



Glenmore Trail East Interchanges Functional Planning Study

Appendix L - Recommended Plan Traffic Analysis Results





Glenmore Trail East FPS 13: N Junction & 116 St

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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		0.0
Taper Length (m)	25.0		Ū	25.0		Ŭ	25.0		•	25.0		Ū
Satd. Flow (prot)	0	0	0	0	3090	0	0	2734	0	0	0	0
Flt Permitted	Ū	v	Ū	v	0000	v	v	2101	v	v	v	J
Satd. Flow (perm)	0	0	0	0	3090	0	0	2734	0	0	0	0
Right Turn on Red	U	U	Yes	Yes	0000	Yes	U	2104	Yes	U	U	Yes
Satd. Flow (RTOR)			100	100		100			100			100
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)		5.5			0.0			5.0			7.0	
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 (%)	100 %	100 %	100 %	100 %	15%	100 %	100 %	30%	100 %	100 %	100 %	100 %
Bus Blockages (#/hr)	0	0	0	0	15%	0	0	30% 0	0	0	0	0
Parking (#/hr)	0	0	0	U	0	0	0	0	0	0	0	0
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)		0 %			070			0 %			0 %	
Lane Group Flow (vph)	0	0	0	0	117	0	0	1213	0	0	0	0
Turn Type	0	0	0	U	NA	0	0	NA	0	0	0	0
Protected Phases					1			2				
Permitted Phases					1			2				
Detector Phase					1			2				
Switch Phase					1			2				
Minimum Initial (s)					20.0			20.0				
Minimum Split (s)					33.5			37.5				
,					42.0			68.0				
Total Split (s) Total Split (%)					42.0 38.2%			61.8%				
,					32.5			58.5				
Maximum Green (s)					32.5			3.5				
Yellow Time (s)					5.5 6.0			5.5 6.0				
All-Red Time (s)					0.0			0.0				
Lost Time Adjust (s) Total Lost Time (s)					0.0 9.5			0.0 9.5				
. ,					Lead							
Lead/Lag								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

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWF
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					С			В				
Approach Delay					32.9			10.7				
Approach LOS					С			В				
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												
	Other											
Cycle Length: 110												
Actuated Cycle Length: 97.6	6											
Natural Cycle: 80												
Control Type: Semi Act-Unc	oord											
Maximum v/c Ratio: 0.74												
Intersection Signal Delay: 12					tersectior							
Intersection Capacity Utiliza	tion 64.9%			IC	U Level o	of Service	С					
Analysis Period (min) 15												
Splits and Phases: 13: N	Junction &	116 St										
#13 #14 #38			#12	#14 #3	0							

#13 #14 #38	#13 #14 #38
42 s	68 s

Glenmore Trail East FPS 14: 116 St & S Junction

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		ተተተ									<u></u>	
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

Lane Group Flash Dont Walk (s) Pedestrian Calls (#/hr) Act Effct Green (s)	NBL NBT 20.1 0.21	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Pedestrian Calls (#/hr)									OVL	3001	SWR
Act Effct Green (s)											
	0.21									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	С									В	
Approach Delay	35.0									10.9	
Approach LOS	С									В	
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											
	ther										
Cycle Length: 110											
Actuated Cycle Length: 97.6											
Natural Cycle: 80											
Control Type: Semi Act-Uncoc	ord										
Maximum v/c Ratio: 0.74											
Intersection Signal Delay: 26.1	1		In	tersectior	LOS: C						
Intersection Capacity Utilizatio	on 43.7%		IC	U Level o	of Service	А					
Analysis Period (min) 15											
Splits and Phases: 14: 116	St & S Junction										

#13 #14 #38	#13 #14 #38
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42 s	68 s

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

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Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		^			ኘኘ	
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 (%)	0.1	0%	0%	0.1	0%	0.1
Storage Length (m)	0.0	0,0	0,0	0.0	0.0	0.0
Storage Lanes	0.0			0.0	2	0.0
Taper Length (m)	25.0			U	25.0	0
Satd. Flow (prot)	0	4441	0	0	2652	0
Flt Permitted	0	1771	0	U	0.950	U
Satd. Flow (perm)	0	4441	0	0	2652	0
Right Turn on Red	0	4441	0	Yes	Yes	Yes
Satd. Flow (RTOR)				162	427	162
		60	60			
Link Speed (k/h)			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)		0.04	0.04	0.04	0.04	0.04
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)		None			Mux	

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

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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		А			А	
Approach Delay		4.6			9.8	
Approach LOS		А			А	
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-Une	coord					
Maximum v/c Ratio: 0.74						
Intersection Signal Delay: 8					tersection	
Intersection Capacity Utiliza	ation 64.7%			IC	U Level c	of Service C
Analysis Period (min) 15						
Colite and Dhasaat 20: 0	luptice Off	Dom: 0	116 04			
Splits and Phases: 38: S	Juntion Off	катр & '	110 St			

#13 #14 #38	#13 #14 #38
42 s	68 s

Glenmore Trail East FPS 13: N Junction & 116 St

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Lane Group NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations				<u></u>			<u>††</u>				
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
	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%	0.1	0.1	0%	0.17	0.11	0%	0.17	0.17	0%	0.1
Storage Length (m) 0.0	0,0	0.0	0.0	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		0.0
Taper Length (m) 25.0		•	25.0		· ·	25.0		· ·	25.0		U
Satd. Flow (prot) 0	0	0	0	3090	0	0	2734	0	0	0	0
Flt Permitted	Ū	U	U	0000	U	U	2104	U	U	U	U
Satd. Flow (perm) 0	0	0	0	3090	0	0	2734	0	0	0	0
Right Turn on Red	U	Yes	Yes	5050	Yes	U	2104	Yes	U	0	Yes
Satd. Flow (RTOR)		163	163		163			163			103
Link Speed (k/h)	60			60			60			60	
	54.8			92.0			83.9			126.8	
Travel Time (s)	3.3			92.0 5.5			5.0			7.6	
Confl. Peds. (#/hr)	3.3			5.5			5.0			7.0	
Confl. Bikes (#/hr)											
	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
	00%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
, ,	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)	00/			00/			00/			00/	
Mid-Block Traffic (%)	0%			0%			0%			0%	_
Shared Lane Traffic (%)	•	•	•	004	<u>,</u>	<u>,</u>	0.47	<u>^</u>	<u>^</u>	•	_
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											
	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				

