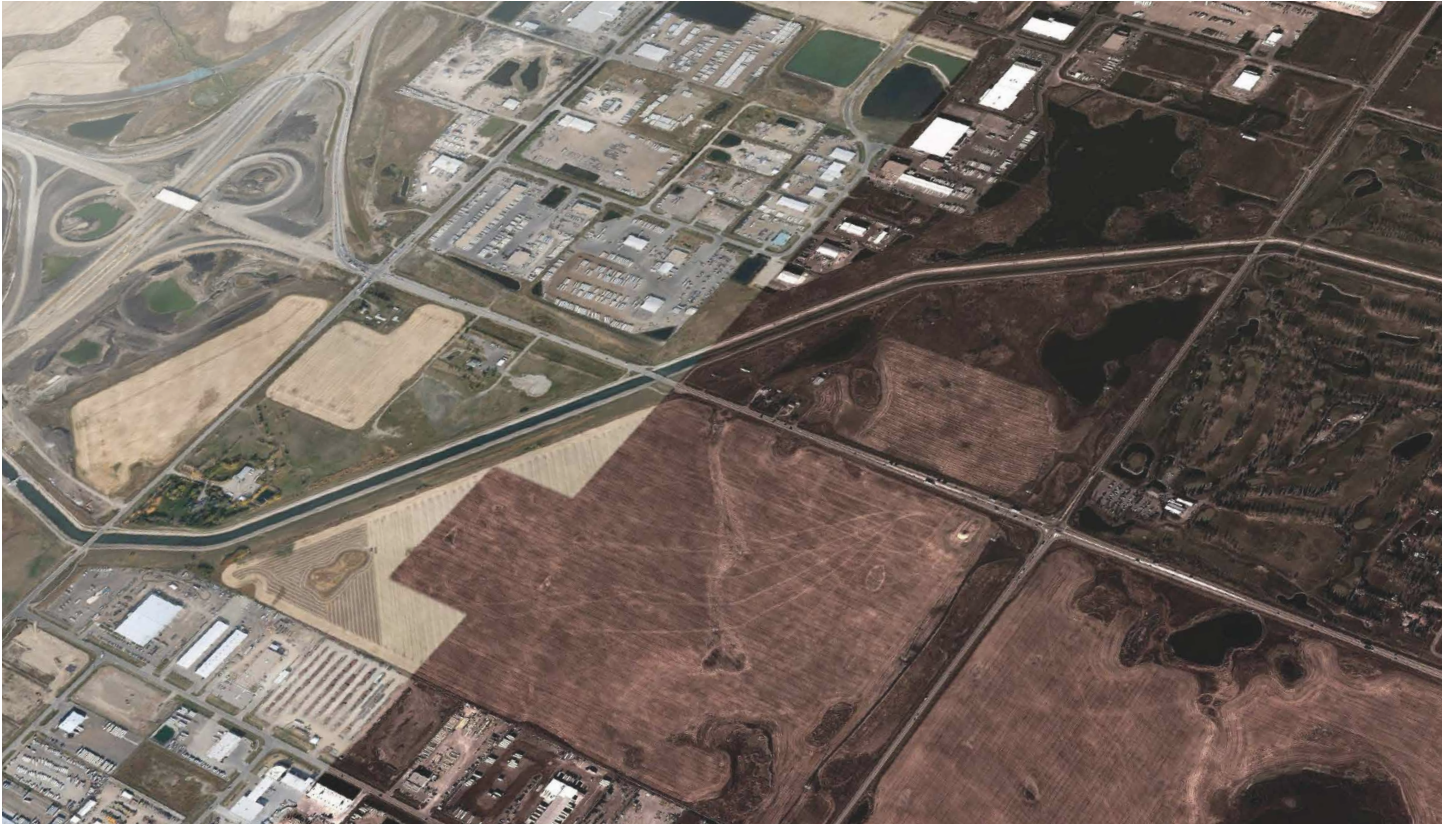


**Calgary**



# Glenmore Trail East Interchanges Functional Planning Study













Appendix L - Recommended Plan Traffic Analysis  
Results

**PARSONS**

**ISL** Engineering  
and Land Services













Glenmore Trail East FPS  
13: N Junction & 116 St

AM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations					↑↑			↑↑				
Traffic Volume (vph)	0	0	0	0	110	0	0	1140	0	0	0	0
Future Volume (vph)	0	0	0	0	110	0	0	1140	0	0	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Satd. Flow (prot)	0	0	0	0	3090	0	0	2734	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	3090	0	0	2734	0	0	0	0
Right Turn on Red			Yes	Yes		Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		54.8			92.0			84.1			126.8	
Travel Time (s)		3.3			5.5			5.0			7.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	10%	10%	10%	15%	10%	10%	30%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	117	0	0	1213	0	0	0	0
Turn Type					NA			NA				
Protected Phases					1			2				
Permitted Phases												
Detector Phase					1			2				
Switch Phase												
Minimum Initial (s)					20.0			20.0				
Minimum Split (s)					33.5			37.5				
Total Split (s)					42.0			68.0				
Total Split (%)					38.2%			61.8%				
Maximum Green (s)					32.5			58.5				
Yellow Time (s)					3.5			3.5				
All-Red Time (s)					6.0			6.0				
Lost Time Adjust (s)					0.0			0.0				
Total Lost Time (s)					9.5			9.5				
Lead/Lag					Lead			Lag				
Lead-Lag Optimize?					Yes			Yes				
Vehicle Extension (s)					3.0			3.0				
Minimum Gap (s)					3.0			3.0				
Time Before Reduce (s)					0.0			0.0				
Time To Reduce (s)					0.0			0.0				
Recall Mode					None			Max				
Walk Time (s)												

Glenmore Trail East FPS  
13: N Junction & 116 St

AM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)					20.1			58.5				
Actuated g/C Ratio					0.21			0.60				
v/c Ratio					0.18			0.74				
Control Delay					32.9			10.7				
Queue Delay					0.0			0.0				
Total Delay					32.9			10.7				
LOS					C			B				
Approach Delay					32.9			10.7				
Approach LOS					C			B				
Queue Length 50th (m)					9.6			39.5				
Queue Length 95th (m)					17.2			44.3				
Internal Link Dist (m)	30.8				68.0			60.1			102.8	
Turn Bay Length (m)												
Base Capacity (vph)					1029			1638				
Starvation Cap Reductn					0			0				
Spillback Cap Reductn					0			0				
Storage Cap Reductn					0			0				
Reduced v/c Ratio					0.11			0.74				

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 97.6

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 12.7

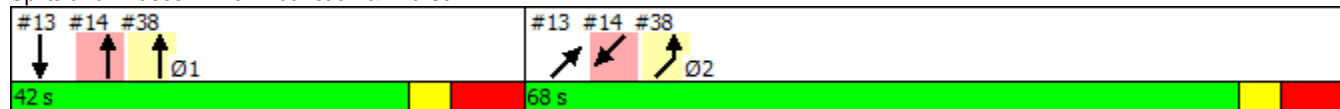
Intersection LOS: B

Intersection Capacity Utilization 64.9%

ICU Level of Service C













Analysis Period (min) 15

Splits and Phases: 13: N Junction & 116 St















Glenmore Trail East FPS  
14: 116 St & S Junction

AM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑	
Traffic Volume (vph)	0	340	0	0	0	0	0	0	0	0	200	0
Future Volume (vph)	0	340	0	0	0	0	0	0	0	0	200	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Satd. Flow (prot)	0	4441	0	0	0	0	0	0	0	0	3090	0
Flt Permitted												
Satd. Flow (perm)	0	4441	0	0	0	0	0	0	0	0	3090	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		90.4			69.3			110.6			104.8	
Travel Time (s)		5.4			4.2			6.6			6.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	15%	10%	10%	10%	10%	10%	10%	10%	10%	15%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	362	0	0	0	0	0	0	0	0	213	0
Turn Type		NA									NA	
Protected Phases		1									2	
Permitted Phases												
Detector Phase		1									2	
Switch Phase												
Minimum Initial (s)		20.0									20.0	
Minimum Split (s)		33.5									37.5	
Total Split (s)		42.0									68.0	
Total Split (%)		38.2%									61.8%	
Maximum Green (s)		32.5									58.5	
Yellow Time (s)		3.5									3.5	
All-Red Time (s)		6.0									6.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		9.5									9.5	
Lead/Lag		Lead									Lag	
Lead-Lag Optimize?		Yes									Yes	
Vehicle Extension (s)		3.0									3.0	
Minimum Gap (s)		3.0									3.0	
Time Before Reduce (s)		0.0									0.0	
Time To Reduce (s)		0.0									0.0	
Recall Mode		None									Max	
Walk Time (s)												

