

TOTAL FUTURE

HCM Signalized Intersection Capacity Analysis
1: Livingston Street & Randolph Road

Total Future AM
08/30/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑			↕				↕
Traffic Volume (vph)	12	1006	7	111	1655	5	7	3	42	17	21	18
Future Volume (vph)	12	1006	7	111	1655	5	7	3	42	17	21	18
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.5			6.5	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.89			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1768	5052		1768	5055			1620			1742	
Flt Permitted	0.10	1.00		0.24	1.00			0.95			0.90	
Satd. Flow (perm)	190	5052		442	5055			1545			1591	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	1118	8	123	1839	6	8	3	47	19	23	20
RTOR Reduction (vph)	0	0	0	0	0	0	0	42	0	0	17	0
Lane Group Flow (vph)	13	1126	0	123	1845	0	0	16	0	0	45	0
Confl. Peds. (#/hr)	5		1	1		5	3		6	6		3
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	95.8	95.8		95.8	95.8			11.7			11.7	
Effective Green, g (s)	95.8	95.8		95.8	95.8			11.7			11.7	
Actuated g/C Ratio	0.80	0.80		0.80	0.80			0.10			0.10	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.5			6.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			5.0			5.0	
Lane Grp Cap (vph)	151	4033		352	4035			150			155	
v/s Ratio Prot		0.22			c0.36							
v/s Ratio Perm	0.07			0.28				0.01			c0.03	
v/c Ratio	0.09	0.28		0.35	0.46			0.10			0.29	
Uniform Delay, d1	2.6	3.1		3.4	3.8			49.4			50.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.1	0.2		2.7	0.4			0.6			2.2	
Delay (s)	3.7	3.3		6.1	4.2			50.0			52.4	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		3.3			4.3			50.0			52.4	
Approach LOS		A			A			D			D	

Intersection Summary		
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.44	A
Actuated Cycle Length (s)	120.0	Sum of lost time (s)
Intersection Capacity Utilization	64.7%	12.5
Analysis Period (min)	15	ICU Level of Service
		C

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Georgia Avenue & Randolph Road

Total Future AM
08/30/2023



Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR	SWR2	
Lane Configurations													
Traffic Volume (vph)	241	64	214	209	1017	180	82	1782	225	998	51	137	
Future Volume (vph)	241	64	214	209	1017	180	82	1782	225	998	51	137	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	12.0	12.0	12.0	7.0	9.0	9.0	7.0	9.0	9.0	12.0	12.0	12.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	1.00	1.00	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.88	1.00	1.00	0.97	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	0.85	
Flt Protected	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1681	1583	3433	5085	1394	3433	5058	1535	3433	1583	1583	
Flt Permitted	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1681	1583	3433	5085	1394	3433	5058	1535	3433	1583	1583	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	248	66	221	215	1048	186	85	1837	232	1029	53	141	
RTOR Reduction (vph)	0	0	108	0	0	0	0	0	50	0	0	101	
Lane Group Flow (vph)	156	158	113	215	1048	186	85	1837	182	1029	53	40	
Confl. Peds. (#/hr)		12	2	8		26	26		8	8	26		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	4	0	0	0	0	
Turn Type	Prot	Prot	pt+ov	Prot	NA	Perm	Prot	NA	Perm	Prot	Prot	custom	
Protected Phases	4	4	4 1	1	6		5	2		3	3	3 5	
Permitted Phases						6			2			3	
Actuated Green, G (s)	24.0	24.0	52.2	16.2	65.2	65.2	10.8	59.8	59.8	40.0	40.0	50.8	
Effective Green, g (s)	24.0	24.0	52.2	16.2	65.2	65.2	10.8	59.8	59.8	40.0	40.0	50.8	
Actuated g/C Ratio	0.13	0.13	0.29	0.09	0.36	0.36	0.06	0.33	0.33	0.22	0.22	0.28	
Clearance Time (s)	12.0	12.0		7.0	9.0	9.0	7.0	9.0	9.0	12.0	12.0		
Vehicle Extension (s)	3.5	3.5		4.0	0.2	0.2	4.0	0.2	0.2	3.0	3.0		
Lane Grp Cap (vph)	236	224	459	308	1841	504	205	1680	509	762	351	446	
v/s Ratio Prot	0.09	c0.09	0.07	c0.06	c0.21		0.02	c0.36		c0.30	0.03	0.03	
v/s Ratio Perm						0.13			0.12				
v/c Ratio	0.66	0.71	0.25	0.70	0.57	0.37	0.41	1.09	0.36	1.35	0.15	0.09	
Uniform Delay, d1	74.1	74.6	48.9	79.5	46.1	42.3	81.6	60.1	45.5	70.0	56.3	47.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.83	1.31	1.56	1.00	1.00	1.00	
Incremental Delay, d2	7.1	10.0	0.3	7.3	1.3	2.1	1.5	50.4	1.6	166.3	0.2	0.1	
Delay (s)	81.2	84.6	49.2	86.8	47.4	44.3	69.5	129.0	72.7	236.3	56.5	47.7	
Level of Service	F	F	D	F	D	D	E	F	E	F	E	D	
Approach Delay (s)					52.9			120.6		206.8			
Approach LOS					D			F		F			
Intersection Summary													
HCM 2000 Control Delay			116.8		HCM 2000 Level of Service				F				
HCM 2000 Volume to Capacity ratio			1.06										
Actuated Cycle Length (s)			180.0		Sum of lost time (s)				40.0				
Intersection Capacity Utilization			114.2%		ICU Level of Service				H				
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: Glenmont Circle/Shopping Center & Randolph Road

