link Dist (m)		127.1			241.8			153.5			294.0	
Turn Bay Length (m)	30.0			30.0			54.0			54.0		
Base Capacity (vph)	273	372		273	367		94	3676		55	3614	
Starvation Cap Reductn	0	0		0	0		0	369		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	0.48	0.18		0.15	0.14		0.91	0.80		0.73	0.55	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 93 (66%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 12.1

Intersection LOS: B

Intersection Capacity Utilization 91.1%

ICU Level of Service F

Analysis Period (min) 15

* User Entered Value

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 25: Kennedy Rd & Beckett Ave



Lanes, Volumes, Timings
26: Kennedy Rd & Wilfred Murison Ave

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	31	32	38	2	24	9	173	2333	24	5	1656	93
Future Volume (vph)	31	32	38	2	24	9	173	2333	24	5	1656	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	50.0		0.0	50.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	2.5			0.0			0.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor												
Frt		0.950			0.967			0.998			0.992	
Flt Protected		0.985			0.997		0.950			0.950		
Satd. Flow (prot)	0	1762	0	0	1731	0	1789	4570	0	1825	4678	0
Flt Permitted		0.985			0.997		0.950			0.950		
Satd. Flow (perm)	0	1762	0	0	1731	0	1789	4570	0	1825	4678	0
Link Speed (k/h)		48			40			60			60	
Link Distance (m)		193.4			236.7			318.0			378.3	
Travel Time (s)		14.5			21.3			19.1			22.7	
Confl. Peds. (#/hr)						2						
Confl. Bikes (#/hr)									1	1		
Peak Hour Factor	0.92	0.92	0.92	0.97	0.92	0.97	0.92	0.97	0.97	0.97	0.97	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	2%	23%	2%	7%	5%	0%	4%	2%
Adj. Flow (vph)	34	35	41	2	26	9	188	2405	25	5	1707	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	37	0	188	2430	0	5	1808	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 71.3%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

Lanes, Volumes, Timings
27: Kennedy Rd & Bur Oak Ave

2041 HOV Future Kennedy PM
Kennedy Road EA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Lane Configurations							
Traffic Volume (vph)	295	85	2137	456	149	1776	
Future Volume (vph)	295	85	2137	456	149	1776	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0		0.0	55.0		
Storage Lanes	1	1		0	1		
Taper Length (m)	0.0				2.5		
Lane Util. Factor	1.00	1.00	*0.85	0.91	1.00	*0.85	
Ped Bike Factor	1.00	0.97	0.99				
Frt		0.850	0.974				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1789	1585	4680	0	1772	4803	
Flt Permitted	0.950				0.055		
Satd. Flow (perm)	1787	1544	4680	0	103	4803	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		88	53				
Link Speed (k/h)	40		60			60	
Link Distance (m)	253.8		378.3			302.0	
Travel Time (s)	22.8		22.7			18.1	
Confl. Peds. (#/hr)	1	11		11	11		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	
Heavy Vehicles (%)	2%	3%	1%	2%	3%	2%	
Adj. Flow (vph)	304	88	2203	470	154	1831	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	304	88	2673	0	154	1831	
Turn Type	Prot	Perm	NA		pm+pt	NA	
Protected Phases	8		6		5	2	4
Permitted Phases		8			2		
Detector Phase	8	8	6		5	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	30.0		5.0	30.0	10.0
Minimum Split (s)	35.0	35.0	37.5		9.5	37.5	35.0
Total Split (s)	35.0	35.0	72.6		12.4	85.0	35.0
Total Split (%)	29.2%	29.2%	60.5%		10.3%	70.8%	29%
Yellow Time (s)	3.5	3.5	5.0		3.5	5.0	3.5
All-Red Time (s)	3.5	3.5	2.5		1.0	2.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.0	7.0	7.5		4.5	7.5	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Recall Mode	None	None	C-Max		None	C-Max	None
Act Effct Green (s)	24.3	24.3	67.8		84.2	81.2	
Actuated g/C Ratio	0.20	0.20	0.56		0.70	0.68	
v/c Ratio	0.84	0.23	1.00		0.79	0.56	
Control Delay	66.0	9.1	44.4		64.4	5.3	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	66.0	9.1	44.4		64.4	5.3	
LOS	E	A	D		E	A	
Approach Delay	53.2		44.4			9.8	



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø4
Approach LOS	D		D			A	
Queue Length 50th (m)	68.4	0.0	~265.3		22.1	34.1	
Queue Length 95th (m)	98.1	12.9	#295.0		#59.7	39.9	
Internal Link Dist (m)	229.8		354.3			278.0	
Turn Bay Length (m)					55.0		
Base Capacity (vph)	417	427	2665		196	3249	
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	0.73	0.21	1.00		0.79	0.56	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 125

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 31.5

Intersection LOS: C

Intersection Capacity Utilization 94.2%

ICU Level of Service F

Analysis Period (min) 15

* User Entered Value

~ 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.

Splits and Phases: 27: Kennedy Rd & Bur Oak Ave



Lanes, Volumes, Timings
28: Kennedy Rd & Angus Glen Blvd

2041 HOV Future Kennedy PM
Kennedy Road EA

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	100	197	1524	1605	7
Future Volume (vph)	6	100	197	1524	1605	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0	0.0	90.0			0.0
Storage Lanes	1	1	1			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	1.00	1.00	1.00	*0.85	*0.85	0.91
Ped Bike Factor						
Frt		0.850			0.999	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1825	1570	1772	4850	4798	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1825	1570	1772	4850	4798	0
Link Speed (k/h)	40			60	60	
Link Distance (m)	234.8			302.0	341.0	
Travel Time (s)	21.1			18.1	20.5	
Confl. Peds. (#/hr)			2			2
Confl. Bikes (#/hr)			1			1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	4%	3%	1%	2%	0%
Adj. Flow (vph)	6	103	203	1571	1655	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	103	203	1571	1662	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 55.4% ICU Level of Service B

Analysis Period (min) 15

* User Entered Value

Lanes, Volumes, Timings
29: Kennedy Rd & The Fairways/Castlemore Ave

2041 HOV Future Kennedy PM

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	5	22	74	12	293	20	1579	132	188	1442	52
Future Volume (vph)	33	5	22	74	12	293	20	1579	132	188	1442	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		20.0	0.0		64.0	57.0		0.0	50.0		0.0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (m)	0.0			0.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.85	0.91	1.00	*0.85	0.91
Ped Bike Factor		1.00	0.98	0.99	0.98		1.00	1.00			1.00	
Frt			0.850		0.856			0.988			0.995	
Flt Protected		0.958		0.950			0.950			0.950		
Satd. Flow (prot)	0	1751	1555	1772	1613	0	1825	4743	0	1772	4777	0
Flt Permitted		0.218		0.732			0.138			0.069		
Satd. Flow (perm)	0	397	1522	1354	1613	0	265	4743	0	129	4777	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		243			12			7	
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		207.4			193.2			341.0			227.3	
Travel Time (s)		18.7			17.4			20.5			13.6	
Confl. Peds. (#/hr)	8		9	9		8	7		2	2		7
Confl. Bikes (#/hr)			1	1					2	2		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	40%	5%	3%	0%	0%	0%	2%	0%	3%	2%	0%
Adj. Flow (vph)	34	5	23	76	12	302	21	1628	136	194	1487	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	23	76	314	0	21	1764	0	194	1541	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4		4	8			6			2		
Detector Phase	4	4	4	8	8		6	6		5	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		33.0	33.0		5.0	33.0	
Minimum Split (s)	44.5	44.5	44.5	44.5	44.5		40.5	40.5		9.5	40.5	
Total Split (s)	44.8	44.8	44.8	44.8	44.8		56.8	56.8		18.4	75.2	
Total Split (%)	37.3%	37.3%	37.3%	37.3%	37.3%		47.3%	47.3%		15.3%	62.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		5.0	5.0		3.5	5.0	
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0		2.5	2.5		1.0	2.5	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		7.5	7.5	7.5	7.5		7.5	7.5		4.5	7.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None		C-Max	C-Max		None	C-Max	
Act Effct Green (s)		17.2	17.2	17.2	17.2		71.9	71.9		90.8	87.8	
Actuated g/C Ratio		0.14	0.14	0.14	0.14		0.60	0.60		0.76	0.73	
v/c Ratio		0.68	0.08	0.39	0.72		0.13	0.62		0.77	0.44	
Control Delay		96.8	0.5	49.4	20.4		30.6	31.1		36.8	3.9	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		96.8	0.5	49.4	20.4		30.6	31.1		36.8	3.9	
LOS		F	A	D	C		C	C		D	A	