GlenmoreTrail East Functional Planning Study 05/31/2016 DDI PM Peak

Synchro 9 Report Page 1

GlenmoreTrail East Functional Planning Study 05/31/2016 DDI PM Peak

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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					С			В				
Approach Delay					23.3			11.9				
Approach LOS					С			В				
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	othor											
Actuated Cycle Length: 86	3 9											
Natural Cycle: 75												
Control Type: Semi Act-Ur	hcoord											
Maximum v/c Ratio: 0.77	100010											
Intersection Signal Delay:	14.6			In	Itersectior							
Intersection Capacity Utiliz						of Service	B					
Analysis Period (min) 15							U					
		440.01										
	N Junction &	116 St										
#13 #14 #38				#13 #	14 #38	0 2						
20 .				52.0								

Glenmore Trail East FPS 13: N Junction & 116 St

Glenmore Trail East FPS 14: S Junction & 116 St

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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	

GlenmoreTrail East Functional Planning Study 05/31/2016 DDI PM Peak

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GlenmoreTrail East Functional Planning Study 05/31/2016 DDI PM Peak

#13 #14 #38

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SW
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		С									В	
Approach Delay		29.6									15.5	
Approach LOS		С									В	
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												
	Other											
Cycle Length: 90												
Actuated Cycle Length: 86.9	9											
Natural Cycle: 75												
Control Type: Semi Act-Unc	coord											
Maximum v/c Ratio: 0.77												
Intersection Signal Delay: 2					tersectior							
Intersection Capacity Utiliza	tion 52.3%			IC	U Level	of Service	А					
Analysis Period (min) 15												
Splits and Phases: 14: S	Junction &	116 St										
#12 #14 #20					4.4.400							

#13 #14 #38 # 202

Glenmore Trail East FPS 14: S Junction & 116 St

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

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Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations	HDL	111			ኘካ	
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 (%)	0.1	0%	0%	0.1	0%	0.1
Storage Length (m)	0.0	070	070	0.0	0.0	0.0
Storage Lanes	0.0			0.0	2	0.0
Taper Length (m)	25.0			0	25.0	U
Satd. Flow (prot)	0	4441	0	0	2652	0
Flt Permitted	U	1111	U	U	0.950	0
Satd. Flow (perm)	0	4441	0	0	2652	0
Right Turn on Red	0	4441	0	Yes	Yes	Yes
Satd. Flow (RTOR)				162	22	162
		60	60		22 60	
Link Speed (k/h)						
Link Distance (m)		69.3	120.0		80.2	
Travel Time (s)		4.2	7.2		4.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)	0.05	0.05	0.05	0.05	0.05	0.05
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)		00/	00/		00/	
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)	^	4050	^	•	0.10	<u>^</u>
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

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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			С	
Approach Delay		5.6			22.0	
Approach LOS		A			С	
Queue Length 50th (m)		3.4			54.0	
Queue Length 95th (m)		7.5	00.0		74.2	
Internal Link Dist (m)		45.3	96.0		56.2	
Turn Bay Length (m)		4.400			1010	
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						
51	ther					
Cycle Length: 90						
Actuated Cycle Length: 86.9						
Natural Cycle: 75						
Control Type: Semi Act-Uncoc	ord					
Maximum v/c Ratio: 0.77						
Intersection Signal Delay: 12.8					tersection	
Intersection Capacity Utilizatio	n 59.1%			IC	U Level o	f Service B
Analysis Period (min) 15						

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

#13 #14 #38	#13 #14 #38
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38 s	52 s

Glenmore Trail East FPS 13: N Junction & Rainbow Road

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations					<u></u>			<u></u>				
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	•	, , , , , , , , , , , , , , , , , , ,	•	•		•	•		, in the second s	•	•	
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)		0.0			0.0			0.0			1.0	
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)	Ű	Ū	Ű	Ű	Ŭ	Ŭ	Ŭ	Ū	Ŭ	Ŭ	Ŭ	Ű
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)		070			070			0,0			0,0	
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		_0.1	0.0		_0.1	0.0		_0.1	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	1.02	14	24		14	24	1.02	14	24		14
Turn Type	- 1				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			5.5 6.0				
Lost Time Adjust (s)					0.0			0.0				
Total Lost Time (s)					0.0 9.5			0.0 9.5				
					9.0			9.0				

GlenmoreTrail East Functional Planning Study 05/31/2016 DDI AM Peak

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					С			В				
Approach Delay					30.6			14.5				
Approach LOS					С			В				
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: Of	ther											
Cycle Length: 100												
Actuated Cycle Length: 93.6												
Natural Cycle: 80												
Control Type: Semi Act-Uncoc	ord											
Maximum v/c Ratio: 0.64												
Intersection Signal Delay: 14.8					tersection							
Intersection Capacity Utilizatio	on 64.3%			IC	U Level o	f Service	С					
Analysis Period (min) 15												

Splits and Phases: 13: N Junction & Rainbow Road

#13 #14 #38	#13 #14 #38
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33.5 s	66.5 s

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Glenmore Trail East FPS 13: N Junction & Rainbow Road

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Glenmore Trail East FPS 14: Rainbow Road & S Junction