Total Future AM
 08/30/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑	↗	↘	↑↑↑			↘	↗		↘	↗
Traffic Volume (vph)	18	852	74	19	1990	30	400	9	17	42	7	46
Future Volume (vph)	18	852	74	19	1990	30	400	9	17	42	7	46
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			7.0	7.0		7.0	7.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		0.99	1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1515	1770	6390			1776	1583		1775	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.69	1.00		0.29	1.00
Satd. Flow (perm)	1770	5085	1515	1770	6390			1293	1583		530	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	878	76	20	2052	31	412	9	18	43	7	47
RTOR Reduction (vph)	0	0	40	0	1	0	0	0	14	0	0	43
Lane Group Flow (vph)	19	878	36	20	2082	0	0	421	4	0	50	4
Confl. Peds. (#/hr)	5		6	6		5			12	12		
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Prot	Perm	NA	Prot
Protected Phases	1	6		5	2			4	4		3	3
Permitted Phases			6				4			3		
Actuated Green, G (s)	4.8	70.1	70.1	4.9	70.2			36.0	36.0		13.0	13.0
Effective Green, g (s)	4.8	70.1	70.1	4.9	70.2			36.0	36.0		13.0	13.0
Actuated g/C Ratio	0.03	0.47	0.47	0.03	0.47			0.24	0.24		0.09	0.09
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0			7.0	7.0		7.0	7.0
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	56	2376	708	57	2990			310	379		45	137
v/s Ratio Prot	0.01	0.17		c0.01	c0.33				0.00			0.00
v/s Ratio Perm			0.02					c0.33			c0.09	
v/c Ratio	0.34	0.37	0.05	0.35	0.70			1.36	0.01		1.11	0.03
Uniform Delay, d1	71.0	25.7	21.8	71.0	31.5			57.0	43.4		68.5	62.7
Progression Factor	1.00	1.00	1.00	1.23	0.54			1.00	1.00		1.00	1.00
Incremental Delay, d2	3.6	0.4	0.1	1.1	0.4			180.8	0.0		168.6	0.1
Delay (s)	74.6	26.2	21.9	88.8	17.4			237.8	43.5		237.1	62.8
Level of Service	E	C	C	F	B			F	D		F	E
Approach Delay (s)		26.8			18.1			229.8			152.7	
Approach LOS		C			B			F			F	

Intersection Summary			
HCM 2000 Control Delay	49.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 4: Residential Driveway & Randolph Road

Total Future AM
 08/30/2023



Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	↑↑↑			↑↑↑		↗			
Traffic Volume (veh/h)	933	27	0	2075	0	89			
Future Volume (Veh/h)	933	27	0	2075	0	89			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93			
Hourly flow rate (vph)	1003	29	0	2231	0	96			
Pedestrians						8			
Lane Width (ft)						12.0			
Walking Speed (ft/s)						3.5			
Percent Blockage						1			
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (ft)	462			470					
pX, platoon unblocked				0.89	0.65	0.89			
vC, conflicting volume				1040	1583	357			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol				627	0	0			
tC, single (s)				4.1	6.8	6.9			
tC, 2 stage (s)									
tF (s)				2.2	3.5	3.3			
p0 queue free %				100	100	90			
cM capacity (veh/h)				843	657	961			
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	
Volume Total	401	401	230	558	558	558	558	96	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	0	0	29	0	0	0	0	96	
cSH	1700	1700	1700	1700	1700	1700	1700	961	
Volume to Capacity	0.24	0.24	0.14	0.33	0.33	0.33	0.33	0.10	
Queue Length 95th (ft)	0	0	0	0	0	0	0	8	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2	
Lane LOS								A	
Approach Delay (s)	0.0				0.0			9.2	
Approach LOS								A	
Intersection Summary									
Average Delay				0.3					
Intersection Capacity Utilization				33.4%	ICU Level of Service	A			
Analysis Period (min)				15					

HCM Signalized Intersection Capacity Analysis

5: Glenallan Avenue & Randolph Road

Total Future AM
08/30/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↗	↑↑↑			↑	↗	↗	↕	
Traffic Volume (vph)	33	901	35	19	1934	246	55	135	0	352	63	86
Future Volume (vph)	33	901	35	19	1934	246	55	135	0	352	63	86
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.5		5.5	6.5			7.0		7.0	7.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00		0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			1.00		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.98	
Satd. Flow (prot)	1770	5042		1766	4980			1836		1681	1635	
Flt Permitted	0.06	1.00		0.23	1.00			0.99		0.95	0.98	
Satd. Flow (perm)	110	5042		427	4980			1836		1681	1635	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	34	939	36	20	2015	256	57	141	0	367	66	90
RTOR Reduction (vph)	0	2	0	0	8	0	0	0	0	0	13	0
Lane Group Flow (vph)	34	973	0	20	2263	0	0	198	0	264	246	0
Confl. Peds. (#/hr)	11		17	17		11	4		12	12		4
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Prot	Split		NA
Protected Phases	1	6		5	2		3	3	3	4		4
Permitted Phases	6			2								
Actuated Green, G (s)	73.6	67.6		70.0	65.8			24.1		28.1	28.1	
Effective Green, g (s)	73.6	67.6		70.0	65.8			24.1		28.1	28.1	
Actuated g/C Ratio	0.49	0.45		0.47	0.44			0.16		0.19	0.19	
Clearance Time (s)	5.5	6.5		5.5	6.5			7.0		7.0	7.0	
Vehicle Extension (s)	3.0	5.0		3.0	5.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	120	2272		236	2184			294		314	306	
v/s Ratio Prot	c0.01	0.19		0.00	c0.45			c0.11		c0.16	0.15	
v/s Ratio Perm	0.13			0.04								
v/c Ratio	0.28	0.43		0.08	1.04			0.67		0.84	0.80	
Uniform Delay, d1	33.6	28.0		22.1	42.1			59.2		58.8	58.3	
Progression Factor	1.45	0.55		0.63	0.48			1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.6		0.1	25.6			6.0		18.0	14.1	
Delay (s)	50.1	16.0		14.1	45.6			65.2		76.8	72.4	
Level of Service	D	B		B	D			E		E	E	
Approach Delay (s)		17.1			45.3			65.2			74.6	
Approach LOS		B			D			E			E	