Lanes, Volumes, Timings
29: Kennedy Rd & The Fairways/Castlemore Ave

2041 HOV Future Kennedy PM

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		61.1			26.1			31.1			7.6	
Approach LOS		E			C			C			A	
Queue Length 50th (m)		9.3	0.0	17.3	16.0		3.3	139.2		25.2	8.3	
Queue Length 95th (m)		17.9	0.0	25.4	36.5		m5.5	m148.4		m14.2	m63.5	
Internal Link Dist (m)		183.4			169.2			317.0			203.3	
Turn Bay Length (m)			20.0				57.0			50.0		
Base Capacity (vph)		123	529	420	668		158	2845		291	3496	
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		0.32	0.04	0.18	0.47		0.13	0.62		0.67	0.44	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 20.8

Intersection LOS: C

Intersection Capacity Utilization 104.4%

ICU Level of Service G

Analysis Period (min) 15

* User Entered Value

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 29: Kennedy Rd & The Fairways/Castlemore Ave



Lanes, Volumes, Timings
30: Kennedy Rd & Schoolhouse Rd

2041 HOV Future Kennedy PM
Kennedy Road EA

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	  	
Traffic Volume (vph)	19	105	95	1786	1921	7
Future Volume (vph)	19	105	95	1786	1921	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	20.0			0.0
Storage Lanes	1	0	1			0
Taper Length (m)	0.0		2.5			
Lane Util. Factor	1.00	1.00	1.00	*0.85	*0.85	0.91
Ped Bike Factor						
Frt	0.886				0.999	
Flt Protected	0.992		0.950			
Satd. Flow (prot)	1688	0	1825	4756	4798	0
Flt Permitted	0.992		0.950			
Satd. Flow (perm)	1688	0	1825	4756	4798	0
Link Speed (k/h)	40			60	60	
Link Distance (m)	115.5			227.3	167.2	
Travel Time (s)	10.4			13.6	10.0	
Confl. Peds. (#/hr)	3	1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Adj. Flow (vph)	20	108	98	1841	1980	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	98	1841	1987	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	60.3%			ICU Level of Service B		
Analysis Period (min)	15					
* User Entered Value						

Lanes, Volumes, Timings
31: Kennedy Rd & Major Mackenzie Dr E

2041 HOV Future Kennedy PM

Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	1875	346	241	1126	44	344	852	262	127	1498	57
Future Volume (vph)	52	1875	346	241	1126	44	344	852	262	127	1498	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		92.0	50.0		160.0	140.0		0.0	50.0		92.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	*0.85	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99			0.99			0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	3614	1617	1755	3579	1633	1807	3266	1633	1825	3579	1633
Flt Permitted	0.159			0.084			0.102			0.107		
Satd. Flow (perm)	305	3614	1595	155	3579	1611	194	3266	1611	206	3579	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			177			82			161			118
Link Speed (k/h)		70			70			60			60	
Link Distance (m)		424.7			384.5			167.2			409.3	
Travel Time (s)		21.8			19.8			10.0			24.6	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	1%	4%	2%	0%	1%	0%	0%	0%	2%	0%
Adj. Flow (vph)	54	1933	357	248	1161	45	355	878	270	131	1544	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	1933	357	248	1161	45	355	878	270	131	1544	59
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	7.0	15.0	15.0	7.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	11.0	37.5	37.5	11.0	37.0	37.0	9.5	38.5	38.5
Total Split (s)	51.0	51.0	51.0	11.0	62.0	62.0	13.0	45.2	45.2	12.8	45.0	45.0
Total Split (%)	42.5%	42.5%	42.5%	9.2%	51.7%	51.7%	10.8%	37.7%	37.7%	10.7%	37.5%	37.5%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.5	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	1.0	2.5	2.5	1.0	1.0	1.0	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	4.0	7.5	7.5	4.0	6.0	6.0	4.5	7.5	7.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	43.5	43.5	43.5	58.0	54.5	54.5	50.3	39.3	39.3	48.7	37.5	37.5
Actuated g/C Ratio	0.36	0.36	0.36	0.48	0.45	0.45	0.42	0.33	0.33	0.41	0.31	0.31
v/c Ratio	0.49	1.48	0.52	1.48	0.71	0.06	1.76	0.82	0.42	0.68	1.38	0.10
Control Delay	47.9	248.8	17.4	266.6	29.5	0.9	381.0	51.2	24.0	39.6	210.7	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	248.8	17.4	266.6	29.5	0.9	381.0	51.2	24.0	39.6	210.7	0.4
LOS	D	F	B	F	C	A	F	D	C	D	F	A
Approach Delay		209.0			69.1			124.2			190.6	

Lanes, Volumes, Timings
31: Kennedy Rd & Major Mackenzie Dr E

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	F			E			F			F		
Queue Length 50th (m)	9.8	~329.5	31.7	~64.3	113.7	0.0	~111.3	128.2	36.2	18.0	~254.0	0.0
Queue Length 95th (m)	24.9	#371.6	59.7	#115.6	138.4	1.7	#163.4	151.2	68.1	#37.9	#296.2	0.0
Internal Link Dist (m)	400.7			360.5			143.2			385.3		
Turn Bay Length (m)	50.0		92.0	50.0		160.0	140.0			50.0		92.0
Base Capacity (vph)	110	1310	691	168	1625	776	202	1070	636	195	1118	584
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	1.48	0.52	1.48	0.71	0.06	1.76	0.82	0.42	0.67	1.38	0.10

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.76

Intersection Signal Delay: 157.4

Intersection LOS: F

Intersection Capacity Utilization 144.8%

ICU Level of Service H

Analysis Period (min) 15

* User Entered Value

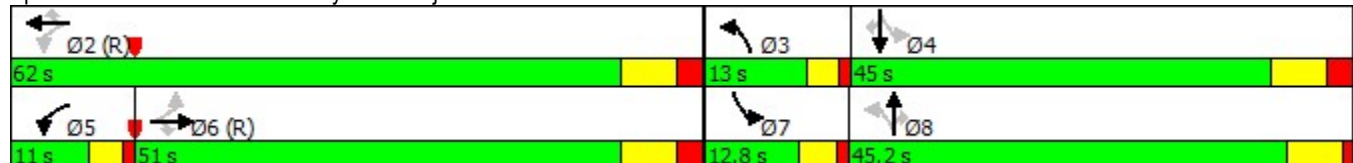
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 31: Kennedy Rd & Major Mackenzie Dr E