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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	

GlenmoreTrail East Functional Planning Study 05/31/2016 DDI AM Peak

Synchro 9 Report Page 1 Glenmore Trail East FPS 14: Rainbow Road & S Junction

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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		С									А	
Approach Delay		30.6									9.8	
Approach LOS		С									А	
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												
51	Other											
Cycle Length: 100												
Actuated Cycle Length: 93.6												
Natural Cycle: 80												
Control Type: Semi Act-Unco	oord											
Maximum v/c Ratio: 0.64												
Intersection Signal Delay: 22					tersectior							
Intersection Capacity Utilizati	ion 40.3%			IC	U Level of	of Service	A					
Analysis Period (min) 15												

Splits and Phases: 14: Rainbow Road & S Junction

#13 #14 #38	#13 #14 #38
33.5 s	66.5 s

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

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Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		^	-	-	ኘኘ	
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 (%)	0.1	0%	0%	0.1	0%	0.1
Storage Length (m)	0.0	0,0	0,0	0.0	0.0	0.0
Storage Lanes	0.0			0.0	2	0.0
Taper Length (m)	25.0			Ŭ	25.0	v
Satd. Flow (prot)	20.0	4441	0	0	2652	0
Flt Permitted	U	1771	U	U	0.950	0
Satd. Flow (perm)	0	4441	0	0	2652	0
Right Turn on Red	U	4441	0	Yes	Yes	Yes
				162	1788	162
Satd. Flow (RTOR)		60	60			
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)		0.01				
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	21	NA			Prot	
Protected Phases		1			2	
Permitted Phases		1			2	
Detector Phase		1			2	
Switch Phase		I			۷	
		20.0			20.0	
Minimum Initial (s)						
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

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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		А			А	
Approach Delay		3.5			0.7	
Approach LOS		А			А	
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: Otl	her					
Cycle Length: 100						
Actuated Cycle Length: 93.6						
Natural Cycle: 80						
Control Type: Semi Act-Uncoo	rd					
Maximum v/c Ratio: 0.64						
Intersection Signal Delay: 0.8					tersection	
Intersection Capacity Utilization	n 64.7%			IC	U Level o	f Service C
Analysis Period (min) 15						

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

	#13 #14 #38 X X X X Ø2
33.5 s	66.5 s

Glenmore Trail East FPS 13: N Junction & Rainbow Road

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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	• / •	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	Ŭ	Ū	Ŭ	Ū	0000	•	Ū	2.01	Ū	•	Ŭ	Ŭ
Satd. Flow (perm)	0	0	0	0	3090	0	0	2734	0	0	0	0
Right Turn on Red	Ŭ	Ū	Yes	Yes	0000	Yes	Ū	2.01	Yes	•	Ŭ	Yes
Satd. Flow (RTOR)			100	100		100			100			100
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)		0.0			0.0			0.0			1.0	
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)	Ű	Ū	v	Ŭ	Ū	Ű	Ŭ	Ű	Ū	Ű	Ű	Ŭ
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)		070			0,0			0,0			0,0	
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)	2011	0.0	ragin	Lon	0.0	rugite	2011	0.0	rugite	Lon	0.0	ragin
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	1.02	14	24	1.02	14	24	1.02	14	24	1.02	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)					0.0 9.5			9.5				
					9.0			9.0				

GlenmoreTrail East Functional Planning Study 05/31/2016 DDI AM Peak

NBL	NBT	NBR	SBL								
			SDL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWF
				Lead			Lag				
				Yes			Yes				
				3.0			3.0				
				3.0			3.0				
				0.0			0.0				
				0.0			0.0				
				None			None				
				20.0			87.0				
				0.16			0.69				
				0.45			0.90				
				51.4			22.4				
				0.0			0.0				
				D			С				
				51.4			22.4				
				D			С				
				26.4			169.2				
				39.2			216.9				
	30.8			68.0			60.1			102.8	
				588			1887				
				0			0				
				0			0				
				0			0				
				0.38			0.90				
er											
78.5%			IC	CU Level c	of Service	D					
	er 78.5%	9 r	9 r	er In In	0.0 None 20.0 0.16 0.45 51.4 0.0 51.4 D 51.4 D 26.4 39.2 30.8 68.0 0 0 0 0 0 0 0 0 0 3.38	0.0 None 20.0 0.16 0.45 51.4 0 0 51.4 D 51.4 D 26.4 39.2 30.8 68.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 None 20.0 0.16 0.45 51.4 0.0 51.4 D 51.4 D 26.4 39.2 30.8 68.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 0.0 None None 20.0 87.0 0.16 0.69 0.45 0.90 51.4 22.4 0.0 0.0 51.4 22.4 D C 51.4 22.4 D C 51.4 22.4 D C 51.4 22.4 D C 26.4 169.2 39.2 216.9 30.8 68.0 60.1 588 1887 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 0.0 None None 20.0 87.0 0.16 0.69 0.45 0.90 51.4 22.4 0.0 0.0 51.4 22.4 D C 51.4 22.4 D C 51.4 22.4 D C 26.4 169.2 39.2 216.9 30.8 68.0 60.1 588 1887 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 0.0 None None 20.0 87.0 0.16 0.69 0.45 0.90 51.4 22.4 0.0 0.0 51.4 22.4 D C 51.4 22.4 D C 51.4 22.4 D C 51.4 169.2 30.8 68.0 60.1 588 1887 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 0.0 None None 20.0 87.0 0.16 0.69 0.45 0.90 51.4 22.4 0.0 0.0 51.4 22.4 D C 51.4 22.4 D C 26.4 169.2 39.2 216.9 30.8 68.0 60.1 102.8 588 1887 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Splits and Phases: 13: N Junction & Rainbow Road