Glenmore Trail East FPS  
14: 116 St & S Junction

AM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	20.1										58.5	
Actuated g/C Ratio	0.21										0.60	
v/c Ratio	0.40										0.12	
Control Delay	35.0										10.9	
Queue Delay	0.0										0.0	
Total Delay	35.0										10.9	
LOS	C										B	
Approach Delay	35.0										10.9	
Approach LOS	C										B	
Queue Length 50th (m)	21.7										14.8	
Queue Length 95th (m)	30.9										23.3	
Internal Link Dist (m)	66.4		45.3				86.6				80.8	
Turn Bay Length (m)												
Base Capacity (vph)	1478										1852	
Starvation Cap Reductn	0										0	
Spillback Cap Reductn	0										0	
Storage Cap Reductn	0										0	
Reduced v/c Ratio	0.24										0.12	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 97.6

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 26.1

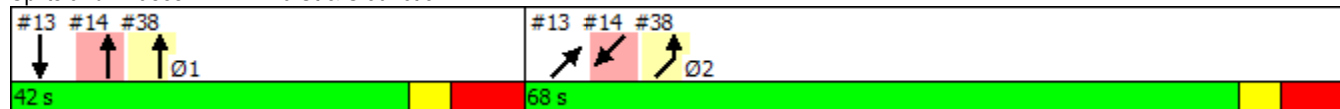
Intersection LOS: C

Intersection Capacity Utilization 43.7%

ICU Level of Service A









Analysis Period (min) 15

Splits and Phases: 14: 116 St & S Junction



Glenmore Trail East FPS  
38: S Juntion Off Ramp & 116 St

AM Peak  
09/13/2017

						
Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	0	340	0	0	1100	0
Future Volume (vph)	0	340	0	0	1100	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	2	0
Taper Length (m)	25.0				25.0	
Satd. Flow (prot)	0	4441	0	0	2652	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	4441	0	0	2652	0
Right Turn on Red				Yes	Yes	Yes
Satd. Flow (RTOR)					427	
Link Speed (k/h)		60	60		60	
Link Distance (m)		69.3	120.0		80.2	
Travel Time (s)		4.2	7.2		4.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	15%	10%	10%	30%	30%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	362	0	0	1170	0
Turn Type		NA			Prot	
Protected Phases		1			2	
Permitted Phases						
Detector Phase		1			2	
Switch Phase						
Minimum Initial (s)		20.0			20.0	
Minimum Split (s)		33.5			37.5	
Total Split (s)		42.0			68.0	
Total Split (%)		38.2%			61.8%	
Maximum Green (s)		32.5			58.5	
Yellow Time (s)		3.5			3.5	
All-Red Time (s)		6.0			6.0	
Lost Time Adjust (s)		0.0			0.0	
Total Lost Time (s)		9.5			9.5	
Lead/Lag		Lead			Lag	
Lead-Lag Optimize?		Yes			Yes	
Vehicle Extension (s)		3.0			3.0	
Minimum Gap (s)		3.0			3.0	
Time Before Reduce (s)		0.0			0.0	
Time To Reduce (s)		0.0			0.0	
Recall Mode		None			Max	
Walk Time (s)						



Glenmore Trail East FPS  
38: S Juntion Off Ramp & 116 St

AM Peak  
09/13/2017



Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)		20.1			58.5	
Actuated g/C Ratio		0.21			0.60	
v/c Ratio		0.40			0.66	
Control Delay		4.6			9.8	
Queue Delay		0.0			0.0	
Total Delay		4.6			9.8	
LOS		A			A	
Approach Delay		4.6			9.8	
Approach LOS		A			A	
Queue Length 50th (m)		1.1			42.7	
Queue Length 95th (m)		1.6			64.3	
Internal Link Dist (m)		45.3	96.0		56.2	
Turn Bay Length (m)						
Base Capacity (vph)		1478			1760	
Starvation Cap Reductn		77			0	
Spillback Cap Reductn		0			0	
Storage Cap Reductn		0			0	
Reduced v/c Ratio		0.26			0.66	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 97.6

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 8.6

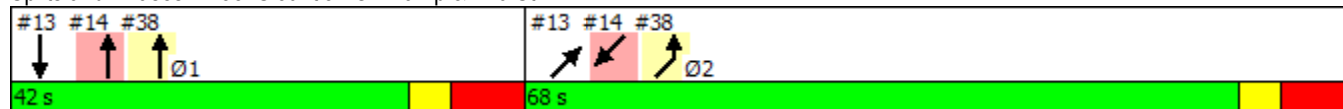
Intersection LOS: A

Intersection Capacity Utilization 64.7%

ICU Level of Service C













Analysis Period (min) 15

Splits and Phases: 38: S Juntion Off Ramp & 116 St



Glenmore Trail East FPS  
13: N Junction & 116 St













Recommended Plan PM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations					↑↑			↑↑				
Traffic Volume (vph)	0	0	0	0	270	0	0	900	0	0	0	0
Future Volume (vph)	0	0	0	0	270	0	0	900	0	0	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Satd. Flow (prot)	0	0	0	0	3090	0	0	2734	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	3090	0	0	2734	0	0	0	0
Right Turn on Red			Yes	Yes		Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		54.8			92.0			83.9			126.8	
Travel Time (s)		3.3			5.5			5.0			7.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	10%	10%	10%	15%	10%	10%	30%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	284	0	0	947	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	R NA	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			-2.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type					NA			NA				
Protected Phases					1			2				
Permitted Phases												
Detector Phase					1			2				
Switch Phase												
Minimum Initial (s)					20.0			20.0				
Minimum Split (s)					33.5			37.5				
Total Split (s)					38.0			52.0				
Total Split (%)					42.2%			57.8%				
Maximum Green (s)					28.5			42.5				
Yellow Time (s)					3.5			3.5				
All-Red Time (s)					6.0			6.0				
Lost Time Adjust (s)					0.0			0.0				
Total Lost Time (s)					9.5			9.5				



Glenmore Trail East FPS  
13: N Junction & 116 St

Recommended Plan PM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lead/Lag					Lead			Lag				
Lead-Lag Optimize?					Yes			Yes				
Vehicle Extension (s)					3.0			3.0				
Minimum Gap (s)					3.0			3.0				
Time Before Reduce (s)					0.0			0.0				
Time To Reduce (s)					0.0			0.0				
Recall Mode					Max			None				
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)					28.6			39.2				
Actuated g/C Ratio					0.33			0.45				
v/c Ratio					0.28			0.77				
Control Delay					23.3			11.9				
Queue Delay					0.0			0.0				
Total Delay					23.3			11.9				
LOS					C			B				
Approach Delay					23.3			11.9				
Approach LOS					C			B				
Queue Length 50th (m)					19.3			27.6				
Queue Length 95th (m)					29.4			36.9				
Internal Link Dist (m)		30.8			68.0			59.9			102.8	
Turn Bay Length (m)												
Base Capacity (vph)					1017			1342				
Starvation Cap Reductn					0			0				
Spillback Cap Reductn					0			0				
Storage Cap Reductn					0			0				
Reduced v/c Ratio					0.28			0.71				

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 86.9

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 14.6

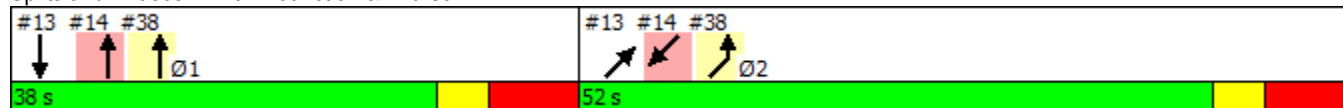
Intersection LOS: B

Intersection Capacity Utilization 58.1%

ICU Level of Service B













Analysis Period (min) 15

Splits and Phases: 13: N Junction & 116 St















Glenmore Trail East FPS  
14: S Junction & 116 St

Recommended Plan PM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑	
Traffic Volume (vph)	0	1000	0	0	0	0	0	0	0	0	130	0
Future Volume (vph)	0	1000	0	0	0	0	0	0	0	0	130	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Satd. Flow (prot)	0	4441	0	0	0	0	0	0	0	0	3090	0
Flt Permitted												
Satd. Flow (perm)	0	4441	0	0	0	0	0	0	0	0	3090	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		90.4			69.3			110.6			104.8	
Travel Time (s)		5.4			4.2			6.6			6.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	15%	10%	10%	10%	10%	10%	10%	10%	10%	15%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1053	0	0	0	0	0	0	0	0	137	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			-2.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type		NA									NA	
Protected Phases		1									2	
Permitted Phases												
Detector Phase		1									2	
Switch Phase												
Minimum Initial (s)		20.0									20.0	
Minimum Split (s)		33.5									37.5	
Total Split (s)		38.0									52.0	
Total Split (%)		42.2%									57.8%	
Maximum Green (s)		28.5									42.5	
Yellow Time (s)		3.5									3.5	
All-Red Time (s)		6.0									6.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		9.5									9.5	