Intersection Summary

HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
7: Georgia Avenue & Layhill Road























Total Future AM
08/30/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↘↗		↗		↕↕↕	↗	↘	↕↕↕	
Traffic Volume (vph)	9	7	15	922	0	30	0	955	412	53	1238	0
Future Volume (vph)	9	7	15	922	0	30	0	955	412	53	1238	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5	6.5		6.5		6.5	6.5	5.5	6.5	
Lane Util. Factor		1.00	1.00	0.97		1.00		0.91	1.00	1.00	0.91	
Frbp, ped/bikes		1.00	1.00	1.00		0.97		1.00	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected		0.97	1.00	0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1812	1583	3433		1543		5085	1583	1768	5038	
Flt Permitted		0.97	1.00	0.95		1.00		1.00	1.00	0.22	1.00	
Satd. Flow (perm)		1812	1583	3433		1543		5085	1583	401	5038	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	9	7	15	931	0	30	0	965	416	54	1251	0
RTOR Reduction (vph)	0	0	15	0	0	20	0	0	49	0	0	0
Lane Group Flow (vph)	0	16	0	931	0	10	0	965	367	54	1251	0
Confl. Peds. (#/hr)	8		1	1		8	7		22	22		7
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	7	0
Turn Type	Split	NA	Prot	Prot		Perm		NA	Prot	pm+pt	NA	
Protected Phases	3	3	3	4				6	6	5	2	
Permitted Phases						4				2		
Actuated Green, G (s)		4.8	4.8	57.8		57.8		85.7	85.7	97.9	97.9	
Effective Green, g (s)		4.8	4.8	57.8		57.8		85.7	85.7	97.9	97.9	
Actuated g/C Ratio		0.03	0.03	0.32		0.32		0.48	0.48	0.54	0.54	
Clearance Time (s)		6.5	6.5	6.5		6.5		6.5	6.5	5.5	6.5	
Vehicle Extension (s)		3.0	3.0	5.0		5.0		0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		48	42	1102		495		2421	753	268	2740	
v/s Ratio Prot		c0.01	0.00	c0.27				0.19	c0.23	0.01	c0.25	
v/s Ratio Perm						0.01				0.10		
v/c Ratio		0.33	0.01	0.84		0.02		0.40	0.49	0.20	0.46	
Uniform Delay, d1		86.0	85.3	56.9		41.7		30.5	32.2	20.8	24.9	
Progression Factor		1.00	1.00	1.00		1.00		1.68	1.91	1.00	1.00	
Incremental Delay, d2		4.1	0.1	6.7		0.0		0.4	2.0	0.4	0.6	
Delay (s)		90.1	85.4	63.6		41.8		51.8	63.3	21.2	25.5	
Level of Service		F	F	E		D		D	E	C	C	
Approach Delay (s)		87.8			63.0			55.2			25.3	
Approach LOS		F			E			E			C	
Intersection Summary												
HCM 2000 Control Delay			46.9								HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			180.0								Sum of lost time (s)	25.0
Intersection Capacity Utilization			82.1%								ICU Level of Service	E
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 10: Glenallan Avenue & Layhill Road

Total Future AM
 08/30/2023

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	62	385	28	111	850	267	19	366	78	134	316	96	
Future Volume (vph)	62	385	28	111	850	267	19	366	78	134	316	96	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	7.0		6.5	7.0	7.0	6.0	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1769	5027		1767	3539	1555	1754	3434		1768	1863	1511	
Flt Permitted	0.12	1.00		0.44	1.00	1.00	0.49	1.00		0.34	1.00	1.00	
Satd. Flow (perm)	223	5027		809	3539	1555	909	3434		637	1863	1511	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	67	418	30	121	924	290	21	398	85	146	343	104	
RTOR Reduction (vph)	0	7	0	0	0	200	0	15	0	0	0	63	
Lane Group Flow (vph)	67	441	0	121	924	90	21	468	0	146	343	41	
Confl. Peds. (#/hr)	5		8	8		5	24		5	5		24	
Confl. Bikes (#/hr)			1			1							
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	
Protected Phases	7	4		3	8		1	6		5	2		
Permitted Phases	4			8		8	6			2		2	
Actuated Green, G (s)	42.4	35.0		46.8	37.2	37.2	43.3	40.5		55.9	47.1	47.1	
Effective Green, g (s)	42.4	35.0		46.8	37.2	37.2	43.3	40.5		55.9	47.1	47.1	
Actuated g/C Ratio	0.35	0.29		0.39	0.31	0.31	0.36	0.34		0.47	0.39	0.39	
Clearance Time (s)	6.5	7.0		6.5	7.0	7.0	6.0	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	3.0	0.2		3.0	0.2	0.2	
Lane Grp Cap (vph)	174	1466		392	1097	482	347	1158		385	731	593	
v/s Ratio Prot	0.02	0.09		c0.02	c0.26		0.00	0.14		c0.03	c0.18		
v/s Ratio Perm	0.11			0.10		0.06	0.02			0.15		0.03	
v/c Ratio	0.39	0.30		0.31	0.84	0.19	0.06	0.40		0.38	0.47	0.07	
Uniform Delay, d1	28.2	33.0		24.0	38.7	30.3	24.9	30.5		19.5	27.1	22.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.4	0.2		0.5	6.6	0.4	0.1	1.1		0.6	2.2	0.2	
Delay (s)	29.7	33.2		24.5	45.3	30.7	25.0	31.5		20.1	29.3	23.0	
Level of Service	C	C		C	D	C	C	C		C	C	C	
Approach Delay (s)		32.8			40.2			31.3			25.9		
Approach LOS		C			D			C			C		
Intersection Summary													
HCM 2000 Control Delay			34.5									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	25.5
Intersection Capacity Utilization			77.4%									ICU Level of Service	D
Analysis Period (min)			15										