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L	01	/ <mark>/</mark> 02	
	33.5 s	96.5 s	

Glenmore Trail East FPS 13: N Junction & Rainbow Road

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Glenmore Trail East FPS 14: Rainbow Road & S Junction

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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)	•	Ŭ	Ū	· ·	Ŭ	•	•	Ū	Ū	Ū	Ū	
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									5.5 6.0	
Lost Time Adjust (s)		0.0									0.0	
Total Lost Time (s)		9.5									9.5	
		9.0									9.0	

GlenmoreTrail East Functional Planning Study 05/31/2016 DDI AM Peak

Synchro 9 Report Page 1 Glenmore Trail East FPS 14: Rainbow Road & S Junction

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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									А	
Approach Delay		45.2									7.1	
Approach LOS		D									А	
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												
	Other											
Cycle Length: 130												
Actuated Cycle Length: 126												
Natural Cycle: 110												
Control Type: Semi Act-Unc	oord											
Maximum v/c Ratio: 0.90												
Intersection Signal Delay: 30					tersectior							
Intersection Capacity Utilizat	tion 40.3%			IC	CU Level o	of Service	A					
Analysis Period (min) 15												

Splits and Phases: 14: Rainbow Road & S Junction

33.5 s	96.5 s	
#13 #14 #38	#13 #14 #38	
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Glenmore Trail East FPS 38: S Junction Off Ramp & Rainbow Road

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Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations	•		^	•	ካካ	•
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%	100%	10%	30%	30%
			0	0		
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)		00/	00/		00/	
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)	•		<u>,</u>	<u>,</u>	1001	<u>,</u>
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					2	
Minimum Initial (s)		20.0			20.0	
. ,		33.5			37.5	
Minimum Split (s)		33.5			96.5	
Total Split (s)						
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

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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	00.0		5.4	
Internal Link Dist (m)		45.3	96.0		56.2	
Turn Bay Length (m)		0.45			0050	
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: Ott	her					
Cycle Length: 130	nei					
Actuated Cycle Length: 126						
Natural Cycle: 110						
Control Type: Semi Act-Uncoo	rd					
Maximum v/c Ratio: 0.90	iu					
Intersection Signal Delay: 2.3				In	tersection	108.1
Intersection Capacity Utilization	n 70 /0/					f Service D
Analysis Period (min) 15	11 7 9.4 /0			IC.		Dervice D

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

#13 #14 #38	#13 #14 #38
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33.5 s	96.5 s

Gonora	l Informati	ion			VING WORKSHEET Site Information						
Genera	i iniornati					Jimation					
Analyst Agency/Co Date Perfo Analysis Ti	rmed	Nicole ISL En 09-12- AM Pe	gineering&Lan 2017	d Services	Freeway/Dii Weaving Se Analysis Ye	gment Locati	Westb on 100 S 2039	oound t to Stoney T	r		
Project Des Inputs	scription 26534	Glenmore Tra	il East Function	nal Planning	Study						
Weaving co Weaving nu Weaving se Freeway fre	onfiguration umber of lanes, l egment length, L ee-flow speed, F	-s FS		One-Sided 5 2193ft 62 mph	5 Freeway minimum speed, S _{MIN} h Freeway maximum capacity, C _{IFL} Terrain type						
Conver	sions to p	T	1	T	T	1		.	1		
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _Τ	E _R	f _{HV}	fp	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							<u>.</u>	4		
VR	0.241										
Config	uration Ch	aracteris	tics								
Minimum n	naneuver lanes,	N _{WI}		3 lc	Minimum w	eaving lane c	hanges, LC _{MIN}		329 lc/		
	e density, ID	VVL		1.2 int/mi	Weaving la	ne changes, l	_C _w		1126 lc/		
Minimum F	RF lane changes	s, LC _{RF}		0 lc/pc	Non-weavir	ng lane chang	es, LC _{NW}		996 lc		
Minimum F	R lane changes	s, LC _{FR}		1 lc/pc		hanges, LC			2122 lc/		
Minimum F	R lane changes	s, LC _{RR}		lc/pc		ng vehicle ind			98		
Weavin	g Segmen	t Speed,	Density, I	Level of		-					
	egment flow rate	•		4681 veh/h	1	tensity factor,			0.22		
•	egment capacity			8534 veh/h	Manufactor and C						
-	egment v/c ratio	vv		0.548	Average weeking encoded						
Weaving s	egment density,	D	1	7.6 pc/mi/ln					54.9 mp		
Level of Se	ervice, LOS			В	Maximum v	veaving lengt	n, L _{MAX}		3391		
Notes											

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General	Informati	ion			Site Information						
Analyst Agency/Cor Date Perfori Analysis Tin	npany ned	Nicole	gineering&Lan 017	d Services	Freeway/Dir of Travel Westbound Weaving Segment Location 100 St to Stoney Tr Analysis Year 2039						
Project Desc Inputs	cription 26534	Glenmore Tra	il East Function	nal Planning	Study						
Weaving co Weaving nu Weaving se Freeway fre	mber of lanes, gment length, L e-flow speed, F	-s FS		One-Sided 5 2193ft 62 mph	Freeway ma Terrain type	nimum speed iximum capa			Freewa 2 185 Lev		
Convers	-	1	r Base Co	1	r						
	V (veh/h)	PHF	Truck (%)	RV (%)	E _T	E _R	f _{HV}	fp	v (pc/h)		
V _{FF}	2100	0.95	6	0	1.5 1.5	1.2	0.971	1.00	2277		
V _{RF}						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										
Configu	ration Ch	aracteris	tics		1						
Minimum m	aneuver lanes,	N _{WL}		3 lc	Minimum w	eaving lane c	hanges, LC _{MIN}		lc		
Interchange	edensity, ID			1.2 int/mi	Weaving la	ne changes, l	LCw		lc		
Minimum R	F lane changes	s, LC _{RF}		0 lc/pc	Non-weavin	g lane chang	jes, LC _{NW}		lc		
Minimum Fl	R lane changes	s, LC _{FR}		1 lc/pc	Total lane c	hanges, LC _{AI}	LL		lc		
Minimum R	R lane changes	s, LC _{RR}		lc/pc	Non-weavin	g vehicle ind	ex, I _{nw}				
Weaving	g Segmen	t Speed,	Density, I	_evel of	Service,	and Ca	pacity				
Weaving se	gment flow rate	ə, v		7158 veh/h	Weaving int	ensity factor,	W				
Weaving se	gment capacity	/, C _w		6830 veh/h	/h Weaving segment speed, S						
Weaving se	gment v/c ratio	1		1.048							
-	gment density,	D		pc/mi/ln					mp		
Level of Se	rvice, LOS			F	Maximum w	eaving lengt	h, L _{MAX}		6231		