Lanes, Volumes, Timings
98: Kennedy Rd & GO Crossing

2041 HOV Future Kennedy PM

Kennedy Road EA

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑			↑↑↑			↑			↑	
Traffic Volume (vph)	0	1847	0	0	1654	0	0	0	0	0	2	0
Future Volume (vph)	0	1847	0	0	1654	0	0	0	0	0	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	5142	0	0	5142	0	0	1883	0	0	1883	0
Flt Permitted												
Satd. Flow (perm)	0	5142	0	0	5142	0	0	1883	0	0	1883	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			48			48	
Link Distance (m)		281.0			277.1			312.4			346.6	
Travel Time (s)		16.9			16.6			23.4			26.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2008	0	0	1798	0	0	0	0	0	2	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2008	0	0	1798	0	0	0	0	0	2	0
Turn Type		NA			NA						NA	
Protected Phases		2			6			4			8	
Permitted Phases												
Detector Phase		2			6			4			8	
Switch Phase												
Minimum Initial (s)		833.0			833.0			158.0			158.0	
Minimum Split (s)		893.0			893.0			180.0			180.0	
Total Split (s)		900.0			900.0			180.0			180.0	
Total Split (%)		83.3%			83.3%			16.7%			16.7%	
Yellow Time (s)		10.0			10.0			2.0			2.0	
All-Red Time (s)		50.0			50.0			20.0			20.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		60.0			60.0			22.0			22.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max			C-Max			Max			Max	
Act Effct Green (s)		840.0			840.0						158.0	
Actuated g/C Ratio		0.78			0.78						0.15	
v/c Ratio		0.50			0.45						0.01	
Control Delay		44.3			41.4						394.5	
Queue Delay		48.0			47.6						0.0	
Total Delay		92.2			89.0						394.5	
LOS		F			F						F	
Approach Delay		92.2			89.0						394.5	
Approach LOS		F			F						F	
Queue Length 50th (m)		596.1			500.3						3.9	
Queue Length 95th (m)		558.5			473.1						9.7	
Internal Link Dist (m)		257.0			253.1			288.4			322.6	
Turn Bay Length (m)												
Base Capacity (vph)		3999			3999						275	

Lanes, Volumes, Timings
98: Kennedy Rd & GO Crossing

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Starvation Cap Reductn		2212			2362						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		1.12			1.10						0.01	

Intersection Summary

Area Type: Other

Cycle Length: 1080

Actuated Cycle Length: 1080

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of 1st Green

Natural Cycle: 1075

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 90.9

Intersection LOS: F

Intersection Capacity Utilization 894.2%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 98: Kennedy Rd & GO Crossing



Lanes, Volumes, Timings
99: Kennedy Rd & GO Crossing

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	0	2	0	0	0	0	0	3059	0	0	1936	0
Future Volume (vph)	0	2	0	0	0	0	0	3059	0	0	1936	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1883	0	0	1883	0	0	5142	0	0	5142	0
Flt Permitted												
Satd. Flow (perm)	0	1883	0	0	1883	0	0	5142	0	0	5142	0
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)												
Link Speed (k/h)	48			48			60			60		
Link Distance (m)	272.7			263.9			99.3			294.7		
Travel Time (s)	20.5			19.8			6.0			17.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2	0	0	0	0	0	3325	0	0	2104	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	0	0	0	3325	0	0	2104	0
Turn Type	NA						NA			NA		
Protected Phases	4			8			2			6		
Permitted Phases												
Detector Phase	4			8			2			6		
Switch Phase												
Minimum Initial (s)	158.0			158.0			833.0			833.0		
Minimum Split (s)	180.0			180.0			893.0			893.0		
Total Split (s)	180.0			180.0			900.0			900.0		
Total Split (%)	16.7%			16.7%			83.3%			83.3%		
Yellow Time (s)	2.0			2.0			10.0			10.0		
All-Red Time (s)	20.0			20.0			50.0			50.0		
Lost Time Adjust (s)	0.0			0.0			0.0			0.0		
Total Lost Time (s)	22.0			22.0			60.0			60.0		
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max			Max			C-Max			C-Max		
Act Effct Green (s)	158.0						840.0			840.0		
Actuated g/C Ratio	0.15						0.78			0.78		
v/c Ratio	0.01						0.83			0.53		
Control Delay	394.5						77.9			45.7		
Queue Delay	0.0						46.5			47.8		
Total Delay	394.5						124.4			93.5		
LOS	F						F			F		
Approach Delay	394.5						124.4			93.5		
Approach LOS	F						F			F		
Queue Length 50th (m)	3.9						1702.7			644.5		
Queue Length 95th (m)	9.7						1469.0			601.0		
Internal Link Dist (m)	248.7			239.9			75.3			270.7		
Turn Bay Length (m)												
Base Capacity (vph)	275						3999			3999		

Lanes, Volumes, Timings
99: Kennedy Rd & GO Crossing

2041 HOV Future Kennedy PM
Kennedy Road EA

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0						1347			2130	
Spillback Cap Reductn		0						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.01						1.25			1.13	

Intersection Summary

Area Type: Other

Cycle Length: 1080

Actuated Cycle Length: 1080

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of 1st Green

Natural Cycle: 1075

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 112.5

Intersection LOS: F

Intersection Capacity Utilization 894.2%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 99: Kennedy Rd & GO Crossing

 Ø2 (R)	 Ø4
900 s	180 s
 Ø6 (R)	 Ø8
900 s	180 s

Appendix B

Multimodal Level of Service Analysis

*Class Environmental Assessment for Kennedy
Road from Steeles Avenue to Major Mackenzie
Drive*



Intersection		Gorvette Road							
		NORTH		SOUTH		EAST		WEST	
		Selection	Point	Selection	Point	Selection	Point	Selection	Point
Pedestrian	Lanes	6	60	5	75			3	105
	Median	Yes		Yes				Yes	
	Island Refuge	No	-4	No	-4			No	-4
	Conflicting Left Turn	Permissive	-8	No left turn/ prohibited	0			Protected/Permissive	-8
	Conflicting Right Turn	No Right turn	0	Permissive or yield control	-5			Permissive or yield control	-5
	RTOR	RTOR prohibited	0	RTOR prohibited	0			RTOR allowed	-3
	Ped Leading Interval	No	-2	No	-2			No	-2
	Corner Radius (largest)	>10m to 15m	-6	>10m to 15m	-6			>10m to 15m	-6
	Crosswalk Type	Zebra stripe hi-vis markings	-4	Zebra stripe hi-vis markings	-4			Zebra stripe hi-vis markings	-4
	LEVEL OF SERVICE	E	36	D	54			C	73
D									