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

12: Glenallan Avenue & Erskine Avenue

Total Future AM
08/30/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	0	0	222	115	26
Future Volume (Veh/h)	30	0	0	222	115	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	39	0	0	288	149	34
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						350
pX, platoon unblocked						
vC, conflicting volume	454	166	183			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	454	166	183			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	100	100			
cM capacity (veh/h)	564	878	1392			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	39	288	183			
Volume Left	39	0	0			
Volume Right	0	0	34			
cSH	564	1392	1700			
Volume to Capacity	0.07	0.00	0.11			
Queue Length 95th (ft)	6	0	0			
Control Delay (s)	11.9	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.9	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			21.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
1: Livingston Street & Randolph Road

Total Future PM
08/30/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↕				↕
Traffic Volume (vph)	29	1662	7	79	1139	12	14	3	37	4	12	8
Future Volume (vph)	29	1662	7	79	1139	12	14	3	37	4	12	8
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			6.5			6.5	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1763	5054		1769	5048			1639			1747	
Flt Permitted	0.22	1.00		0.12	1.00			0.92			0.95	
Satd. Flow (perm)	414	5054		222	5048			1523			1677	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	30	1696	7	81	1162	12	14	3	38	4	12	8
RTOR Reduction (vph)	0	0	0	0	0	0	0	28	0	0	7	0
Lane Group Flow (vph)	30	1703	0	81	1174	0	0	27	0	0	17	0
Confl. Peds. (#/hr)	6		2	2		6	11		6	6		11
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	93.3	93.3		93.3	93.3			14.2			14.2	
Effective Green, g (s)	93.3	93.3		93.3	93.3			14.2			14.2	
Actuated g/C Ratio	0.78	0.78		0.78	0.78			0.12			0.12	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.5			6.5	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			5.0			5.0	
Lane Grp Cap (vph)	321	3929		172	3924			180			198	
v/s Ratio Prot		0.34			0.23							
v/s Ratio Perm	0.07			c0.37				c0.02			0.01	
v/c Ratio	0.09	0.43		0.47	0.30			0.15			0.09	
Uniform Delay, d1	3.2	4.5		4.7	3.9			47.5			47.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.6	0.3		9.0	0.2			0.8			0.4	
Delay (s)	3.8	4.8		13.7	4.1			48.3			47.5	
Level of Service	A	A		B	A			D			D	
Approach Delay (s)		4.8			4.7			48.3			47.5	
Approach LOS		A			A			D			D	

Intersection Summary

























HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Georgia Avenue & Randolph Road

Total Future PM
08/30/2023

												
Movement	EBL2	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR	SWR2
Lane Configurations												
Traffic Volume (vph)	363	102	145	187	1667	354	154	1327	324	456	60	128
Future Volume (vph)	363	102	145	187	1667	354	154	1327	324	456	60	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	12.0	12.0	12.0	7.0	9.0	9.0	7.0	9.0	9.0	12.0	12.0	12.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.83	1.00	1.00	0.96	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1681	1583	3433	5085	1321	3433	5058	1521	3433	1583	1583
Flt Permitted	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1681	1583	3433	5085	1321	3433	5058	1521	3433	1583	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	382	107	153	197	1755	373	162	1397	341	480	63	135
RTOR Reduction (vph)	0	0	73	0	0	0	0	0	59	0	0	101
Lane Group Flow (vph)	244	245	80	197	1755	373	162	1397	282	480	63	34
Confl. Peds. (#/hr)		9	6	12		38	38		12			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	4	0	0	0	0
Turn Type	Prot	Prot	pt+ov	Prot	NA	Perm	Prot	NA	Perm	Prot	Prot	custom
Protected Phases	4	4	4 1	1	6		5	2		3	3	3 5
Permitted Phases						6			2			3
Actuated Green, G (s)	31.6	31.6	60.2	16.6	63.6	63.6	14.1	61.1	61.1	30.7	30.7	44.8
Effective Green, g (s)	31.6	31.6	60.2	16.6	63.6	63.6	14.1	61.1	61.1	30.7	30.7	44.8
Actuated g/C Ratio	0.18	0.18	0.33	0.09	0.35	0.35	0.08	0.34	0.34	0.17	0.17	0.25
Clearance Time (s)	12.0	12.0		7.0	9.0	9.0	7.0	9.0	9.0	12.0	12.0	
Vehicle Extension (s)	3.5	3.5		4.0	0.2	0.2	4.0	0.2	0.2	3.0	3.0	
Lane Grp Cap (vph)	310	295	529	316	1796	466	268	1716	516	585	269	393
v/s Ratio Prot	0.14	c0.15	0.05	c0.06	c0.35		0.05	0.28		c0.14	0.04	0.02
v/s Ratio Perm						0.28			0.19			
v/c Ratio	0.79	0.83	0.15	0.62	0.98	0.80	0.60	0.81	0.55	0.82	0.23	0.09
Uniform Delay, d1	71.0	71.6	42.0	78.7	57.5	52.5	80.3	54.3	48.2	72.0	64.5	51.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.96	1.19	1.31	1.00	1.00	1.00
Incremental Delay, d2	12.7	18.1	0.2	4.3	16.5	13.5	3.7	3.7	3.5	9.0	0.4	0.1
Delay (s)	83.7	89.7	42.2	83.0	74.0	65.9	80.9	68.4	66.7	81.0	64.9	52.0
Level of Service	F	F	D	F	E	E	F	E	E	F	E	D
Approach Delay (s)					73.4			69.1		73.7		
Approach LOS					E			E		E		
Intersection Summary												
HCM 2000 Control Delay			72.3									HCM 2000 Level of Service E
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			180.0									Sum of lost time (s) 40.0
Intersection Capacity Utilization			98.1%									ICU Level of Service F
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: Glenmont Circle/Shopping Center & Randolph Road