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Gonora	l Informati	on			VING WORKSHEET Site Information						
Genera	i iiioiinati	UII				mation					
Analyst Agency/Co Date Perfo Analysis Ti	med	Nicole ISL Er 9/13/2 AM Pe	gineering Land 017	l Services	Freeway/Dir Weaving Se Analysis Yea	gment Locati	Westt on 116 S 2039	oound t to 100 St			
Project Des Inputs	cription 26534	Glenmore Tra	il East Function	nal Planning	Study						
•											
Weaving n Weaving se	onfiguration umber of lanes, l egment length, L ee-flow speed, F	S		One-Sided 5 1768ft 62 mph	Segment typ Freeway mir Freeway ma Terrain type	nimum speed ximum capao			Freewa 2 185 Lev		
Conver	sions to p	c/h Unde	r Base Co	ondition							
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _Τ	E _R	f _{HV}	fp	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										
Config	uration Ch	aracteris	tics								
Minimum r	naneuver lanes,	N _{WL}		3 lc	Minimum we	eaving lane c	hanges, LC _{MIN}		219 lc/		
Interchang	e density, ID			1.2 int/mi	Weaving lar	ne changes, l	_C _w		921 lc/		
Minimum F	RF lane changes	, LC _{RF}		0 lc/pc	Non-weavin	g lane chang	es, LC _{NW}		746 lc/		
Minimum F	R lane changes	s, LC _{FR}		1 lc/pc	Total lane c	hanges, LC _{AL}	L		1667 lc/		
Minimum F	R lane changes	s, LC _{RR}		lc/pc	Non-weavin	g vehicle ind	ex, I _{NW}		77		
Weavin	g Segmen	t Speed,	Density, I	Level of	Service,	and Ca	oacity				
Weaving s	egment flow rate	e, v		4256 veh/h		ensity factor,			0.21		
Weaving s	egment capacity	ν, c _w		8587 veh/h	Weaving se	56.8 mp					
Ŭ	egment v/c ratio			0.496	Average we	59.7 mp					
-	egment density,	D	1	5.8 pc/mi/ln					56.1 mp		
Level of Se	ervice, LOS			В	Maximum w	eaving lengtl	n, L _{MAX}		2825		
Notes											

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Gonora	I Informati				VING WORKSHEET Site Information						
Genera	i iniornati	on				mation					
Analyst Agency/Co Date Perfo Analysis Ti	rmed	Nicole ISL Er 9/13/2 PM Pe	gineering Lanc 017	l Services	Freeway/Dir Weaving Se Analysis Yea	gment Locati	Westk on 116 S 2039	oound t to 100 St			
Project De: Inputs	scription 26534	Glenmore Tra	il East Functio	nal Planning	Study						
Weaving co Weaving n Weaving so	onfiguration umber of lanes, l egment length, L ee-flow speed, F	S		One-Sided 5 1769ft 62 mph	Segment typ Freeway mir Freeway ma Terrain type	Freewa 4 185 Lev					
Conver	sions to p	c/h Unde	r Base Co	ondition	S						
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _Τ	E _R	f _{HV}	fp	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		2		_		2	V =	5348		
V _W	2408										
VR	0.450										
Config	uration Ch	aracteris	tics								
Minimum r	naneuver lanes,	N _{WI}		3 lc	Minimum we	eaving lane c	hanges, LC _{MIN}		108 lc/		
Interchang	e density, ID			1.2 int/mi	Weaving lar	ne changes, l	_C _w		810 lc/		
Minimum F	RF lane changes	, LC _{RF}		0 lc/pc	Non-weavin	g lane chang	es, LC _{NW}		601 lc/		
Minimum F	R lane changes	, LC _{FR}		1 lc/pc	Total lane cl	hanges, LC _{AI}	L		1411 lc/		
Minimum F	RR lane changes	s, LC _{RR}		lc/pc	Non-weavin	g vehicle ind	ex, I _{NW}		62		
Weavir	ig Segmen	t Speed,	Density,	Level of	Service,	and Ca	pacity				
Weaving s	egment flow rate	e, v		4948 veh/h	Weaving inte	ensity factor,	W		0.18		
Weaving s	egment capacity	′, C _w		7524 veh/h	Weaving se	57.8 mp					
Weaving s	egment v/c ratio			0.658	Average we	59.9 mp					
-	egment density,	D	1	8.5 pc/mi/ln					56.1 mp		
Level of Se	ervice, LOS			В	Maximum w	eaving lengt	n, L _{MAX}		5685		
Notes											