Intersection		Denison Street							
		NORTH		SOUTH		EAST		WEST	
		Selection	Point	Selection	Point	Selection	Point	Selection	Point
Pedestrian	Lanes	6	60	6	60	5	75	5	75
	Median	Yes		Yes		Yes		Yes	
	Island Refuge	No	-4	No	-4	No	-4	No	-4
	Conflicting Left Turn	Protected/Permissive	-8	Protected/Permissive	-8	Protected/Permissive	-8	Protected/Permissive	-8
	Conflicting Right Turn	Permissive or yield control	-5	Permissive or yield control	-5	Permissive or yield control	-5	Permissive or yield control	-5
	RTOR	RTOR allowed	-3	RTOR allowed	-3	RTOR allowed	-3	RTOR allowed	-3
	Ped Leading Interval	No	-2	No	-2	No	-2	No	-2
	Corner Radius (largest)	>15m to 25m	-8	>10m to 15m	-6	>10m to 15m	-6	>15m to 25m	-8
	Crosswalk Type	Zebra stripe hi-vis markings	-4	Zebra stripe hi-vis markings	-4	Zebra stripe hi-vis markings	-4	Zebra stripe hi-vis markings	-4
	LEVEL OF SERVICE	F	26	F	28	E	43	E	41
E									

Intersection		Highglen Avenue							
		NORTH		SOUTH		EAST		WEST	
		Selection	Point	Selection	Point	Selection	Point	Selection	Point
Pedestrian	Lanes	6		5		3		3	
	Median	Yes	60	Yes	75	No	105	No	105
	Island Refuge	No	-4	No	-4	No	-4	No	-4
	Conflicting Left Turn	Permissive	-8	Protected/Permissive	-8	Protected/Permissive	-8	Protected/Permissive	-5
	Conflicting Right Turn	Protected/Permissive	-5	Permissive or yield control	-5	Permissive or yield control	-5	Permissive or yield control	-5
	RTOR	RTOR allowed	-3	RTOR allowed	-3	RTOR allowed	-3	RTOR allowed	-3
	Ped Leading Interval	No	-2	No	-2	No	-2	No	-2
	Corner Radius (largest)	>15m to 25m	-8	>15m to 25m	-8	>15m to 25m	-8	>15m to 25m	-8
	Crosswalk Type	Zebra stripe hi-vis markings	-4	Zebra stripe hi-vis markings	-4	Zebra stripe hi-vis markings	-4	Zebra stripe hi-vis markings	-4
	LEVEL OF SERVICE	F	26	E	41	C	71	C	74
D									

Intersection		Lee Avenue							
		NORTH		SOUTH		EAST		WEST	
		Selection	Point	Selection	Point	Selection	Point	Selection	Point
Pedestrian	Lanes	6		5		3		3	
	Median	Yes	60	Yes	75	No	105	No	105
	Island Refuge	No	-4	No	-4	No	-4	No	-4
	Conflicting Left Turn	Permissive	-8	Permissive	-8	Permissive	-8	Permissive	-8
	Conflicting Right Turn	Permissive or yield control	-5	Permissive or yield control	-5	Permissive or yield control	-5	Permissive or yield control	-5
	RTOR	RTOR allowed	-3	RTOR allowed	-3	RTOR allowed	-3	RTOR allowed	-3
	Ped Leading Interval	No	-2	No	-2	No	-2	No	-2
	Corner Radius (largest)	>10m to 15m	-6	>10m to 15m	-6	>5m to 10m	-5	>10m to 15m	-6
	Crosswalk Type	Zebra stripe hi-vis markings	-4	Zebra stripe hi-vis markings	-4	Zebra stripe hi-vis markings	-4	Zebra stripe hi-vis markings	-4
	LEVEL OF SERVICE	F	28	E	43	C	74	C	73
D									

Intersection		Hwy 407 Off-ramp (South exit)							
		NORTH		SOUTH		EAST		WEST	
		Selection	Point	Selection	Point	Selection	Point	Selection	Point
Pedestrian	Lanes	5		5				3	
	Median	Yes	75	Yes	75			Yes	105
	Island Refuge	No	-4	No	-4			No	-4
	Conflicting Left Turn	Permissive	-8	No left turn/ prohibited	0			Permissive	-8
	Conflicting Right Turn	No Right turn	0	Permissive or yield control	-5			Permissive or yield control	-5
	RTOR	RTOR allowed	-3	RTOR prohibited	0			RTOR allowed	-3
	Ped Leading Interval	No	-2	No	-2			No	-2
	Corner Radius (largest)	>15m to 25m	-8	>15m to 25m	-8			>15m to 25m	-8
	Crosswalk Type	No marking	-10	Standard transverse marking:	-7			Standard transverse markings	-7
	LEVEL OF SERVICE	E	40	D	49			C	68
D									

Intersection		Hwy 407 Off-ramp (North Exit)							
		NORTH		SOUTH		EAST		WEST	
		Selection	Point	Selection	Point	Selection	Point	Selection	Point
Pedestrian	Lanes	5	75	6	60	3	105		
	Median	Yes		Yes		No			
	Island Refuge	No	-4	No	-4	No	-4		
	Conflicting Left Turn	No left turn/ prohibited	0	Protected/Permissive	-8	No left turn/ prohibited	0		
	Conflicting Right Turn	Permissive or yield control	-5	Permissive or yield control	-5	No Right turn	0		
	RTOR	RTOR prohibited	0	RTOR prohibited	0	RTOR allowed	-3		
	Ped Leading Interval	No	-2	No	-2	No	-2		
	Corner Radius (largest)	>15m to 25m	-8	>3m to 5m	-4	>15m to 25m	-8		
	Crosswalk Type	Standard transverse markings	-7	No marking	-10	Standard transverse markings	-7		
	LEVEL OF SERVICE	D	49	F	27	B	81		
D									

Intersection									
Pedestrian	Lanes	6	60	6	60	3	105	3	105
	Median	Yes		Yes		No		No	
	Island Refuge	No	-4	No	-4	No	-4	No	-4
	Conflicting Left Turn	Permissive	-8	Permissive	-8	Permissive	-8	Permissive	-8
	Conflicting Right Turn	Permissive or yield control	-5	Permissive or yield control	-5	Permissive or yield control	-5	Permissive or yield control	-5
	RTOR	RTOR allowed	-3	RTOR allowed	-3	RTOR allowed	-3	RTOR allowed	-3
	Ped Leading Interval	No	-2	No	-2	No	-2	No	-2
	Corner Radius (largest)	>10m to 15m	-6	>10m to 15m	-6	>10m to 15m	-6	>10m to 15m	-6
	Crosswalk Type	Standard transverse markings	-7	Standard transverse markings	-7	Standard transverse markings	-7	Standard transverse markings	-7
	LEVEL OF SERVICE	F	25	F	25	C	70	C	70

Intersection		Birchview Lane							
						WEST			
Pedestrian	Lanes	4	90	5	75				
	Median	Yes		Yes					
	Island Refuge	Yes	0	No	-4				
	Conflicting Left Turn	Permissive	-8	No left turn/ prohibited	0				
	Conflicting Right Turn	No Right turn	0	Permissive or yield control	-5				
	RTOR	RTOR allowed	-3	RTOR prohibited	0				
	Ped Leading Interval	No	-2	No	-2				
	Corner Radius (largest)	>10m to 15m	-6	>10m to 15m	-6				
	Crosswalk Type	Zebra stripe hi-vis markings	-4	Zebra stripe hi-vis markings	-4				
	LEVEL OF SERVICE	C	67	D	54	B			