Total Future PM
 08/30/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑	↗	↙	↑↑↑			↙	↗		↙	↗
Traffic Volume (vph)	34	1575	155	28	1018	75	203	19	12	77	26	100
Future Volume (vph)	34	1575	155	28	1018	75	203	19	12	77	26	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			7.0	7.0		7.0	7.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86			1.00	1.00		1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		0.98	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1497	1770	6318			1780	1583		1755	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.67	1.00		0.21	1.00
Satd. Flow (perm)	1770	5085	1497	1770	6318			1247	1583		374	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	35	1624	160	29	1049	77	209	20	12	79	27	103
RTOR Reduction (vph)	0	0	68	0	7	0	0	0	9	0	0	91
Lane Group Flow (vph)	35	1624	92	29	1119	0	0	229	3	0	106	12
Confl. Peds. (#/hr)	9		9	9		9	1		44	44		1
Confl. Bikes (#/hr)												1
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Prot	Perm	NA	Prot
Protected Phases	1	6		5	2			4	4		3	3
Permitted Phases			6				4			3		
Actuated Green, G (s)	7.3	68.3	68.3	5.5	66.5			33.2	33.2		17.0	17.0
Effective Green, g (s)	7.3	68.3	68.3	5.5	66.5			33.2	33.2		17.0	17.0
Actuated g/C Ratio	0.05	0.46	0.46	0.04	0.44			0.22	0.22		0.11	0.11
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0			7.0	7.0		7.0	7.0
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	86	2315	681	64	2800			276	350		42	179
v/s Ratio Prot	c0.02	c0.32		0.02	0.18				0.00			0.01
v/s Ratio Perm			0.06					c0.18			c0.28	
v/c Ratio	0.41	0.70	0.14	0.45	0.40			0.83	0.01		2.52	0.07
Uniform Delay, d1	69.2	32.7	23.7	70.8	28.2			55.7	45.6		66.5	59.4
Progression Factor	1.00	1.00	1.00	1.13	1.02			1.00	1.00		1.00	1.00
Incremental Delay, d2	3.1	1.8	0.4	4.3	0.4			18.3	0.0		750.6	0.2
Delay (s)	72.4	34.5	24.1	84.0	29.2			74.0	45.6		817.1	59.6
Level of Service	E	C	C	F	C			E	D		F	E
Approach Delay (s)		34.3			30.5			72.6			443.7	
Approach LOS		C			C			E			F	
Intersection Summary												
HCM 2000 Control Delay			60.7			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			26.0			
Intersection Capacity Utilization			76.8%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

4: Residential Driveway & Randolph Road

Total Future PM
08/30/2023



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑		↗		
Traffic Volume (veh/h)	1609	68	0	1162	0	47		
Future Volume (Veh/h)	1609	68	0	1162	0	47		
Sign Control	Free			Free	Stop			
Grade	0%			0%	0%			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Hourly flow rate (vph)	1730	73	0	1249	0	51		
Pedestrians	2			1				
Lane Width (ft)	12.0			12.0				
Walking Speed (ft/s)	3.5			3.5				
Percent Blockage	0			0				
Right turn flare (veh)								
Median type	None			None				
Median storage (veh)								
Upstream signal (ft)	462			470				
pX, platoon unblocked				0.74	0.74	0.74		
vC, conflicting volume				1804	2082	614		
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol				875	1249	0		
tC, single (s)				4.1	6.8	6.9		
tC, 2 stage (s)								
tF (s)				2.2	3.5	3.3		
p0 queue free %				100	100	94		
cM capacity (veh/h)				570	122	806		
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	692	692	419	312	312	312	312	51
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	73	0	0	0	0	51
cSH	1700	1700	1700	1700	1700	1700	1700	806
Volume to Capacity	0.41	0.41	0.25	0.18	0.18	0.18	0.18	0.06
Queue Length 95th (ft)	0	0	0	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8
Lane LOS								A
Approach Delay (s)	0.0			0.0			9.8	
Approach LOS								A
Intersection Summary								
Average Delay	0.2							
Intersection Capacity Utilization	42.6%			ICU Level of Service				A
Analysis Period (min)	15							