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		F	REEWAY	WEAV	ING WOF	RKSHEE	Т			
Genera	l Informati	on			Site Info	rmation				
Analyst Agency/Co Date Perfor Analysis Tir Project Des	rmed	9/13/20 AM Pe	gineering Land)17 ak		Freeway/Dir of Travel Westbound Weaving Segment Location Rainbow Rd to 116 St Analysis Year 2039					
Inputs				larr lanning	olddy					
Weaving nu Weaving se Freeway fre	onfiguration umber of lanes, I egment length, L ee-flow speed, F	s FS		One-Sided 5 1689ft 62 mph	Segment typ Freeway min Freeway ma: Terrain type	imum speed			Freewa 4 185 Lev	
Conver	sions to p	1	T	ľ	ľ		4	t.		
.1	V (veh/h)	PHF	Truck (%)	RV (%)	E _T	E _R	f _{HV}	fp	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									
/R Config	0.278 uration Cha	aractoris	tics							
	naneuver lanes,			3 lc	Minimum we	aving lane c	hanges, LC _{MIN}		115 lc/	
	e density, ID	• WL		1.2 int/mi	Weaving lan	-	- 000		798 lc/	
•	RF lane changes	, LC _{de}		0 lc/pc	Non-weaving	•	**		542 lc/	
	R lane changes	ru -		1 lc/pc	Total lane ch				1340 lc/	
	RR lane changes			lc/pc	Non-weaving		-		58	
Weavin	g Segmen	t Speed,	Density, I	_evel of		-				
	egment flow rate			3735 veh/h	Weaving inte				0.18	
•	egment capacity			8204 veh/h	Weaving accoment and C					
Weaving s	egment v/c ratio			0.455	Average weaving encoded					
-	egment density,	D	13	3.6 pc/mi/ln	Average nor	• •			57.4 mp	
Level of Se	ervice, LOS			В	Maximum w	eaving length	n, L _{MAX}		3779	
Notes										
Chapter 13,	segments longer t "Freeway Merge a nes that exceed th	and Diverge Se	egments".	-		solated merge	and diverge are	eas using the	procedures of	

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			REEWAY	WEAV	ING WOF	RKSHEE	Т			
Genera	I Informati	on			Site Info	rmation				
-		9/13/20 PM Pe	gineering Land)17 ak		Freeway/Dir of Travel Westbound Weaving Segment Location Rainbow Rd to 116 St Analysis Year 2039					
Inputs				<u> </u>	,					
Weaving n Weaving so Freeway fr	onfiguration umber of lanes, I egment length, L ee-flow speed, F	s FS		One-Sided 5 1689ft 62 mph	Freeway minimum speed, S _{MIN} Freeway maximum capacity, C _{IFL} Terrain type					
Convei	rsions to p		T	ľ	1		4	6		
	V (veh/h) 1245	PHF 0.95	Truck (%)	RV (%)	Е _т 1.5	Е _R 1.2	f _{HV}	fp 1.00	v (pc/h) 1350	
V _{FF}	_	_		0			0.971			
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 uration Cha	aractorie	tice							
	maneuver lanes,		1105	3 lc	Minimum we	aving lane c	hanges, LC _{MIN}		60 lc/	
	le density, ID	WL		1.2 int/mi	Weaving lan	-	- 10114		743 lc/	
-	RF lane changes	. LC _{nr}		0 lc/pc	Non-weaving	•	**		244 lc/	
	R lane changes	ru -		1 lc/pc	Total lane ch				987 lc/	
	RR lane changes			lc/pc	Non-weaving		-		28	
	ng Segmen		Densitv. I	-		-	100			
	egment flow rate			2958 veh/h	Weaving inte				0.14	
•	egment capacity			6042 veh/h	Washing asgment and C					
Weaving s	egment v/c ratio			0.490	Average weaving aread C					
Weaving s	egment density,	D	10).9 pc/mi/ln	Average nor	n-weaving sp	eed, S _{NW}		58.5 mp	
Level of Se	ervice, LOS			В	Maximum we	eaving length	n, L _{MAX}		6999	
Notes										
Chapter 13,	segments longer t "Freeway Merge nes that exceed th	and Diverge Se	egments".	0		olated merge	and diverge are	eas using the	procedures of	

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		F	REEWAY	WEAV		RKSHEE	Т			
Genera	al Informati	on			Site Info	rmation				
-	rmed me Period	09/12/2 AM Pe	gineering&Lan 2017 ak		Freeway/Dir of Travel Eastbound Weaving Segment Location Stoney Tr to 100 St Analysis Year 2039					
Inputs	scription 26534	Glenmore Tra	II East Function	hai Planning	Study					
Weaving n Weaving s Freeway fr	onfiguration umber of lanes, I egment length, L ee-flow speed, F	s FS		One-Sided 4 2906ft 62 mph	Segment typ Freeway min Freeway max Terrain type	imum speed			Freewa 4 185 Leve	
Conve	rsions to p	1	1	1	1	-	£	<i>c</i>	((1.)	
	V (veh/h) 2880	PHF	Truck (%)	RV (%)	E _T	E _R	f _{HV}	fp	v (pc/h)	
V _{FF}	_	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						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 Config	0.422 uration Cha	aractorie	tics							
	maneuver lanes,		105	3 lc	Minimum we	aving lane c	hanges, LC _{MIN}		1096 lc/	
	je density, ID	WL		1.2 int/mi	Weaving lan				1695 lc/	
-	RF lane changes			1 lc/pc	Non-weaving	•	**		1654 lc/	
	R lane changes	14		0 lc/pc	Total lane ch				3349 lc/	
	RR lane changes			lc/pc	Non-weaving		-		1340	
	ng Segmen	144	Densitv. I	-		-	1111			
	egment flow rate			6149 veh/h	Weaving inte				0.25	
•	egment capacity			6184 veh/h	Weaving account and C					
	egment v/c ratio	vv		0.994	Average wea	aving speed,	S _w		59.4 mp	
Weaving s	egment density,	D	32	2.6 pc/mi/ln	Average nor	n-weaving sp	eed, S _{NW}		46.1 mp	
Level of S	ervice, LOS			D	Maximum we	eaving length	n, L _{MAX}		5367	
Notes					•					
Chapter 13,	segments longer t "Freeway Merge nes that exceed th	and Diverge Se	egments".	-		olated merge	and diverge are	eas using the p	procedures of	