C

Intersection		Major Mackenzie Drive East							
		NORTH		SOUTH		EAST		WEST	
		Selection	Point	Selection	Point	Selection	Point	Selection	Point
Pedestrian	Lanes	6		6		6		6	
	Median	Yes	60	Yes	60	Yes	60	Yes	60
	Island Refuge	No	-4	No	-4	No	-4	No	-4
	Conflicting Left Turn	Protected/Permissive	-8	Protected/Permissive	-8	Protected/Permissive	-8	Protected/Permissive	-8
	Conflicting Right Turn	Permissive or yield control	-5	Permissive or yield control	-5	Permissive or yield control	-5	Permissive or yield control	-5
	RTOR	RTOR allowed	-3	RTOR allowed	-3	RTOR allowed	-3	RTOR allowed	-3
	Ped Leading Interval	No	-2	No	-2	No	-2	No	-2
	Corner Radius (largest)	>15m to 25m	-8	>15m to 25m	-8	>15m to 25m	-8	>15m to 25m	-8
	Crosswalk Type	Standard transverse markings	-7	Standard transverse markings	-7	Standard transverse markings	-7	Standard transverse markings	-7
	LEVEL OF SERVICE	F	23	F	23	F	23	F	23
F									

Segment	From	Steeles Avenue East	Clayton Dr	GO Rail Crossing	Gorvette Road	Denison Street	Highglen Avenue	Lee Avenue	14th Avenue	Duffield Drive	Hwy 407 Off-ramp (South exit)
	To	Clayton Dr	GO Rail Crossing	Gorvette Road	Denison Street	Highglen Avenue	Lee Avenue	14th Avenue	Duffield Drive	Hwy 407 Off-ramp (South exit)	Hwy 407 Off-ramp (North exit)
Segment PLOS		Segment 1	Segment 2	Segment 3	Segment 4	Segment 5	Segment 6	Segment 7	Segment 8	Segment 9	Segment 10
East side	Sidewalk Width (m)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	Boulevard Width (m)	3+	6+	6.5+	2.75+	2.2+	0.6	0.6	0.3	1.5+	0
	AADT*	34840	34840	34840	34840	41580	41580	41580	41580	41580	41580
	Physical barrier (on-street parking, guard rail ...)	No	No	No	Yes	No	No	No	No	No	No
	Operating Speed (km/h)	60	60	60	60	60	60	60	60	60	60
	LOS	E	E	E	D	E	E	E	F	E	F
West side	Sidewalk Width (m)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	Boulevard Width (m)	3+	2.6+	6.5+	2.75+	2.4+	1.5+	2+	0	1.5+	0
	AADT*	34840	34840	34840	34840	41580	41580	41580	41580	41580	41580
	Physical barrier (on-street parking, guard rail ...)	No	No	No	No	No	No	No	No	No	No
	Operating Speed (km/h)	60	60	60	60	60	60	60	60	60	60
	LOS	E	E	E	E	E	E	E	F	E	F

Segment	From	Hwy 407 Off-ramp (North exit)	YMCA Boulevard/Helen Avenue	Unionville Gate/ South Unionville Avenue	Castan Avenue	Avoca Drive	Eton Street	Highway 7	Denby Court/Second Street North	Austin Drive	GO Rail Crossing
	To	YMCA Boulevard/Helen Avenue	Unionville Gate/ South Unionville Avenue	Castan Avenue	Avoca Drive	Eton Street	Highway 7	Denby Court/Second Street North	Austin Drive	GO Rail Crossing	Carlton Road
Segment PLOS		Segment 11	Segment 12	Segment 13	Segment 14	Segment 15	Segment 16	Segment 17	Segment 18	Segment 19	Segment 20
East side	Sidewalk Width (m)	1.5	1.5	1.5	1.5	1.5	1.8	1.5	1.5	1.5	1.5
	Boulevard Width (m)	1.2+	2.4	5.6	5.5	5.9	0	2.8	0	4.5+	4+
	AADT*	41580	41580	41580	41580	41580	41580	28270	28270	28270	28270
	Physical barrier (on-street parking, guard rail ...)	No	No	Yes	No	Yes	No	No	No	No	Yes
	Operating Speed (km/h)	60	60	60	60	60	60	60	60	60	60
	LOS	E	E	D	E	D	F	E	F	E	D
West side	Sidewalk Width (m)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.7	1.5	1.5
	Boulevard Width (m)	2.8+	1.8	3.7	5.5	4.2	2.2	3	0	1.5+	5+
	AADT*	41580	41580	41580	41580	41580	41580	28270	28270	28270	28270
	Physical barrier (on-street parking, guard rail ...)	No	Yes	No	No	Yes	Yes	No	No	No	Yes
	Operating Speed (km/h)	60	60	60	60	60	60	60	60	60	60
	LOS	E	D	E	E	D	D	E	F	E	D

Segment	From	Carlton Road	The Bridle Trail	Birchview Lane	16th Avenue	Nipigon Avenue	Beckett Avenue	Wilfred Murison Avenue	Bur Oakes Avenue	Angus Glen Boulevard	Castlemore Avenue
	To	The Bridle Trail	Birchview Lane	16th Avenue	Nipigon Avenue	Beckett Avenue	Wilfred Murison Avenue	Bur Oakes Avenue	Angus Glen Boulevard	Castlemore Avenue	Major Mackenzie Drive East
Segment PLOS		Segment 21	Segment 22	Segment 23	Segment 24	Segment 25	Segment 26	Segment 27	Segment 28	Segment 29	Segment 30
East side	Sidewalk Width (m)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	Boulevard Width (m)	4.3+	3.3	2.5	1.1	1.1	1.1	1.4	1.8+	1.3+	4.5+
	AADT*	28270	28270	28270	22420	22420	22420	22420	22420	22420	22420
	Physical barrier (on-street parking, guard rail ...)	Yes	Yes	No	No	No	No	No	No	Yes	Yes
	Operating Speed (km/h)	60	60	60	60	60	60	70	70	70	70
	LOS	D	D	E	E	E	E	E	E	D	D
West side	Sidewalk Width (m)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.2	1.5	1.5
	Boulevard Width (m)	5.6+	3.3	6.4	0.9	0.8	0.4	2.2	2.7	3+	3+
	AADT*	28270	28270	28270	22420	22420	22420	22420	22420	22420	22420
	Physical barrier (on-street parking, guard rail ...)	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes
	Operating Speed (km/h)	60	60	60	60	60	60	70	70	70	70
	LOS	D	D	D	E	E	E	E	E	D	D

*AADT provided by York Region

Intersection (Signalized)		Steeles Avenue			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	25m to 50m	None	>50m
	Turning Speed (based on curb radii)	=<25km/h	=<25km/h	=<25km/h	=<25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	F	D	C*	F
	Operating Speed	60 km/h	60 km/h	50 km/h	50 km/h
	Number of Lanes Crossed	2 or more	2 or more	2 or more	2 or more
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	F	F
Overall Approach LOS		F	E	E	F
LEVEL OF SERVICE (average)		F			

Intersection (Signalized)		Clayton Drive			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	>50m	None	None
	Turning Speed (based on curb radii)	> 25 km/h	=<25km/h	> 25 km/h	>25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	F	F	D*	D*
	Operating Speed	60 km/h	60 km/h	40 km/h	40 km/h
	Number of Lanes Crossed	2 or more	2 or more	1 lane	1 lane
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	B	B
Overall Approach LOS		F	F	C	C
LEVEL OF SERVICE (average)		D			