HCM Signalized Intersection Capacity Analysis

5: Glenallan Avenue & Randolph Road

Total Future PM
08/30/2023




























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑			↑	↗	↖	↕	
Traffic Volume (vph)	76	1542	30	41	1067	296	31	38	5	370	43	64
Future Volume (vph)	76	1542	30	41	1067	296	31	38	5	370	43	64
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.5		5.5	6.5			7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.99			1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.97			1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00	0.95	0.97	
Satd. Flow (prot)	1770	5068		1770	4873			1822	1583	1681	1647	
Flt Permitted	0.12	1.00		0.09	1.00			0.98	1.00	0.95	0.97	
Satd. Flow (perm)	223	5068		172	4873			1822	1583	1681	1647	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	78	1573	31	42	1089	302	32	39	5	378	44	65
RTOR Reduction (vph)	0	1	0	0	24	0	0	0	5	0	9	0
Lane Group Flow (vph)	78	1603	0	42	1367	0	0	71	0	246	232	0
Confl. Peds. (#/hr)	15		2	2		15	1		2	2		1
Confl. Bikes (#/hr)			1			1						
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Prot	Split	NA	
Protected Phases	1	6		5	2		3	3	3	4	4	
Permitted Phases	6			2								
Actuated Green, G (s)	84.9	76.3		79.9	73.8			14.7	14.7	26.9	26.9	
Effective Green, g (s)	84.9	76.3		79.9	73.8			14.7	14.7	26.9	26.9	
Actuated g/C Ratio	0.57	0.51		0.53	0.49			0.10	0.10	0.18	0.18	
Clearance Time (s)	5.5	6.5		5.5	6.5			7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	5.0		3.0	5.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	214	2577		156	2397			178	155	301	295	
v/s Ratio Prot	c0.02	c0.32		0.01	0.28			c0.04	0.00	c0.15	0.14	
v/s Ratio Perm	0.18			0.13								
v/c Ratio	0.36	0.62		0.27	0.57			0.40	0.00	0.82	0.79	
Uniform Delay, d1	17.7	26.5		19.6	26.9			63.5	61.0	59.2	58.8	
Progression Factor	1.03	0.27		1.32	0.87			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.8		0.9	0.9			1.5	0.0	15.6	12.9	
Delay (s)	19.0	8.0		26.7	24.3			65.0	61.0	74.8	71.7	
Level of Service	B	A		C	C			E	E	E	E	
Approach Delay (s)		8.5		24.4				64.7			73.3	
Approach LOS		A		C				E			E	
Intersection Summary												
HCM 2000 Control Delay			24.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				26.0		
Intersection Capacity Utilization			70.7%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group



























HCM Signalized Intersection Capacity Analysis
7: Georgia Avenue & Layhill Road

Total Future PM
08/30/2023

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations				 				  			  			
Traffic Volume (vph)	13	18	7	600	0	48	0	1422	698	107	1283	0		
Future Volume (vph)	13	18	7	600	0	48	0	1422	698	107	1283	0		
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		6.5	6.5	6.5		6.5		6.5	6.5	5.5	6.5			
Lane Util. Factor		1.00	1.00	0.97		1.00		0.91	1.00	1.00	0.91			
Frbp, ped/bikes		1.00	1.00	1.00		0.96		1.00	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00			
Frt		1.00	0.85	1.00		0.85		1.00	0.85	1.00	1.00			
Flt Protected		0.98	1.00	0.95		1.00		1.00	1.00	0.95	1.00			
Satd. Flow (prot)		1824	1583	3433		1524		5085	1583	1769	5038			
Flt Permitted		0.98	1.00	0.95		1.00		1.00	1.00	0.10	1.00			
Satd. Flow (perm)		1824	1583	3433		1524		5085	1583	189	5038			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94		
Adj. Flow (vph)	14	19	7	638	0	51	0	1513	743	114	1365	0		
RTOR Reduction (vph)	0	0	7	0	0	39	0	0	48	0	0	0		
Lane Group Flow (vph)	0	33	0	638	0	12	0	1513	695	114	1365	0		
Confl. Peds. (#/hr)	15					15	8		25	25		8		
Confl. Bikes (#/hr)									1			1		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	7	0		
Turn Type	Split	NA	Prot	Prot		Perm		NA	Prot	pm+pt	NA			
Protected Phases	3	3	3	4				6	6	5	2			
Permitted Phases						4				2				
Actuated Green, G (s)		7.6	7.6	42.1		42.1		95.0	95.0	110.8	110.8			
Effective Green, g (s)		7.6	7.6	42.1		42.1		95.0	95.0	110.8	110.8			
Actuated g/C Ratio		0.04	0.04	0.23		0.23		0.53	0.53	0.62	0.62			
Clearance Time (s)		6.5	6.5	6.5		6.5		6.5	6.5	5.5	6.5			
Vehicle Extension (s)		3.0	3.0	5.0		5.0		0.2	0.2	3.0	0.2			
Lane Grp Cap (vph)		77	66	802		356		2683	835	206	3101			
v/s Ratio Prot		c0.02	0.00	c0.19				0.30	c0.44	c0.03	0.27			
v/s Ratio Perm						0.01				0.31				
v/c Ratio		0.43	0.00	0.80		0.03		0.56	0.83	0.55	0.44			
Uniform Delay, d1		84.1	82.6	64.9		53.2		28.6	35.8	20.3	18.2			
Progression Factor		1.00	1.00	1.00		1.00		1.66	1.72	1.00	1.00			
Incremental Delay, d2		3.8	0.0	6.3		0.1		0.4	4.5	3.2	0.5			
Delay (s)		87.9	82.6	71.2		53.3		47.9	65.9	23.5	18.7			
Level of Service		F	F	E		D		D	E	C	B			
Approach Delay (s)		87.0			69.9			53.8			19.1			
Approach LOS		F			E			D			B			
Intersection Summary														
HCM 2000 Control Delay			45.1									HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio			0.78											
Actuated Cycle Length (s)			180.0								25.0			
Intersection Capacity Utilization			74.7%										ICU Level of Service	D
Analysis Period (min)			15											
c Critical Lane Group														