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Genera	imornau	on				mation					
Analyst Agency/Cor Date Perfor Analysis Tir	med	Nicole ISL Er 9/13/2 PM Pe	gineering&Lan 017	d Services	Freeway/Dir Weaving Se Analysis Yea	gment Locati	Eastb ion Stone 2039	ound y Tr to 100 S	t		
	cription 26534	Glenmore Tra	il East Functio	nal Planning	Study						
Inputs					r						
Weaving se	nfiguration Imber of lanes, l Igment length, L Pe-flow speed, F	S		One-Sided 5 2906ft 62 mph	5 Freeway minimum speed, S _{MIN}						
Conver	sions to p	<u>c/h Unde</u>	r Base Co	ondition	S			-			
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _Τ	E _R	f _{HV}	fp	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										
Configu	uration Ch	aracteris	tics								
Minimum m	naneuver lanes,	N _{WL}		3 lc	Minimum we	eaving lane o	hanges, LC _{MIN}		542 lc		
Interchange	e density, ID			1.2 int/mi	Weaving lar	ne changes, l	LCw		1477 lc/		
Minimum R	F lane changes	, LC _{RF}		1 lc/pc	Non-weavin	g lane chang	jes, LC _{NW}		2696 lc		
Minimum F	R lane changes	, LC _{FR}		0 lc/pc	Total lane cl	hanges, LC _{AI}	L		4173 lc		
Minimum R	R lane changes	s, LC _{RR}		lc/pc	Non-weavin	g vehicle ind	ex, I _{NW}		185		
Weavin	g Segmen	t Speed,	Density, I	Level of	Service,	and Ca	pacity				
Weaving se	egment flow rate	e, v		7158 veh/h	Weaving int	ensity factor,	W		0.30		
Weaving se	egment capacity	′, C _w		8140 veh/h	Washing assemant anoad S						
Weaving se	egment v/c ratio			0.879	Average weaving speed, S _w						
-	egment density,	D	29	9.4 pc/mi/ln					50.6 mp		
l evel of Se	rvice, LOS			D	Maximum w	eaving lengt	h, L _{max}		4215		

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Gonora	l Informati	on			Site Information						
Genera	imornau	OII				mation					
Analyst Agency/Cor Date Perfor Analysis Tir	med	Nicole ISL En 9/13/2 PM Pe	gineering&Lan 017	d Services	Freeway/Dir Weaving Se Analysis Yea	gment Locati	Eastb ion 100 S 2039	ound t to 116 St			
	cription 26534	Glenmore Tra	il East Function	nal Planning	Study						
Inputs					1						
Weaving se	nfiguration Imber of lanes, l gment length, L e-flow speed, F	S		One-Sided 4 1679ft 62 mph	Segment typ Freeway mir Freeway ma Terrain type		Freewa 185 Lev				
Conver	sions to p	c/h Unde	r Base Co	ondition	S						
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _Τ	E _R	f _{HV}	fp	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										
Configu	iration Ch	aracteris	tics								
Minimum m	naneuver lanes,	N _{WL}		3 lc	Minimum we	eaving lane o	hanges, LC _{MIN}		55 lc/		
Interchange	e density, ID			1.2 int/mi	Weaving lar	ne changes, l	LCw		490 lc/		
Minimum R	F lane changes	, LC _{RF}		1 lc/pc	Non-weavin	g lane chang	jes, LC _{NW}		563 lc		
Minimum F	R lane changes	, LC _{FR}		0 lc/pc	Total lane c	hanges, LC _{Al}	L		1053 lc/		
Minimum R	R lane changes	s, LC _{RR}		lc/pc	Non-weavin	g vehicle ind	ex, I _{NW}		41		
Weavin	g Segmen	t Speed,	Density, I	Level of	Service,	and Ca	pacity				
Weaving se	egment flow rate	e, v		4149 veh/h	, v	ensity factor,			0.15		
Weaving se	egment capacity	′, C _w		5395 veh/h	Weaving se		58.3 mp				
•	egment v/c ratio			0.769	Average we	60.2 mp					
•	egment density,	D	19	9.8 pc/mi/ln		n-weaving sp			56.1 mp		
Level of Se	rvice, LOS			В	Maximum w	eaving lengt	h, L _{MAX}		6909		

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Gonora	I Informati				VING WORKSHEET Site Information						
Genera	i informati	on			Site into	ormation					
Analyst Agency/Co Date Perfo Analysis Ti	rmed	Nicole ISL En 9/13/2 PM Pe	gineering&Lan)17	d Services	Freeway/Dir of Travel Eastbound Weaving Segment Location 100 St to 116 St Analysis Year 2039						
Project Des Inputs	scription 26534	Glenmore Tra	il East Function	nal Planning	Study						
Weaving co Weaving n Weaving so Freeway fr	onfiguration umber of lanes, l egment length, L ee-flow speed, F	FS		One-Sided 4 1679ft 62 mph	A Freeway minimum speed, S _{MIN} Freeway maximum capacity, C _{IFL} Terrain type						
Conver	sions to p	l I	1	1	1	,		1	-1		
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _Τ	E _R	f _{HV}	fp	v (pc/h)		
V _{FF}	3750	0.95	15	0	1.5	1.2	0.930	1.00	4243		
V _{RF}	450 0.05 0.0					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										
Config	uration Ch	aracteris	tics								
Minimum r	naneuver lanes,	N _{WI}		3 lc	Minimum we	eaving lane c	hanges, LC _{MIN}		163 lc/		
Interchang	e density, ID			1.2 int/mi	Weaving lar	ne changes, l	_C _w		598 lc/		
Minimum F	RF lane changes	, LC _{RF}		1 lc/pc	Non-weavin	g lane chang	les, LC _{NW}		1047 lc/		
Minimum F	R lane changes	, LC _{FR}		0 lc/pc	Total lane c	hanges, LC _{AI}	1		1645 lc/		
Minimum F	RR lane changes	s, LC _{RR}		lc/pc		g vehicle ind			88		
Weavir	ig Segmen	t Speed,	Density, I	_evel of	Service,	and Ca	pacity				
Weaving s	egment flow rate	e. v		5685 veh/h	Weaving int	ensity factor,	W		0.22		
•	egment capacity			6247 veh/h	Weaving se	55.1 mp					
Weaving s	egment v/c ratio			0.910	Average we	59.6 mp					
Weaving s	eaving segment density, D 28.2 pc/mi/lr					/In Average non-weaving speed, S _{NW}					
Level of Se	ervice, LOS			D	Maximum w	eaving lengt	h, L _{MAX}		3908		
Notes											