Intersection (Signalized)		Gorvette Road			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m			None
	Turning Speed (based on curb radii)	=<25km/h			=<25km/h
	Dual right-turn lanes?	No			No
	Right Turn LOS	F			C*
	Operating Speed		60 km/h		40 km/h
	Number of Lanes Crossed		2 or more		1 lane
	Two-stage, left-turn bike box?		No		No
	Dual left-turn lanes (share or exclusive)?		No		No
	Left Turn LOS		F		B
	Overall Approach LOS		F		C
LEVEL OF SERVICE (average)		E			

Intersection (Signalized)		Denison Street			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	>50m	None	None
	Turning Speed (based on curb radii)	>25km/h	=<25km/h	=<25km/h	>25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	F	F	C*	D*
	Operating Speed	60 km/h	60 km/h	50 km/h	50 km/h
	Number of Lanes Crossed	2 or more	2 or more	2 or more	2 or more
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	F	F
	Overall Approach LOS	F	F	E	E
LEVEL OF SERVICE (average)		E			

Intersection (Signalized)		Highglen Avenue			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	None	None	None
	Turning Speed (based on curb radii)	>25km/h	>25km/h	>25km/h	>25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	F	F	D*	D*
	Operating Speed	60 km/h	60 km/h	40 km/h	40 km/h
	Number of Lanes Crossed	2 or more	2 or more	1 lane	1 lane
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	B	B
	Overall Approach LOS	F	F	C	C
	LEVEL OF SERVICE (average)	D			

Intersection (Signalized)		Lee Avenue			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	None	None	None
	Turning Speed (based on curb radii)	>25km/h	>25km/h	=<25km/h	>25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	F	F	C*	D*
	Operating Speed	60 km/h	60 km/h	40 km/h	40 km/h
	Number of Lanes Crossed	2 or more	2 or more	1 lane	1 lane
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	B	B
	Overall Approach LOS	F	F	C	C
	LEVEL OF SERVICE (average)	D			

Intersection (Signalized)		14th Avenue			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	>50m	>50m	>50m
	Turning Speed (based on curb radii)	>25km/h	=<25km/h	>25km/h	>25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	F	F	F	F
	Operating Speed	60 km/h	60 km/h	50 km/h	60 km/h
	Number of Lanes Crossed	2 or more	2 or more	2 or more	2 or more
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	F	F
	Overall Approach LOS	F	F	F	F
LEVEL OF SERVICE (average)		F			

Intersection (Signalized)		Duffield Drive			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m			>50m
	Turning Speed (based on curb radii)	>25km/h			>25km/h
	Dual right-turn lanes?	No			No
	Right Turn LOS	F			F
	Operating Speed	60 km/h		40 km/h	
	Number of Lanes Crossed	2 or more		1 lane	
	Two-stage, left-turn bike box?	No		No	
	Dual left-turn lanes (share or exclusive)?	No		No	
	Left Turn LOS	F		B	
	Overall Approach LOS	F	F	D	
LEVEL OF SERVICE (average)		E			

Intersection (Signalized)		Hwy 407 Off-ramp (South exit)			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length				
	Turning Speed (based on curb radii)				
	Dual right-turn lanes?				
	Right Turn LOS				
	Operating Speed				
	Number of Lanes Crossed				
	Two-stage, left-turn bike box?				
	Dual left-turn lanes (share or exclusive)?				
	Left Turn LOS				
	Overall Approach LOS	F	F		
LEVEL OF SERVICE (average)		F			

Intersection (Signalized)		Hwy 407 Off-ramp (North Exit)			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length			>50m	
	Turning Speed (based on curb radii)			>25km/h	
	Dual right-turn lanes?			No	
	Right Turn LOS			F	
	Operating Speed			60 km/h	
	Number of Lanes Crossed			2 or more	
	Two-stage, left-turn bike box?			No	
	Dual left-turn lanes (share or exclusive)?			No	
	Left Turn LOS			F	
	Overall Approach LOS	F	F	F	
LEVEL OF SERVICE (average)		F			

Intersection (Signalized)		<i>YMCA Blvd/ Helen Ave</i>			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	None	None	None	None
	Turning Speed (based on curb radii)	>25km/h	>25km/h	>25km/h	>25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	D*	D*	D*	D*
	Operating Speed	60 km/h	60 km/h	50 km/h	50 km/h
	Number of Lanes Crossed	2 or more	2 or more	1 lane	2 or more
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	D	F
	Overall Approach LOS	E	E	D	E
	LEVEL OF SERVICE (average)	E			

Intersection (Signalized)		<i>Unionville Gate/South Unionville Avenue</i>			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	>50m		
	Turning Speed (based on curb radii)	>25km/h	>25km/h		
	Dual right-turn lanes?	No	No		
	Right Turn LOS	F	F	A	A
	Operating Speed	60 km/h	60 km/h	40 km/h	40 km/h
	Number of Lanes Crossed	2 or more	2 or more	2 or more	2 or more
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	D	D
	Overall Approach LOS	E	E	C	C
	LEVEL OF SERVICE (average)	D			

Intersection (Signalized)		Avoca Drive			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	None	None	None	None
	Turning Speed (based on curb radii)	>25km/h	=<25km/h	>25km/h	>25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	D	C	D*	D*
	Operating Speed	60 km/h	60 km/h	40 km/h	40 km/h
	Number of Lanes Crossed	2 or more	2 or more	1 lane	1 lane
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	B	B
	Overall Approach LOS	E	E	C	C
	LEVEL OF SERVICE (average)	D			

Intersection (Signalized)		Highway 7			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	>50m	>50m	>50m
	Turning Speed (based on curb radii)	=<25km/h	=<25km/h	=<25km/h	=<25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	F	F	F	F
	Operating Speed	60 km/h	60 km/h	70 km/h	70 km/h
	Number of Lanes Crossed	2 or more	2 or more	1 lane	1 lane
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	F	F
	Overall Approach LOS	F	F	F	F
	LEVEL OF SERVICE (average)	F			

Intersection (Signalized)		Austin Drive			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length		>50m	>50m	
	Turning Speed (based on curb radii)		>25km/h	>25km/h	
	Dual right-turn lanes?		No	No	
	Right Turn LOS		F	F	
	Operating Speed	60 km/h		40 km/h	
	Number of Lanes Crossed	2 or more		1 lane	
	Two-stage, left-turn bike box?	No		No	
	Dual left-turn lanes (share or exclusive)?	No		No	
	Left Turn LOS	F		B	
	Overall Approach LOS	F	F	D	
	LEVEL OF SERVICE (average)	E			

Intersection (Signalized)		Carlton Road			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	>50m	>50m	>50m
	Turning Speed (based on curb radii)	=<25km/h	=<25km/h	=<25km/h	=<25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	F	F	F	F
	Operating Speed	60 km/h	60 km/h	50 km/h	50 km/h
	Number of Lanes Crossed	2 or more	2 or more	2 or more	2 or more
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	F	F
	Overall Approach LOS	F	F	F	F
	LEVEL OF SERVICE (average)	F			

Intersection (Signalized)		<i>The Bridle Trail</i>			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	>50m	None	None
	Turning Speed (based on curb radii)	=<25km/h	=<25km/h	=<25km/h	=<25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	F	F	C*	C*
	Operating Speed	60 km/h	60 km/h	40 km/h	40 km/h
	Number of Lanes Crossed	2 or more	2 or more	1 lane	1 lane
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	B	B
	Overall Approach LOS	F	F	C	C
LEVEL OF SERVICE (average)		D			