Glenmore Trail East FPS  
14: S Junction & 116 St

Recommended Plan PM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lead/Lag	Lead					Lag						
Lead-Lag Optimize?	Yes					Yes						
Vehicle Extension (s)	3.0					3.0						
Minimum Gap (s)	3.0					3.0						
Time Before Reduce (s)	0.0					0.0						
Time To Reduce (s)	0.0					0.0						
Recall Mode	Max					None						
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	28.6					39.2						
Actuated g/C Ratio	0.33					0.45						
v/c Ratio	0.72					0.10						
Control Delay	29.6					15.5						
Queue Delay	0.0					0.0						
Total Delay	29.6					15.5						
LOS	C					B						
Approach Delay	29.6					15.5						
Approach LOS	C					B						
Queue Length 50th (m)	59.3					9.7						
Queue Length 95th (m)	74.9					17.5						
Internal Link Dist (m)	66.4					45.3	86.6				80.8	
Turn Bay Length (m)												
Base Capacity (vph)	1462					1517						
Starvation Cap Reductn	0					0						
Spillback Cap Reductn	0					0						
Storage Cap Reductn	0					0						
Reduced v/c Ratio	0.72					0.09						

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 86.9

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 28.0

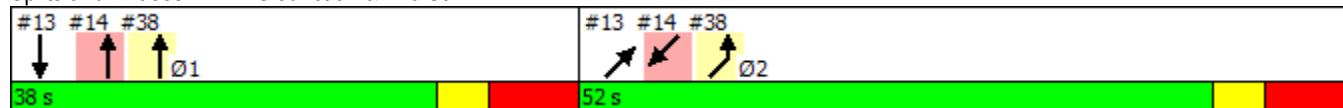
Intersection LOS: C

Intersection Capacity Utilization 52.3%

ICU Level of Service A









Analysis Period (min) 15

Splits and Phases: 14: S Junction & 116 St









Glenmore Trail East FPS  
38: S Junction Off ramp & 116 St

Recommended Plan PM Peak  
09/13/2017

						
Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	0	1000	0	0	800	0
Future Volume (vph)	0	1000	0	0	800	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	2	0
Taper Length (m)	25.0				25.0	
Satd. Flow (prot)	0	4441	0	0	2652	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	4441	0	0	2652	0
Right Turn on Red				Yes	Yes	Yes
Satd. Flow (RTOR)					22	
Link Speed (k/h)		60	60		60	
Link Distance (m)		69.3	120.0		80.2	
Travel Time (s)		4.2	7.2		4.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	15%	10%	10%	30%	30%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1053	0	0	842	0
Enter Blocked Intersection	No	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	R NA	Right
Median Width(m)		0.0	0.0		7.4	
Link Offset(m)		-2.0	2.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24			14	40	14
Turn Type		NA			Prot	
Protected Phases		1			2	
Permitted Phases						
Detector Phase		1			2	
Switch Phase						
Minimum Initial (s)		20.0			20.0	
Minimum Split (s)		33.5			37.5	
Total Split (s)		38.0			52.0	
Total Split (%)		42.2%			57.8%	
Maximum Green (s)		28.5			42.5	
Yellow Time (s)		3.5			3.5	
All-Red Time (s)		6.0			6.0	
Lost Time Adjust (s)		0.0			0.0	
Total Lost Time (s)		9.5			9.5	

Glenmore Trail East FPS  
38: S Junction Off ramp & 116 St

Recommended Plan PM Peak  
09/13/2017

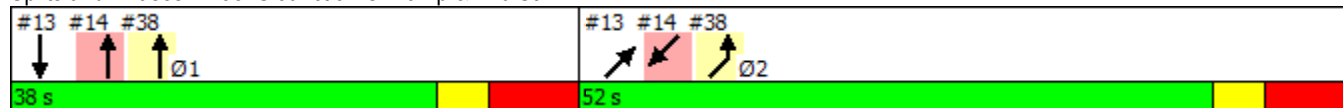
						
Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lead/Lag	Lead			Lag		
Lead-Lag Optimize?	Yes			Yes		
Vehicle Extension (s)	3.0			3.0		
Minimum Gap (s)	3.0			3.0		
Time Before Reduce (s)	0.0			0.0		
Time To Reduce (s)	0.0			0.0		
Recall Mode	Max			None		
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	28.6			39.2		
Actuated g/C Ratio	0.33			0.45		
v/c Ratio	0.72			0.70		
Control Delay	5.6			22.0		
Queue Delay	0.0			0.0		
Total Delay	5.6			22.0		
LOS	A			C		
Approach Delay	5.6			22.0		
Approach LOS	A			C		
Queue Length 50th (m)	3.4			54.0		
Queue Length 95th (m)	7.5			74.2		
Internal Link Dist (m)	45.3		96.0	56.2		
Turn Bay Length (m)						
Base Capacity (vph)	1462			1312		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.72			0.64		

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 86.9  
 Natural Cycle: 75  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 12.8  
 Intersection Capacity Utilization 59.1%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service B















Splits and Phases: 38: S Junction Off ramp & 116 St



Glenmore Trail East FPS  
13: N Junction & Rainbow Road













Recommended Plan AM Peak

09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	20	0	0	1120	0	0	0	0
Future Volume (vph)	0	0	0	0	20	0	0	1120	0	0	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Satd. Flow (prot)	0	0	0	0	3090	0	0	2734	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	3090	0	0	2734	0	0	0	0
Right Turn on Red			Yes	Yes		Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		54.8			92.0			84.1			126.8	
Travel Time (s)		3.3			5.5			5.0			7.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	10%	10%	10%	15%	10%	10%	30%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	21	0	0	1191	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			-2.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type					NA			NA				
Protected Phases					1			2				
Permitted Phases												
Detector Phase					1			2				
Switch Phase												
Minimum Initial (s)					20.0			20.0				
Minimum Split (s)					33.5			37.5				
Total Split (s)					33.5			66.5				
Total Split (%)					33.5%			66.5%				
Maximum Green (s)					24.0			57.0				
Yellow Time (s)					3.5			3.5				
All-Red Time (s)					6.0			6.0				
Lost Time Adjust (s)					0.0			0.0				
Total Lost Time (s)					9.5			9.5				

Glenmore Trail East FPS  
13: N Junction & Rainbow Road

Recommended Plan AM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lead/Lag					Lead			Lag				
Lead-Lag Optimize?					Yes			Yes				
Vehicle Extension (s)					3.0			3.0				
Minimum Gap (s)					3.0			3.0				
Time Before Reduce (s)					0.0			0.0				
Time To Reduce (s)					0.0			0.0				
Recall Mode					None			Max				
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)					20.1			63.4				
Actuated g/C Ratio					0.21			0.68				
v/c Ratio					0.03			0.64				
Control Delay					30.6			14.5				
Queue Delay					0.0			0.0				
Total Delay					30.6			14.5				
LOS					C			B				
Approach Delay					30.6			14.5				
Approach LOS					C			B				
Queue Length 50th (m)					1.6			79.2				
Queue Length 95th (m)					4.7			105.2				
Internal Link Dist (m)		30.8			68.0			60.1			102.8	
Turn Bay Length (m)												
Base Capacity (vph)					795			1851				
Starvation Cap Reductn					0			0				
Spillback Cap Reductn					0			0				
Storage Cap Reductn					0			0				
Reduced v/c Ratio					0.03			0.64				

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 93.6

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 14.8

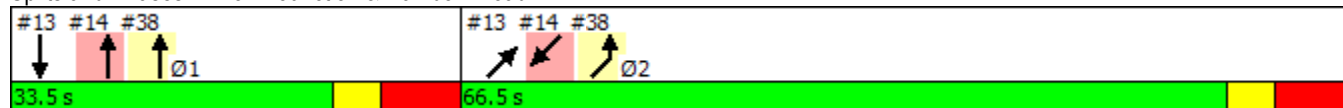
Intersection LOS: B

Intersection Capacity Utilization 64.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 13: N Junction & Rainbow Road

