HCM Signalized Intersection Capacity Analysis
 10: Glenallan Avenue & Layhill Road

Total Future PM
 08/30/2023

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 			 		
Traffic Volume (vph)	126	703	50	96	470	127	28	305	84	189	337	139	
Future Volume (vph)	126	703	50	96	470	127	28	305	84	189	337	139	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.5	7.0		6.5	7.0	7.0	6.0	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1767	5027		1768	3539	1547	1758	3411		1768	1863	1529	
Flt Permitted	0.32	1.00		0.25	1.00	1.00	0.51	1.00		0.40	1.00	1.00	
Satd. Flow (perm)	593	5027		463	3539	1547	950	3411		743	1863	1529	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	131	732	52	100	490	132	29	318	88	197	351	145	
RTOR Reduction (vph)	0	8	0	0	0	100	0	18	0	0	0	85	
Lane Group Flow (vph)	131	776	0	100	490	32	29	388	0	197	351	60	
Confl. Peds. (#/hr)	11		11	11		11	16		4	4		16	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	
Protected Phases	7	4		3	8		1	6		5	2		
Permitted Phases	4			8		8	6			2		2	
Actuated Green, G (s)	42.2	31.0		38.4	29.1	29.1	46.0	41.6		60.2	49.8	49.8	
Effective Green, g (s)	42.2	31.0		38.4	29.1	29.1	46.0	41.6		60.2	49.8	49.8	
Actuated g/C Ratio	0.35	0.26		0.32	0.24	0.24	0.38	0.35		0.50	0.41	0.41	
Clearance Time (s)	6.5	7.0		6.5	7.0	7.0	6.0	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	3.0	0.2		3.0	0.2	0.2	
Lane Grp Cap (vph)	318	1298		249	858	375	393	1182		480	773	634	
v/s Ratio Prot	c0.04	c0.15		0.03	0.14		0.00	0.11		c0.04	c0.19		
v/s Ratio Perm	0.11			0.10		0.02	0.03			0.16		0.04	
v/c Ratio	0.41	0.60		0.40	0.57	0.09	0.07	0.33		0.41	0.45	0.09	
Uniform Delay, d1	27.7	39.0		29.7	40.0	35.2	23.2	28.9		17.4	25.3	21.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.9	1.1		1.1	1.5	0.2	0.1	0.7		0.6	1.9	0.3	
Delay (s)	28.6	40.2		30.8	41.4	35.4	23.3	29.6		17.9	27.2	21.7	
Level of Service	C	D		C	D	D	C	C		B	C	C	
Approach Delay (s)		38.5			38.8			29.2			23.4		
Approach LOS		D			D			C			C		
Intersection Summary													
HCM 2000 Control Delay			33.4									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.52										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	25.5
Intersection Capacity Utilization			77.7%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis
 12: Glenallan Avenue & Erskine Avenue

Total Future PM
 08/30/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	0	0	100	120	55
Future Volume (Veh/h)	14	0	0	100	120	55
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	18	0	0	130	156	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						350
pX, platoon unblocked						
vC, conflicting volume	322	192	227			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	322	192	227			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	672	850	1341			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	18	130	227			
Volume Left	18	0	0			
Volume Right	0	0	71			
cSH	672	1341	1700			
Volume to Capacity	0.03	0.00	0.13			
Queue Length 95th (ft)	2	0	0			
Control Delay (s)	10.5	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	10.5	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			19.7%	ICU Level of Service	A	
Analysis Period (min)			15			

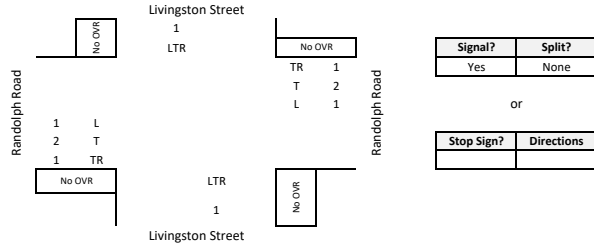
1
Critical Lane Volume
and
Level of Service Calculations

Intersection: 01. Randolph Road / Livingston Street

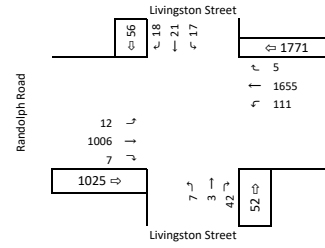
Jurisdiction: Montgomery County, MD
Scenario/Design Year: Total Future Conditions
Computed by: W+A



Intersection Lane Use & Traffic Control

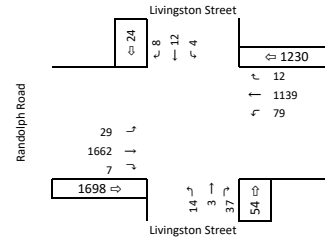


AM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	1013		0.37	375	111	1.00	111	486	
	L	12		1.00	12				123	
WB	TR	1660		0.37	614	12	1.00	12	626	*
	L	111		1.00	111				123	
NB	LTR	52		1.00	52	17	1.00	17	69	*
					0				17	
SB	LTR	56		1.00	56	7	1.00	7	63	
					0				7	
Note:									CLV	695
Congestion Equiv.									v/c	0.386
										1800