Intersection (Signalized)		Birchview Lane			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	None			None
	Turning Speed (based on curb radii)	=<25km/h			=<25km/h
	Dual right-turn lanes?	No			No
	Right Turn LOS	C*			C*
	Operating Speed			60 km/h	40 km/h
	Number of Lanes Crossed			2 or more	None
	Two-stage, left-turn bike box?			No	No
	Dual left-turn lanes (share or exclusive)?			No	No
	Left Turn LOS			F	B
	Overall Approach LOS	C	F		
LEVEL OF SERVICE (average)		D			

Intersection (Signalized)		16th Avenue			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	>50m	>50m	>50m
	Turning Speed (based on curb radii)	>25km/h	>25km/h	>25km/h	>25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	F	F	C*	F
	Operating Speed	60 km/h	60 km/h	60 km/h	60 km/h
	Number of Lanes Crossed	2 or more	2 or more	1 lane	2 or more
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	F	F
	Overall Approach LOS	F	F	E	F
	LEVEL OF SERVICE (average)	F			

Intersection (Signalized)		Beckett Avenue			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length		None	None	
	Turning Speed (based on curb radii)		=<25km/h	=<25km/h	
	Dual right-turn lanes?		No	No	
	Right Turn LOS		C*	C*	
	Operating Speed	60 km/h		40 km/h	
	Number of Lanes Crossed	2 or more		1 lane	
	Two-stage, left-turn bike box?	No		No	
	Dual left-turn lanes (share or exclusive)?	No		No	
	Left Turn LOS	F		B	
	Overall Approach LOS	F	C	C	
	LEVEL OF SERVICE (average)	D			

Intersection (Signalized)		Bur Oak Avenue			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length		>50m	None	
	Turning Speed (based on curb radii)		=<25km/h	=<25km/h	
	Dual right-turn lanes?		No	No	
	Right Turn LOS		F	C*	
	Operating Speed	60 km/h		40 km/h	
	Number of Lanes Crossed	2 or more		1 lane	
	Two-stage, left-turn bike box?	No		No	
	Dual left-turn lanes (share or exclusive)?	No		No	
	Left Turn LOS	F		B	
	Overall Approach LOS	F	F	C	
LEVEL OF SERVICE (average)		E			

Intersection (Signalized)		<i>The Fairways/ Castlemore Avenue</i>			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	>50m	None	None
	Turning Speed (based on curb radii)	=<25km/h	=<25km/h	=<25km/h	=<25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	F	F	C*	C*
	Operating Speed	70 km/h	70 km/h	40 km/h	40 km/h
	Number of Lanes Crossed	2 or more	2 or more	1 lane	1 lane
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	B	B
	Overall Approach LOS	F	F	C	C
LEVEL OF SERVICE (average)		D			

Intersection (Signalized)		Major Mackenzie Drive E			
		NORTH	SOUTH	EAST	WEST
BLOS	Right turn lane length	>50m	>50m	>50m	>50m
	Turning Speed (based on curb radii)	>25km/h	>25km/h	>25km/h	>25km/h
	Dual right-turn lanes?	No	No	No	No
	Right Turn LOS	F	F	F	F
	Operating Speed	70 km/h	70 km/h	70 km/h	70 km/h
	Number of Lanes Crossed	2 or more	2 or more	2 or more	2 or more
	Two-stage, left-turn bike box?	No	No	No	No
	Dual left-turn lanes (share or exclusive)?	No	No	No	No
	Left Turn LOS	F	F	F	F
	Overall Approach LOS	F	F	F	F
LEVEL OF SERVICE (average)		F			

From	Steeles Avenue East	Clayton Dr	GO Rail Crossing	Corvette Road	Denison Street	Highglan Avenue	Lee Avenue	14th Avenue	Duffield Drive	Hwy 407 Off-ramp (South exit)
To	Clayton Dr	GO Rail Crossing	Corvette Road	Denison Street	Highglan Avenue	Lee Avenue	14th Avenue	Duffield Drive	Hwy 407 Off-ramp (South exit)	Hwy 407 Off-ramp (North exit)
Segment BLOS	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5	Segment 6	Segment 7	Segment 8	Segment 9	Segment 10
Bikeway Type*	4	4	4	4	4	4	4	4	4	4
No. Travel Lanes**	4	4	4	5	4	5	5	5	5	6
Bike Lane width (if applicable)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Operating Speed (kph)	60	60	60	60	60	60	60	60	60	60
Bike Lane Blockage (if applicable)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BLOS	F	F	F	F	F	F	F	F	F	F

From	Hwy 407 Off-ramp (North exit)	YMCA Boulevard/Helen Avenue	Unionville Gate/ South Unionville Avenue	Castan Avenue	Avoca Drive	Eton Street	Highway 7	Denby Court/Second Street North	Austin Drive	GO Rail Crossing
To	YMCA Boulevard/Helen Avenue	Unionville Gate/ South Unionville Avenue	Castan Avenue	Avoca Drive	Eton Street	Highway 7	Denby Court/Second Street North	Austin Drive	GO Rail Crossing	Carlton Road
Segment BLOS	Segment 11	Segment 12	Segment 13	Segment 14	Segment 15	Segment 16	Segment 17	Segment 18	Segment 19	Segment 20
Bikeway Type*	4	4	4	4	4	4	4	4	4	4
No. Travel Lanes**	6	5	5	5	5	5	5	4	5	4
Bike Lane width (if applicable)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Operating Speed (kph)	60	60	60	60	60	60	60	60	60	60
Bike Lane Blockage (if applicable)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BLOS	F	F	F	F	F	F	F	F	F	F

From	Carlton Road	The Bridle Trail	Birchview Lane	16th Avenue	Nipigon Avenue	Beckett Avenue	Wilfred Murison Avenue	Bur Oakes Avenue	Angus Glen Boulevard	Castlemore Avenue
To	The Bridle Trail	Birchview Lane	16th Avenue	Nipigon Avenue	Beckett Avenue	Wilfred Murison Avenue	Bur Oakes Avenue	Angus Glen Boulevard	Castlemore Avenue	Major Mackenzie Drive East
Segment BLOS	Segment 21	Segment 22	Segment 23	Segment 24	Segment 25	Segment 26	Segment 27	Segment 28	Segment 29	Segment 30
Bikeway Type*	4	4	4	4	4	4	4	4	4	4
No. Travel Lanes**	4	4	4	4	4	4	4	5	4	4
Bike Lane width (if applicable)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Operating Speed (kph)	60	60	60	60	60	60	70	70	70	70
Bike Lane Blockage (if applicable)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BLOS	F	F	F	F	F	F	F	F	F	F

Notes: Speed >=60 km/hr automatically receive an F for mixed-traffic cycling conditons. Must implement MUT/separated cycling facilities.