Glenmore Trail East FPS  
14: Rainbow Road & S Junction













Recommended Plan AM Peak

09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑	
Traffic Volume (vph)	0	30	0	0	0	0	0	0	0	0	20	0
Future Volume (vph)	0	30	0	0	0	0	0	0	0	0	20	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Satd. Flow (prot)	0	4441	0	0	0	0	0	0	0	0	3090	0
Flt Permitted												
Satd. Flow (perm)	0	4441	0	0	0	0	0	0	0	0	3090	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		90.4			69.3			110.6			104.8	
Travel Time (s)		5.4			4.2			6.6			6.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	15%	10%	10%	10%	10%	10%	10%	10%	10%	15%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	32	0	0	0	0	0	0	0	0	21	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			-2.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type		NA									NA	
Protected Phases		1									2	
Permitted Phases												
Detector Phase		1									2	
Switch Phase												
Minimum Initial (s)		20.0									20.0	
Minimum Split (s)		33.5									37.5	
Total Split (s)		33.5									66.5	
Total Split (%)		33.5%									66.5%	
Maximum Green (s)		24.0									57.0	
Yellow Time (s)		3.5									3.5	
All-Red Time (s)		6.0									6.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		9.5									9.5	

Glenmore Trail East FPS  
14: Rainbow Road & S Junction

Recommended Plan AM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lead/Lag	Lead					Lag						
Lead-Lag Optimize?	Yes					Yes						
Vehicle Extension (s)	3.0					3.0						
Minimum Gap (s)	3.0					3.0						
Time Before Reduce (s)	0.0					0.0						
Time To Reduce (s)	0.0					0.0						
Recall Mode	None					Max						
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	20.1					63.4						
Actuated g/C Ratio	0.21					0.68						
v/c Ratio	0.03					0.01						
Control Delay	30.6					9.8						
Queue Delay	0.0					0.0						
Total Delay	30.6					9.8						
LOS	C					A						
Approach Delay	30.6					9.8						
Approach LOS	C					A						
Queue Length 50th (m)	1.7					1.5						
Queue Length 95th (m)	4.3					4.7						
Internal Link Dist (m)	66.4					45.3	86.6				80.8	
Turn Bay Length (m)												
Base Capacity (vph)	1143					2092						
Starvation Cap Reductn	0					0						
Spillback Cap Reductn	0					0						
Storage Cap Reductn	0					0						
Reduced v/c Ratio	0.03					0.01						

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 93.6

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 22.4

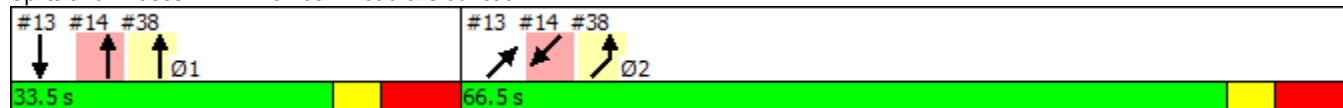
Intersection LOS: C

Intersection Capacity Utilization 40.3%

ICU Level of Service A







Analysis Period (min) 15

Splits and Phases: 14: Rainbow Road & S Junction



Glenmore Trail East FPS  
38: S Junction Off Ramp & Rainbow Road

Recommended Plan AM Peak  
09/13/2017

						
Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑↑↑			↑↑	
Traffic Volume (vph)	0	30	0	0	1100	0
Future Volume (vph)	0	30	0	0	1100	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	2	0
Taper Length (m)	25.0				25.0	
Satd. Flow (prot)	0	4441	0	0	2652	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	4441	0	0	2652	0
Right Turn on Red				Yes	Yes	Yes
Satd. Flow (RTOR)					1788	
Link Speed (k/h)		60	60		60	
Link Distance (m)		69.3	120.0		80.2	
Travel Time (s)		4.2	7.2		4.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	15%	10%	10%	30%	30%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	32	0	0	1170	0
Enter Blocked Intersection	No	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	R NA	Right
Median Width(m)		0.0	0.0		7.4	
Link Offset(m)		-2.0	2.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24			14	40	14
Turn Type		NA			Prot	
Protected Phases		1			2	
Permitted Phases						
Detector Phase		1			2	
Switch Phase						
Minimum Initial (s)		20.0			20.0	
Minimum Split (s)		33.5			37.5	
Total Split (s)		33.5			66.5	
Total Split (%)		33.5%			66.5%	
Maximum Green (s)		24.0			57.0	
Yellow Time (s)		3.5			3.5	
All-Red Time (s)		6.0			6.0	
Lost Time Adjust (s)		0.0			0.0	
Total Lost Time (s)		9.5			9.5	

Glenmore Trail East FPS  
38: S Junction Off Ramp & Rainbow Road

Recommended Plan AM Peak  
09/13/2017



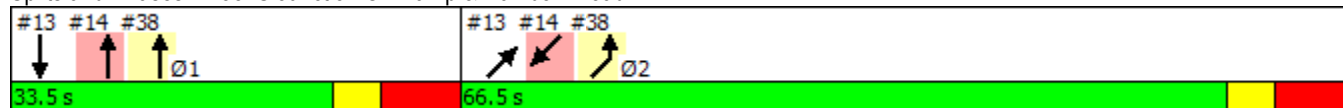
Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lead/Lag		Lead			Lag	
Lead-Lag Optimize?		Yes			Yes	
Vehicle Extension (s)		3.0			3.0	
Minimum Gap (s)		3.0			3.0	
Time Before Reduce (s)		0.0			0.0	
Time To Reduce (s)		0.0			0.0	
Recall Mode		None			Max	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)		20.1			63.4	
Actuated g/C Ratio		0.21			0.68	
v/c Ratio		0.03			0.49	
Control Delay		3.5			0.7	
Queue Delay		0.0			0.0	
Total Delay		3.5			0.7	
LOS		A			A	
Approach Delay		3.5			0.7	
Approach LOS		A			A	
Queue Length 50th (m)		0.1			0.0	
Queue Length 95th (m)		0.2			0.0	
Internal Link Dist (m)		45.3	96.0		56.2	
Turn Bay Length (m)						
Base Capacity (vph)		1143			2373	
Starvation Cap Reductn		0			0	
Spillback Cap Reductn		0			0	
Storage Cap Reductn		0			0	
Reduced v/c Ratio		0.03			0.49	

Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 93.6  
Natural Cycle: 80  
Control Type: Semi Act-Uncoord  
Maximum v/c Ratio: 0.64  
Intersection Signal Delay: 0.8  
Intersection Capacity Utilization 64.7%  
Analysis Period (min) 15













Intersection LOS: A  
ICU Level of Service C

Splits and Phases: 38: S Junction Off Ramp & Rainbow Road















Glenmore Trail East FPS  
13: N Junction & Rainbow Road

Recommended Plan PM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations					↑↑			↑↑				
Traffic Volume (vph)	0	0	0	0	210	0	0	1620	0	0	0	0
Future Volume (vph)	0	0	0	0	210	0	0	1620	0	0	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Satd. Flow (prot)	0	0	0	0	3090	0	0	2734	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	3090	0	0	2734	0	0	0	0
Right Turn on Red			Yes	Yes		Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		54.8			92.0			84.1			126.8	
Travel Time (s)		3.3			5.5			5.0			7.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	10%	10%	10%	15%	10%	10%	30%	10%	10%	10%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	221	0	0	1705	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			-2.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type					NA			NA				
Protected Phases					1			2				
Permitted Phases												
Detector Phase					1			2				
Switch Phase												
Minimum Initial (s)					20.0			20.0				
Minimum Split (s)					33.5			37.5				
Total Split (s)					33.5			96.5				
Total Split (%)					25.8%			74.2%				
Maximum Green (s)					24.0			87.0				
Yellow Time (s)					3.5			3.5				
All-Red Time (s)					6.0			6.0				
Lost Time Adjust (s)					0.0			0.0				
Total Lost Time (s)					9.5			9.5				