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			FREEWA	(WEAV			-				
Genera	l Informati	on			Site Info	rmation					
Analyst Agency/Co Date Perfor Analysis Tir Project Des	med	9/13/2 AM Pe	igineering&Lan 017 eak		Analysis Year 2039						
Inputs					olddy						
Weaving nu Weaving se Freeway fre	aving configuration One-Sid aving number of lanes, N aving segment length, L _s 160 eway free-flow speed, FFS 62 m Inversions to pc/h Under Base Condition					A Freeway minimum speed, S _{MIN} Freeway maximum capacity, C _{IFL} Terrain type					
Conver		1	1	T	1	-					
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _Τ	E _R	f _{HV}	fp	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										
Configu	uration Ch	aracteris	tics								
Minimum n	naneuver lanes,	N _{WI}		3 lc	Minimum we	eaving lane c	hanges, LC _{MIN}		22 lc/		
Interchang	e density, ID			1.2 int/mi	Weaving lan	ie changes, l	_C _w		445 lc/		
Minimum F	RF lane changes	, LC _{RF}		1 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		269 lc/		
Minimum F	R lane changes	, LC _{FR}		0 lc/pc	Total lane ch	nanges, LC	1		714 lc/		
Minimum F	R lane changes	s, LC _{RR}		lc/pc	Non-weaving				16		
Weavin	g Segmen	t Speed,	Density, I	Level of	Service,	and Ca	oacity				
Weaving s	egment flow rate	e, v		1958 veh/h	Weaving inte	ensity factor,	W		0.12		
•	egment capacity			5150 veh/h							
Weaving s	/eaving segment v/c ratio 0.38					Average weeking encoded					
•	/eaving segment density, D 9.1 pc/mi/li					i/In Average non-weaving speed, S_{NW} 5					
Level of Se	ervice, LOS			А	Maximum w	eaving lengtl	n, L _{MAX}		7686		
Notes					=						

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			REEWA	WEAV	ING WOF	RKSHEE	Т			
Genera	I Informati	on			Site Info	rmation				
Analyst Agency/Co Date Perfor Analysis Ti Project Des	rmed	9/13/20 PM Pe	gineering&Lan)17 ak		Freeway/Dir of Travel Eastbound Weaving Segment Location 116 St to Rainbow Rd Analysis Year 2039					
nputs										
Veaving nu Veaving se Freeway fre	onfiguration umber of lanes, I egment length, L ee-flow speed, F	s FS		One-Sided 4 1600ft 62 mph	Segment typ Freeway min Freeway max Terrain type	imum speed			Freewa 4 185 Lev	
Conver	sions to p	1	1	ľ	1		L C	4		
/	V (veh/h) 2445	PHF 0.95	Truck (%) 15	RV (%)	Е _т 1.5	Е _R 1.2	f _{нv} 0.930	fp 1.00	v (pc/h) 2767	
/ _{FF}				0	1.5	1.2			_	
/ _{RF}	155	0.95	6	0		0.971	1.00	168		
/ _{FR}	1455	0.95	30	0	1.5	1.2	0.870	1.00	1761	
/ _{RR}	155	0.95	6	0	1.5	1.2	0.971	1.00	168	
NW	2935							V =	4864	
/ _w /R	1929									
	0.397 uration Cha	 aracteris	tics							
	naneuver lanes,			3 lc	Minimum we	aving lane c	hanges, LC _{MIN}		168 lc/	
	e density, ID	VVL		1.2 int/mi	Weaving lan	e changes, L	.C _w		591 lc/	
Minimum F	RF lane changes	, LC _{RF}		1 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		701 lc/	
Minimum F	R lane changes	, LC _{FR}		0 lc/pc	Total lane ch	nanges, LC _{AI}			1292 lc/	
Minimum F	RR lane changes	, LC _{RR}		lc/pc	Non-weaving		-		56	
Weavin	ig Segmen	t Speed,	Density, I	_evel of	Service,	and Cap	pacity			
•	egment flow rate egment capacity			4432 veh/h 5894 veh/h	Weaving inte Weaving seg	gment speed	, S		0.19 56.8 mp 59.9 mp	
•	egment v/c ratio			0.752						
-	egment density,	D	21	1.4 pc/mi/ln	Average non	• •			55.0 mp	
	ervice, LOS			С	Maximum we	eaving length	n, L _{MAX}		5077	
Notes	segments longer t	han the calcul	ated maximum le	anath should	he treated as is		and diverge an	eas using the	nocedures of	
Chapter 13,	"Freeway Merge	and Diverge Se	egments".	0		olateu merge	and diverge all	cas using the		

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