* Bike Facility Type

- 1 = Physically separated bikeway
- 2 = Bike Lanes not adjacent to parking
- 3 = Bike Lanes adjacent to parking
- 4 = Mixed Traffic

**For mixed traffic, report traffic lanes in both directions. All else report in the direction of travel.

Summary of Intersection Level of Service

FID	Shape *	OBJECTID	FACILITYID	MINORSTREET	INTS_PLOS	INTS_BLOS
0	Point ZM	21	2	Denison St.	E	E
1	Point ZM	19	3	Highglen Ave./ Ent. to Milliken Mills H.S.	D	D
2	Point ZM	22	460	Gorvette Rd.	D	E
3	Point ZM	14	548	Kennedy Rd. W/B Offramp	D	F
4	Point ZM	8	8	Carlton Rd.	E	F
5	Point ZM	9	7	Austin Drive	E	E
6	Point ZM	2	505	Castlemore Ave. / The Fairways	E	E
7	Point ZM	13	343	Helen Ave. / Unionville GO Station	E	E
8	Point ZM	10	408	Highway 7	F	F
9	Point ZM	18	723	Lee Ave./Community Centre Entrance	D	D
10	Point ZM	7	9	The Bridle Trail	D	D
11	Point ZM	15	346	Kennedy Rd Eastbound Offramp	D	E
12	Point ZM	12	13	Unionville Gate	E	D
13	Point ZM	6	728	Birchview Lane	D	D
14	Point ZM	16	341	Duffield Dr.	D	E
15	Point ZM	11	6	Avoca Drive	D	D
16	Point ZM	3	569	Bur Oak Ave.	E	E
17	Point ZM	1	11	Major Mackenzie Dr.	F	F
18	Point ZM	23	1	Clayton Dr.	E	D
19	Point ZM	5	10	16th Ave.	F	F
20	Point ZM	20	845	Milliken Mills HS Pedestrian Signal		
21	Point ZM	4	850	Beckett Ave.	D	D
22	Point ZM	17	4	14th Ave.	F	F
23	Point ZM	24		Steeles Ave.	F	F

Summary of Segment Level of Service

ID	FROM	TO	SEG_PLOS	SEG_BLOS
1	Steeles Avenue East	Clayton Dr	E	F
2	Clayton Dr	GO Rail Crossing	E	F
2	GO Rail Crossing	Gorvette Road	E	F
3	Gorvette Road	Denison Street	D	F
4	Denison Street	Highglen Avenue	E	F
5	Highglen Avenue	Lee Avenue	E	F
6	Lee Avenue	14th Avenue	E	F
7	14th Avenue	Duffield Drive	F	F
8	Duffield Drive	Hwy 407 Off-ramp (South exit)	E	F
9	Hwy 407 Off-ramp (South exit)	Hwy 407 Off-ramp (North exit)	F	F
10	Hwy 407 Off-ramp (North exit)	YMCA Boulevard/Helen Avenue	E	F
11	YMCA Boulevard/Helen Avenue	Unionville Gate/ South Unionville Avenue	E	F
12	Unionville Gate/ South Unionville Avenue	Castan Avenue	D	F
13	Castan Avenue	Avoca Drive	E	F
14	Avoca Drive	Eton Street	D	F
15	Eton Street	Highway 7	F	F
16	Highway 7	Denby Court/Second Street North	E	F
17	Denby Court/Second Street North	Austin Drive	F	F
18	Austin Drive	GO Rail Crossing	E	F
18	GO Rail Crossing	Carlton Road	D	F
19	Carlton Road	The Bridle Trail	D	F
20	The Bridle Trail	Birchview Lane	D	F
21	Birchview Lane	16th Avenue	E	F
22	16th Avenue	Nipigon Avenue	E	F
23	Nipigon Avenue	Beckett Avenue	E	F
24	Beckett Avenue	Wilfred Murison Avenue	E	F
25	Wilfred Murison Avenue	Bur Oakes Avenue	E	F
26	Bur Oakes Avenue	Angus Glen Boulevard	E	F
27	Angus Glen Boulevard	Castlemore Avenue	D	F
28	Castlemore Avenue	Major Mackenzie Drive East	D	F

York Region Speed Zones

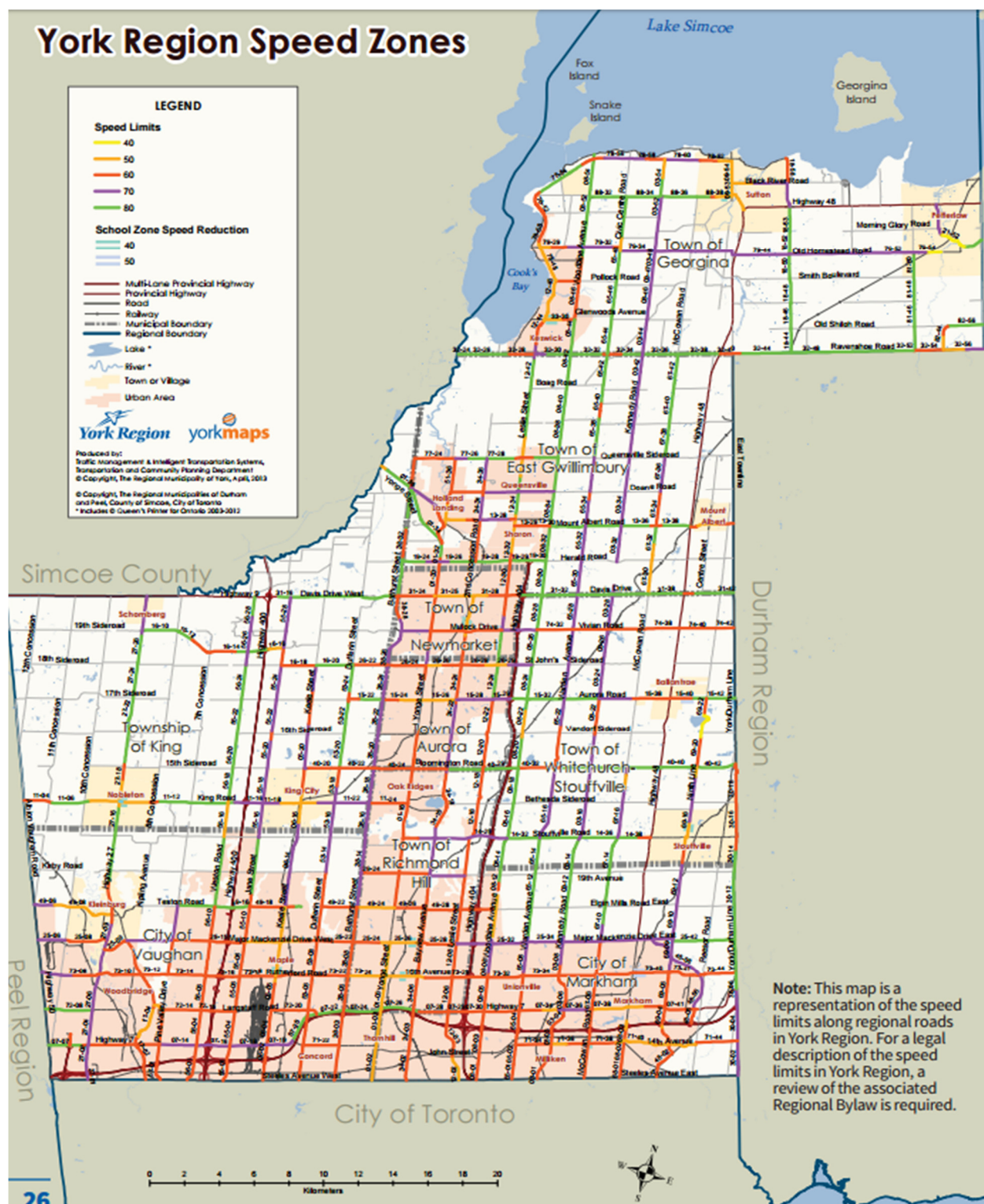


Figure 3

Number of Lanes on Regional Roads