Glenmore Trail East FPS  
13: N Junction & Rainbow Road

Recommended Plan PM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lead/Lag					Lead			Lag				
Lead-Lag Optimize?					Yes			Yes				
Vehicle Extension (s)					3.0			3.0				
Minimum Gap (s)					3.0			3.0				
Time Before Reduce (s)					0.0			0.0				
Time To Reduce (s)					0.0			0.0				
Recall Mode					None			None				
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)					20.0			87.0				
Actuated g/C Ratio					0.16			0.69				
v/c Ratio					0.45			0.90				
Control Delay					51.4			22.4				
Queue Delay					0.0			0.0				
Total Delay					51.4			22.4				
LOS					D			C				
Approach Delay					51.4			22.4				
Approach LOS					D			C				
Queue Length 50th (m)					26.4			169.2				
Queue Length 95th (m)					39.2			216.9				
Internal Link Dist (m)		30.8			68.0			60.1			102.8	
Turn Bay Length (m)												
Base Capacity (vph)					588			1887				
Starvation Cap Reductn					0			0				
Spillback Cap Reductn					0			0				
Storage Cap Reductn					0			0				
Reduced v/c Ratio					0.38			0.90				

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 126

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 25.8

Intersection LOS: C

Intersection Capacity Utilization 78.5%

ICU Level of Service D

Analysis Period (min) 15













Splits and Phases: 13: N Junction & Rainbow Road



Glenmore Trail East FPS  
14: Rainbow Road & S Junction

Recommended Plan PM Peak













09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑	
Traffic Volume (vph)	0	30	0	0	0	0	0	0	0	0	20	0
Future Volume (vph)	0	30	0	0	0	0	0	0	0	0	20	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Satd. Flow (prot)	0	4441	0	0	0	0	0	0	0	0	3090	0
Flt Permitted												
Satd. Flow (perm)	0	4441	0	0	0	0	0	0	0	0	3090	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		90.4			69.3			110.6			104.8	
Travel Time (s)		5.4			4.2			6.6			6.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	15%	10%	10%	10%	10%	10%	10%	10%	10%	15%	10%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	32	0	0	0	0	0	0	0	0	21	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			-2.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type		NA									NA	
Protected Phases		1									2	
Permitted Phases												
Detector Phase		1									2	
Switch Phase												
Minimum Initial (s)		20.0									20.0	
Minimum Split (s)		33.5									37.5	
Total Split (s)		33.5									96.5	
Total Split (%)		25.8%									74.2%	
Maximum Green (s)		24.0									87.0	
Yellow Time (s)		3.5									3.5	
All-Red Time (s)		6.0									6.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		9.5									9.5	



Glenmore Trail East FPS  
14: Rainbow Road & S Junction

Recommended Plan PM Peak  
09/13/2017

												
Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lead/Lag	Lead					Lag						
Lead-Lag Optimize?	Yes					Yes						
Vehicle Extension (s)	3.0					3.0						
Minimum Gap (s)	3.0					3.0						
Time Before Reduce (s)	0.0					0.0						
Time To Reduce (s)	0.0					0.0						
Recall Mode	None					None						
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	20.0					87.0						
Actuated g/C Ratio	0.16					0.69						
v/c Ratio	0.05					0.01						
Control Delay	45.2					7.1						
Queue Delay	0.0					0.0						
Total Delay	45.2					7.1						
LOS	D					A						
Approach Delay	45.2					7.1						
Approach LOS	D					A						
Queue Length 50th (m)	2.4					1.6						
Queue Length 95th (m)	5.8					3.4						
Internal Link Dist (m)	66.4					45.3	86.6				80.8	
Turn Bay Length (m)												
Base Capacity (vph)	845					2133						
Starvation Cap Reductn	0					0						
Spillback Cap Reductn	0					0						
Storage Cap Reductn	0					0						
Reduced v/c Ratio	0.04					0.01						

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 126

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 30.1

Intersection LOS: C

Intersection Capacity Utilization 40.3%

ICU Level of Service A







Analysis Period (min) 15

Splits and Phases: 14: Rainbow Road & S Junction



Glenmore Trail East FPS  
38: S Junction Off Ramp & Rainbow Road

Recommended Plan PM Peak  
09/13/2017

						
Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑↑↑			↔↔	
Traffic Volume (vph)	0	30	0	0	1600	0
Future Volume (vph)	0	30	0	0	1600	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%	0%		0%	
Storage Length (m)	0.0			0.0	0.0	0.0
Storage Lanes	0			0	2	0
Taper Length (m)	25.0				25.0	
Satd. Flow (prot)	0	4441	0	0	2652	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	4441	0	0	2652	0
Right Turn on Red				Yes	Yes	Yes
Satd. Flow (RTOR)					1697	
Link Speed (k/h)		60	60		60	
Link Distance (m)		69.3	120.0		80.2	
Travel Time (s)		4.2	7.2		4.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	10%	15%	10%	10%	30%	30%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	32	0	0	1684	0
Enter Blocked Intersection	No	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	R NA	Right
Median Width(m)		0.0	0.0		7.4	
Link Offset(m)		-2.0	2.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	24			14	40	14
Turn Type		NA			Prot	
Protected Phases		1			2	
Permitted Phases						
Detector Phase		1			2	
Switch Phase						
Minimum Initial (s)		20.0			20.0	
Minimum Split (s)		33.5			37.5	
Total Split (s)		33.5			96.5	
Total Split (%)		25.8%			74.2%	
Maximum Green (s)		24.0			87.0	
Yellow Time (s)		3.5			3.5	
All-Red Time (s)		6.0			6.0	
Lost Time Adjust (s)		0.0			0.0	
Total Lost Time (s)		9.5			9.5	

Glenmore Trail East FPS  
38: S Junction Off Ramp & Rainbow Road

Recommended Plan PM Peak  
09/13/2017



Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lead/Lag		Lead			Lag	
Lead-Lag Optimize?		Yes			Yes	
Vehicle Extension (s)		3.0			3.0	
Minimum Gap (s)		3.0			3.0	
Time Before Reduce (s)		0.0			0.0	
Time To Reduce (s)		0.0			0.0	
Recall Mode		None			None	
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)		20.0			87.0	
Actuated g/C Ratio		0.16			0.69	
v/c Ratio		0.05			0.71	
Control Delay		3.8			2.2	
Queue Delay		0.0			0.0	
Total Delay		3.8			2.2	
LOS		A			A	
Approach Delay		3.8			2.2	
Approach LOS		A			A	
Queue Length 50th (m)		0.2			0.0	
Queue Length 95th (m)		0.3			5.4	
Internal Link Dist (m)		45.3	96.0		56.2	
Turn Bay Length (m)						
Base Capacity (vph)		845			2356	
Starvation Cap Reductn		0			0	
Spillback Cap Reductn		0			0	
Storage Cap Reductn		0			0	
Reduced v/c Ratio		0.04			0.71	

Intersection Summary

Area Type: Other  
Cycle Length: 130  
Actuated Cycle Length: 126  
Natural Cycle: 110  
Control Type: Semi Act-Uncoord  
Maximum v/c Ratio: 0.90  
Intersection Signal Delay: 2.3  
Intersection Capacity Utilization 79.4%  
Analysis Period (min) 15

Intersection LOS: A  
ICU Level of Service D

Splits and Phases: 38: S Junction Off Ramp & Rainbow Road



FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst		Nicole Lau			Freeway/Dir of Travel		Westbound		
Agency/Company		ISL Engineering&Land Services			Weaving Segment Location		100 St to Stoney Tr		
Date Performed		09-12-2017			Analysis Year		2039		
Analysis Time Period		AM Peak							
Project Description 26534 Glenmore Trail East Functional Planning Study									
<b>Inputs</b>									
Weaving configuration				One-Sided		Segment type		Freeway	
Weaving number of lanes, N				5		Freeway minimum speed, $S_{MIN}$		49	
Weaving segment length, $L_S$				2193ft		Freeway maximum capacity, $C_{IFL}$		1850	
Freeway free-flow speed, FFS				62 mph		Terrain type		Level	
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	3300	0.94	6	0	1.5	1.2	0.971	1.00	3616
$V_{RF}$	700	0.94	30	0	1.5	1.2	0.870	1.00	856
$V_{FR}$	300	0.94	6	0	1.5	1.2	0.971	1.00	329
$V_{RR}$	100	0.94	30	0	1.5	1.2	0.870	1.00	122
$V_{NW}$	3738							V =	4923
$V_W$	1185								
VR	0.241								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$				3 lc		Minimum weaving lane changes, $LC_{MIN}$		329 lc/h	
Interchange density, ID				1.2 int/mi		Weaving lane changes, $LC_W$		1126 lc/h	
Minimum RF lane changes, $LC_{RF}$				0 lc/pc		Non-weaving lane changes, $LC_{NW}$		996 lc/h	
Minimum FR lane changes, $LC_{FR}$				1 lc/pc		Total lane changes, $LC_{ALL}$		2122 lc/h	
Minimum RR lane changes, $LC_{RR}$				lc/pc		Non-weaving vehicle index, $I_{NW}$		984	
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v				4681 veh/h		Weaving intensity factor, W		0.220	
Weaving segment capacity, $c_w$				8534 veh/h		Weaving segment speed, S		56.0 mph	
Weaving segment v/c ratio				0.548		Average weaving speed, $S_W$		59.7 mph	
Weaving segment density, D				17.6 pc/mi/ln		Average non-weaving speed, $S_{NW}$		54.9 mph	
Level of Service, LOS				B		Maximum weaving length, $L_{MAX}$		3391 ft	
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments". b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst		Nicole Lau			Freeway/Dir of Travel		Westbound		
Agency/Company		ISL Engineering&Land Services			Weaving Segment Location		100 St to Stoney Tr		
Date Performed		9/13/2017			Analysis Year		2039		
Analysis Time Period		PM Peak							
Project Description 26534 Glenmore Trail East Functional Planning Study									
<b>Inputs</b>									
Weaving configuration				One-Sided	Segment type		Freeway		
Weaving number of lanes, N				5	Freeway minimum speed, $S_{MIN}$		49		
Weaving segment length, $L_S$				2193ft	Freeway maximum capacity, $C_{IFL}$		1850		
Freeway free-flow speed, FFS				62 mph	Terrain type		Level		
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	2100	0.95	6	0	1.5	1.2	0.971	1.00	2277
$V_{RF}$	1000	0.95	30	0	1.5	1.2	0.870	1.00	1211
$V_{FR}$	2400	0.95	6	0	1.5	1.2	0.971	1.00	2602
$V_{RR}$	1300	0.95	30	0	1.5	1.2	0.870	1.00	1574
$V_{NW}$	3851							V =	7664
$V_W$	3813								
VR	0.498								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$				3 lc	Minimum weaving lane changes, $LC_{MIN}$		lc/h		
Interchange density, ID				1.2 int/mi	Weaving lane changes, $LC_W$		lc/h		
Minimum RF lane changes, $LC_{RF}$				0 lc/pc	Non-weaving lane changes, $LC_{NW}$		lc/h		
Minimum FR lane changes, $LC_{FR}$				1 lc/pc	Total lane changes, $LC_{ALL}$		lc/h		
Minimum RR lane changes, $LC_{RR}$				lc/pc	Non-weaving vehicle index, $I_{NW}$				
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v				7158 veh/h	Weaving intensity factor, W				
Weaving segment capacity, $c_w$				6830 veh/h	Weaving segment speed, S		mph		
Weaving segment v/c ratio				1.048	Average weaving speed, $S_W$		mph		
Weaving segment density, D				pc/mi/ln	Average non-weaving speed, $S_{NW}$		mph		
Level of Service, LOS				F	Maximum weaving length, $L_{MAX}$		6231 ft		
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst		Nicole Lau			Freeway/Dir of Travel		Westbound		
Agency/Company		ISL Engineering Land Services			Weaving Segment Location		116 St to 100 St		
Date Performed		9/13/2017			Analysis Year		2039		
Analysis Time Period		AM Peak							
Project Description 26534 Glenmore Trail East Functional Planning Study									
<b>Inputs</b>									
Weaving configuration				One-Sided	Segment type		Freeway		
Weaving number of lanes, N				5	Freeway minimum speed, $S_{MIN}$		49		
Weaving segment length, $L_S$				1768ft	Freeway maximum capacity, $C_{IFL}$		1850		
Freeway free-flow speed, FFS				62 mph	Terrain type		Level		
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	3100	0.94	6	0	1.5	1.2	0.971	1.00	3397
$V_{RF}$	500	0.94	30	0	1.5	1.2	0.870	1.00	612
$V_{FR}$	200	0.94	6	0	1.5	1.2	0.971	1.00	219
$V_{RR}$	200	0.94	30	0	1.5	1.2	0.870	1.00	245
$V_{NW}$	3642							V =	4473
$V_W$	831								
VR	0.186								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$				3 lc	Minimum weaving lane changes, $LC_{MIN}$		219 lc/h		
Interchange density, ID				1.2 int/mi	Weaving lane changes, $LC_W$		921 lc/h		
Minimum RF lane changes, $LC_{RF}$				0 lc/pc	Non-weaving lane changes, $LC_{NW}$		746 lc/h		
Minimum FR lane changes, $LC_{FR}$				1 lc/pc	Total lane changes, $LC_{ALL}$		1667 lc/h		
Minimum RR lane changes, $LC_{RR}$				lc/pc	Non-weaving vehicle index, $I_{NW}$		773		
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v				4256 veh/h	Weaving intensity factor, W		0.216		
Weaving segment capacity, $c_w$				8587 veh/h	Weaving segment speed, S		56.8 mph		
Weaving segment v/c ratio				0.496	Average weaving speed, $S_W$		59.7 mph		
Weaving segment density, D				15.8 pc/mi/ln	Average non-weaving speed, $S_{NW}$		56.1 mph		
Level of Service, LOS				B	Maximum weaving length, $L_{MAX}$		2825 ft		
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst		Nicole Lau			Freeway/Dir of Travel		Westbound		
Agency/Company		ISL Engineering Land Services			Weaving Segment Location		116 St to 100 St		
Date Performed		9/13/2017			Analysis Year		2039		
Analysis Time Period		PM Peak							
Project Description 26534 Glenmore Trail East Functional Planning Study									
<b>Inputs</b>									
Weaving configuration				One-Sided	Segment type		Freeway		
Weaving number of lanes, N				5	Freeway minimum speed, $S_{MIN}$		49		
Weaving segment length, $L_S$				1769ft	Freeway maximum capacity, $C_{IFL}$		1850		
Freeway free-flow speed, FFS				62 mph	Terrain type		Level		
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	2600	0.95	6	0	1.5	1.2	0.971	1.00	2819
$V_{RF}$	1900	0.95	30	0	1.5	1.2	0.870	1.00	2300
$V_{FR}$	100	0.95	6	0	1.5	1.2	0.971	1.00	108
$V_{RR}$	100	0.95	30	0	1.5	1.2	0.870	1.00	121
$V_{NW}$	2940							V =	5348
$V_W$	2408								
VR	0.450								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$				3 lc	Minimum weaving lane changes, $LC_{MIN}$		108 lc/h		
Interchange density, ID				1.2 int/mi	Weaving lane changes, $LC_W$		810 lc/h		
Minimum RF lane changes, $LC_{RF}$				0 lc/pc	Non-weaving lane changes, $LC_{NW}$		601 lc/h		
Minimum FR lane changes, $LC_{FR}$				1 lc/pc	Total lane changes, $LC_{ALL}$		1411 lc/h		
Minimum RR lane changes, $LC_{RR}$				lc/pc	Non-weaving vehicle index, $I_{NW}$		624		
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v				4948 veh/h	Weaving intensity factor, W		0.189		
Weaving segment capacity, $c_w$				7524 veh/h	Weaving segment speed, S		57.8 mph		
Weaving segment v/c ratio				0.658	Average weaving speed, $S_W$		59.9 mph		
Weaving segment density, D				18.5 pc/mi/ln	Average non-weaving speed, $S_{NW}$		56.1 mph		
Level of Service, LOS				B	Maximum weaving length, $L_{MAX}$		5685 ft		
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									



FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst		Nicole Lau			Freeway/Dir of Travel		Westbound		
Agency/Company		ISL Engineering Land Services			Weaving Segment Location		Rainbow Rd to 116 St		
Date Performed		9/13/2017			Analysis Year		2039		
Analysis Time Period		AM Peak							
Project Description 26534 Glenmore Trail East Functional Planning Study									
<b>Inputs</b>									
Weaving configuration				One-Sided	Segment type		Freeway		
Weaving number of lanes, N				5	Freeway minimum speed, $S_{MIN}$		49		
Weaving segment length, $L_S$				1689ft	Freeway maximum capacity, $C_{IFL}$		1850		
Freeway free-flow speed, FFS				62 mph	Terrain type		Level		
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	2495	0.94	6	0	1.5	1.2	0.971	1.00	2734
$V_{RF}$	805	0.94	30	0	1.5	1.2	0.870	1.00	985
$V_{FR}$	105	0.94	6	0	1.5	1.2	0.971	1.00	115
$V_{RR}$	105	0.94	30	0	1.5	1.2	0.870	1.00	128
$V_{NW}$	2862							V =	3962
$V_W$	1100								
VR	0.278								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$				3 lc	Minimum weaving lane changes, $LC_{MIN}$		115 lc/h		
Interchange density, ID				1.2 int/mi	Weaving lane changes, $LC_W$		798 lc/h		
Minimum RF lane changes, $LC_{RF}$				0 lc/pc	Non-weaving lane changes, $LC_{NW}$		542 lc/h		
Minimum FR lane changes, $LC_{FR}$				1 lc/pc	Total lane changes, $LC_{ALL}$		1340 lc/h		
Minimum RR lane changes, $LC_{RR}$				lc/pc	Non-weaving vehicle index, $I_{NW}$		580		
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v				3735 veh/h	Weaving intensity factor, W		0.188		
Weaving segment capacity, $c_w$				8204 veh/h	Weaving segment speed, S		58.1 mph		
Weaving segment v/c ratio				0.455	Average weaving speed, $S_W$		59.9 mph		
Weaving segment density, D				13.6 pc/mi/ln	Average non-weaving speed, $S_{NW}$		57.4 mph		
Level of Service, LOS				B	Maximum weaving length, $L_{MAX}$		3779 ft		
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst		Nicole Lau			Freeway/Dir of Travel		Westbound		
Agency/Company		ISL Engineering Land Services			Weaving Segment Location		Rainbow Rd to 116 St		
Date Performed		9/13/2017			Analysis Year		2039		
Analysis Time Period		PM Peak							
Project Description 26534 Glenmore Trail East Functional Planning Study									
<b>Inputs</b>									
Weaving configuration				One-Sided	Segment type		Freeway		
Weaving number of lanes, N				5	Freeway minimum speed, $S_{MIN}$		49		
Weaving segment length, $L_S$				1689ft	Freeway maximum capacity, $C_{IFL}$		1850		
Freeway free-flow speed, FFS				62 mph	Terrain type		Level		
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	1245	0.95	6	0	1.5	1.2	0.971	1.00	1350
$V_{RF}$	1455	0.95	30	0	1.5	1.2	0.870	1.00	1761
$V_{FR}$	55	0.95	6	0	1.5	1.2	0.971	1.00	60
$V_{RR}$	55	0.95	30	0	1.5	1.2	0.870	1.00	67
$V_{NW}$	1417							V =	3238
$V_W$	1821								
VR	0.562								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$				3 lc	Minimum weaving lane changes, $LC_{MIN}$		60 lc/h		
Interchange density, ID				1.2 int/mi	Weaving lane changes, $LC_W$		743 lc/h		
Minimum RF lane changes, $LC_{RF}$				0 lc/pc	Non-weaving lane changes, $LC_{NW}$		244 lc/h		
Minimum FR lane changes, $LC_{FR}$				1 lc/pc	Total lane changes, $LC_{ALL}$		987 lc/h		
Minimum RR lane changes, $LC_{RR}$				lc/pc	Non-weaving vehicle index, $I_{NW}$		287		
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v				2958 veh/h	Weaving intensity factor, W		0.148		
Weaving segment capacity, $c_w$				6042 veh/h	Weaving segment speed, S		59.5 mph		
Weaving segment v/c ratio				0.490	Average weaving speed, $S_W$		60.3 mph		
Weaving segment density, D				10.9 pc/mi/ln	Average non-weaving speed, $S_{NW}$		58.5 mph		
Level of Service, LOS				B	Maximum weaving length, $L_{MAX}$		6999 ft		
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments". b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst		Nicole Lau			Freeway/Dir of Travel		Eastbound		
Agency/Company		ISL Engineering&Land Services			Weaving Segment Location		Stoney Tr to 100 St		
Date Performed		09/12/2017			Analysis Year		2039		
Analysis Time Period		AM Peak							
Project Description 26534 Glenmore Trail East Functional Planning Study									
<b>Inputs</b>									
Weaving configuration				One-Sided	Segment type		Freeway		
Weaving number of lanes, N				4	Freeway minimum speed, $S_{MIN}$		49		
Weaving segment length, $L_S$				2906ft	Freeway maximum capacity, $C_{IFL}$		1850		
Freeway free-flow speed, FFS				62 mph	Terrain type		Level		
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	2880	0.94	15	0	1.5	1.2	0.930	1.00	3294
$V_{RF}$	1000	0.94	6	0	1.5	1.2	0.971	1.00	1096
$V_{FR}$	1400	0.94	30	0	1.5	1.2	0.870	1.00	1713
$V_{RR}$	500	0.94	6	0	1.5	1.2	0.971	1.00	548
$V_{NW}$	3842							V =	6651
$V_W$	2809								
VR	0.422								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$				3 lc	Minimum weaving lane changes, $LC_{MIN}$		1096 lc/h		
Interchange density, ID				1.2 int/mi	Weaving lane changes, $LC_W$		1695 lc/h		
Minimum RF lane changes, $LC_{RF}$				1 lc/pc	Non-weaving lane changes, $LC_{NW}$		1654 lc/h		
Minimum FR lane changes, $LC_{FR}$				0 lc/pc	Total lane changes, $LC_{ALL}$		3349 lc/h		
Minimum RR lane changes, $LC_{RR}$				lc/pc	Non-weaving vehicle index, $I_{NW}$		1340		
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v				6149 veh/h	Weaving intensity factor, W		0.253		
Weaving segment capacity, $c_w$				6184 veh/h	Weaving segment speed, S		50.9 mph		
Weaving segment v/c ratio				0.994	Average weaving speed, $S_W$		59.4 mph		
Weaving segment density, D				32.6 pc/mi/ln	Average non-weaving speed, $S_{NW}$		46.1 mph		
Level of Service, LOS				D	Maximum weaving length, $L_{MAX}$		5367 ft		
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst		Nicole Lau			Freeway/Dir of Travel		Eastbound		
Agency/Company		ISL Engineering&Land Services			Weaving Segment Location		Stoney Tr to 100 St		
Date Performed		9/13/2017			Analysis Year		2039		
Analysis Time Period		PM Peak							
Project Description 26534 Glenmore Trail East Functional Planning Study									
<b>Inputs</b>									
Weaving configuration				One-Sided	Segment type		Freeway		
Weaving number of lanes, N				5	Freeway minimum speed, $S_{MIN}$		49		
Weaving segment length, $L_S$				2906ft	Freeway maximum capacity, $C_{IFL}$		1850		
Freeway free-flow speed, FFS				62 mph	Terrain type		Level		
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	4500	0.95	15	0	1.5	1.2	0.930	1.00	5092
$V_{RF}$	500	0.95	6	0	1.5	1.2	0.971	1.00	542
$V_{FR}$	1600	0.95	30	0	1.5	1.2	0.870	1.00	1937
$V_{RR}$	200	0.95	6	0	1.5	1.2	0.971	1.00	217
$V_{NW}$	5309							V =	7788
$V_W$	2479								
VR	0.318								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$				3 lc	Minimum weaving lane changes, $LC_{MIN}$		542 lc/h		
Interchange density, ID				1.2 int/mi	Weaving lane changes, $LC_W$		1477 lc/h		
Minimum RF lane changes, $LC_{RF}$				1 lc/pc	Non-weaving lane changes, $LC_{NW}$		2696 lc/h		
Minimum FR lane changes, $LC_{FR}$				0 lc/pc	Total lane changes, $LC_{ALL}$		4173 lc/h		
Minimum RR lane changes, $LC_{RR}$				lc/pc	Non-weaving vehicle index, $I_{NW}$		1851		
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v				7158 veh/h	Weaving intensity factor, W		0.301		
Weaving segment capacity, $c_w$				8140 veh/h	Weaving segment speed, S		53.0 mph		
Weaving segment v/c ratio				0.879	Average weaving speed, $S_W$		59.0 mph		
Weaving segment density, D				29.4 pc/mi/ln	Average non-weaving speed, $S_{NW}$		50.6 mph		
Level of Service, LOS				D	Maximum weaving length, $L_{MAX}$		4215 ft		
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst		Nicole Lau			Freeway/Dir of Travel		Eastbound		
Agency/Company		ISL Engineering&Land Services			Weaving Segment Location		100 St to 116 St		
Date Performed		9/13/2017			Analysis Year		2039		
Analysis Time Period		PM Peak							
Project Description 26534 Glenmore Trail East Functional Planning Study									
<b>Inputs</b>									
Weaving configuration				One-Sided	Segment type		Freeway		
Weaving number of lanes, N				4	Freeway minimum speed, $S_{MIN}$		49		
Weaving segment length, $L_S$				1679ft	Freeway maximum capacity, $C_{IFL}$		1850		
Freeway free-flow speed, FFS				62 mph	Terrain type		Level		
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	1750	0.94	15	0	1.5	1.2	0.930	1.00	2001
$V_{RF}$	50	0.94	6	0	1.5	1.2	0.971	1.00	55
$V_{FR}$	2050	0.94	30	0	1.5	1.2	0.870	1.00	2508
$V_{RR}$	50	0.94	6	0	1.5	1.2	0.971	1.00	55
$V_{NW}$	2056							V =	4619
$V_W$	2563								
VR	0.555								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$				3 lc	Minimum weaving lane changes, $LC_{MIN}$		55 lc/h		
Interchange density, ID				1.2 int/mi	Weaving lane changes, $LC_W$		490 lc/h		
Minimum RF lane changes, $LC_{RF}$				1 lc/pc	Non-weaving lane changes, $LC_{NW}$		563 lc/h		
Minimum FR lane changes, $LC_{FR}$				0 lc/pc	Total lane changes, $LC_{ALL}$		1053 lc/h		
Minimum RR lane changes, $LC_{RR}$				lc/pc	Non-weaving vehicle index, $I_{NW}$		414		
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v				4149 veh/h	Weaving intensity factor, W		0.156		
Weaving segment capacity, $c_w$				5395 veh/h	Weaving segment speed, S		58.3 mph		
Weaving segment v/c ratio				0.769	Average weaving speed, $S_W$		60.2 mph		
Weaving segment density, D				19.8 pc/mi/ln	Average non-weaving speed, $S_{NW}$		56.1 mph		
Level of Service, LOS				B	Maximum weaving length, $L_{MAX}$		6909 ft		
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst		Nicole Lau			Freeway/Dir of Travel		Eastbound		
Agency/Company		ISL Engineering&Land Services			Weaving Segment Location		100 St to 116 St		
Date Performed		9/13/2017			Analysis Year		2039		
Analysis Time Period		PM Peak							
Project Description 26534 Glenmore Trail East Functional Planning Study									
<b>Inputs</b>									
Weaving configuration				One-Sided	Segment type		Freeway		
Weaving number of lanes, N				4	Freeway minimum speed, $S_{MIN}$		49		
Weaving segment length, $L_S$				1679ft	Freeway maximum capacity, $C_{IFL}$		1850		
Freeway free-flow speed, FFS				62 mph	Terrain type		Level		
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	3750	0.95	15	0	1.5	1.2	0.930	1.00	4243
$V_{RF}$	150	0.95	6	0	1.5	1.2	0.971	1.00	163
$V_{FR}$	1350	0.95	30	0	1.5	1.2	0.870	1.00	1634
$V_{RR}$	150	0.95	6	0	1.5	1.2	0.971	1.00	163
$V_{NW}$	4406							V =	6203
$V_W$	1797								
VR	0.290								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$				3 lc	Minimum weaving lane changes, $LC_{MIN}$		163 lc/h		
Interchange density, ID				1.2 int/mi	Weaving lane changes, $LC_W$		598 lc/h		
Minimum RF lane changes, $LC_{RF}$				1 lc/pc	Non-weaving lane changes, $LC_{NW}$		1047 lc/h		
Minimum FR lane changes, $LC_{FR}$				0 lc/pc	Total lane changes, $LC_{ALL}$		1645 lc/h		
Minimum RR lane changes, $LC_{RR}$				lc/pc	Non-weaving vehicle index, $I_{NW}$		888		
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v				5685 veh/h	Weaving intensity factor, W		0.222		
Weaving segment capacity, $c_w$				6247 veh/h	Weaving segment speed, S		55.1 mph		
Weaving segment v/c ratio				0.910	Average weaving speed, $S_W$		59.6 mph		
Weaving segment density, D				28.2 pc/mi/ln	Average non-weaving speed, $S_{NW}$		53.4 mph		
Level of Service, LOS				D	Maximum weaving length, $L_{MAX}$		3908 ft		
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst		Nicole Lau			Freeway/Dir of Travel		Eastbound		
Agency/Company		ISL Engineering&Land Services			Weaving Segment Location		116 St to Rainbow Rd		
Date Performed		9/13/2017			Analysis Year		2039		
Analysis Time Period		AM Peak							
Project Description 26534 Glenmore Trail East Functional Planning Study									
<b>Inputs</b>									
Weaving configuration				One-Sided	Segment type		Freeway		
Weaving number of lanes, N				4	Freeway minimum speed, $S_{MIN}$		49		
Weaving segment length, $L_S$				1600ft	Freeway maximum capacity, $C_{IFL}$		1850		
Freeway free-flow speed, FFS				62 mph	Terrain type		Level		
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	710	0.94	15	0	1.5	1.2	0.930	1.00	812
$V_{RF}$	20	0.94	6	0	1.5	1.2	0.971	1.00	22
$V_{FR}$	1090	0.94	30	0	1.5	1.2	0.870	1.00	1334
$V_{RR}$	20	0.94	6	0	1.5	1.2	0.971	1.00	22
$V_{NW}$	834							V =	2190
$V_W$	1356								
VR	0.619								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$				3 lc	Minimum weaving lane changes, $LC_{MIN}$		22 lc/h		
Interchange density, ID				1.2 int/mi	Weaving lane changes, $LC_W$		445 lc/h		
Minimum RF lane changes, $LC_{RF}$				1 lc/pc	Non-weaving lane changes, $LC_{NW}$		269 lc/h		
Minimum FR lane changes, $LC_{FR}$				0 lc/pc	Total lane changes, $LC_{ALL}$		714 lc/h		
Minimum RR lane changes, $LC_{RR}$				lc/pc	Non-weaving vehicle index, $I_{NW}$		160		
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v				1958 veh/h	Weaving intensity factor, W		0.120		
Weaving segment capacity, $c_w$				5150 veh/h	Weaving segment speed, S		60.1 mph		
Weaving segment v/c ratio				0.380	Average weaving speed, $S_W$		60.6 mph		
Weaving segment density, D				9.1 pc/mi/ln	Average non-weaving speed, $S_{NW}$		59.2 mph		
Level of Service, LOS				A	Maximum weaving length, $L_{MAX}$		7686 ft		
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									



FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst		Nicole Lau			Freeway/Dir of Travel		Eastbound		
Agency/Company		ISL Engineering&Land Services			Weaving Segment Location		116 St to Rainbow Rd		
Date Performed		9/13/2017			Analysis Year		2039		
Analysis Time Period		PM Peak							
Project Description 26534 Glenmore Trail East Functional Planning Study									
<b>Inputs</b>									
Weaving configuration				One-Sided	Segment type		Freeway		
Weaving number of lanes, N				4	Freeway minimum speed, $S_{MIN}$		49		
Weaving segment length, $L_S$				1600ft	Freeway maximum capacity, $C_{IFL}$		1850		
Freeway free-flow speed, FFS				62 mph	Terrain type		Level		
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	2445	0.95	15	0	1.5	1.2	0.930	1.00	2767
$V_{RF}$	155	0.95	6	0	1.5	1.2	0.971	1.00	168
$V_{FR}$	1455	0.95	30	0	1.5	1.2	0.870	1.00	1761
$V_{RR}$	155	0.95	6	0	1.5	1.2	0.971	1.00	168
$V_{NW}$	2935							V =	4864
$V_W$	1929								
VR	0.397								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$				3 lc	Minimum weaving lane changes, $LC_{MIN}$		168 lc/h		
Interchange density, ID				1.2 int/mi	Weaving lane changes, $LC_W$		591 lc/h		
Minimum RF lane changes, $LC_{RF}$				1 lc/pc	Non-weaving lane changes, $LC_{NW}$		701 lc/h		
Minimum FR lane changes, $LC_{FR}$				0 lc/pc	Total lane changes, $LC_{ALL}$		1292 lc/h		
Minimum RR lane changes, $LC_{RR}$				lc/pc	Non-weaving vehicle index, $I_{NW}$		564		
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v				4432 veh/h	Weaving intensity factor, W		0.191		
Weaving segment capacity, $c_w$				5894 veh/h	Weaving segment speed, S		56.8 mph		
Weaving segment v/c ratio				0.752	Average weaving speed, $S_W$		59.9 mph		
Weaving segment density, D				21.4 pc/mi/ln	Average non-weaving speed, $S_{NW}$		55.0 mph		
Level of Service, LOS				C	Maximum weaving length, $L_{MAX}$		5077 ft		
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments". b. For volumes that exceed the weaving segment capacity, the level of service is "F".									