PM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	1669		0.37	618	79	1.00	79	697	*
	L	29		1.00	29				108	
WB	TR	1151		0.37	426	29	1.00	29	455	
	L	79		1.00	79				108	
NB	LTR	54		1.00	54	4	1.00	4	58	*
					0				4	
SB	LTR	24		1.00	24	14	1.00	14	38	
					0				14	
Note:									CLV	755
Congestion Equiv.									v/c	0.419
										1800

Right Turn Overlap

Approach	Exc. Right	Right Vol.				Adjacent Overlap Vol.				Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM		
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	

Montgomery County LATR

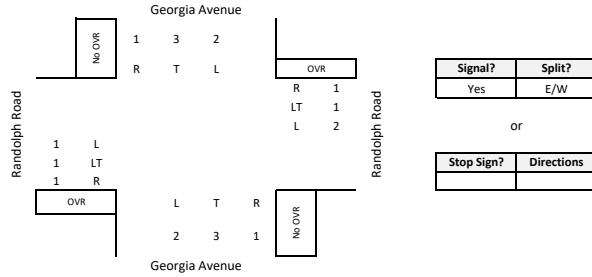
Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

2
Critical Lane Volume
and
Level of Service Calculations

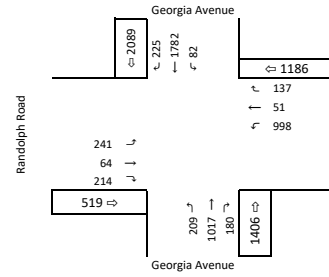
Intersection: **02. Georgia Avenue / Randolph Road**
Jurisdiction: **Montgomery County, MD**
Scenario/Design Year: **Total Future Conditions**
Computed by: **W+A**



Intersection Lane Use & Traffic Control

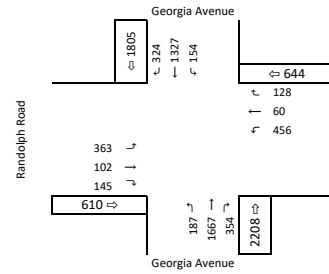


AM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	305		0.37	113			0	113	*
	R	214	111	1.00	103			0	103	*
WB	LT	1049		0.37	388			0	388	*
	R	137	43	1.00	94			0	94	*
NB	T	1017		0.37	376	82	0.53	43	419	*
	R	180	0	1.00	180			43	223	*
SB	T	1782		0.37	659			111	770	*
	R	225	0	1.00	225	209	0.53	111	336	*
Note:									CLV	1271
Congestion Equiv.									v/c	0.706
										1800

PM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	465		0.37	172			0	172	*
	R	145	99	1.00	46			0	46	*
WB	LT	516		0.37	191			0	191	*
	R	128	82	1.00	46			0	46	*
NB	T	1667		0.37	617	154	0.53	82	699	*
	R	354	0	1.00	354			82	436	*
SB	T	1327		0.37	491			99	590	*
	R	324	0	1.00	324	187	0.53	99	423	*
Note:									CLV	1062
Congestion Equiv.									v/c	0.590
										1800

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	LUF
Eastbound	Yes	214	145	1.00	209	187	0.53	111	99	
Westbound	Yes	137	128	1.00	82	154	0.53	43	82	
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	

Montgomery County LATR

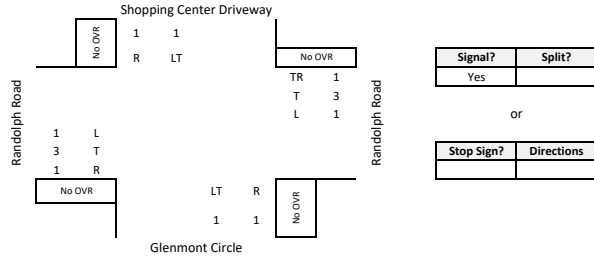
Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

3
Critical Lane Volume
and
Level of Service Calculations

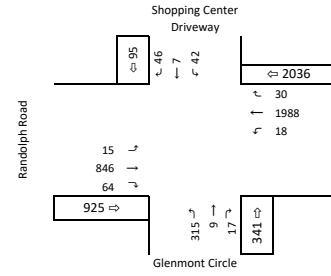
Intersection: **03. Randolph Road / Glenmont Circle**
Jurisdiction: **Montgomery County, MD**
Scenario/Design Year: **Total Future Conditions**
Computed by: **W+A**



Intersection Lane Use & Traffic Control

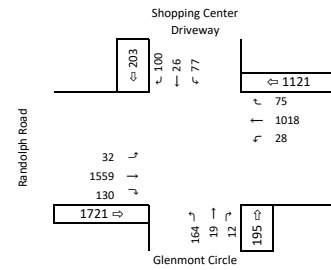


AM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	861		0.30	258				276	
	R	64		1.00	64	18	1.00	18	82	
WB	TR	2018		0.30	605	15	1.00	15	620	*
	L	18		1.00	18				33	
NB	LT	324		1.00	324	42	1.00	42	366	*
	R	17		1.00	17				59	
SB	LT	49		1.00	49				364	
	R	46		1.00	46	315	1.00	315	361	
Note:									CLV	986
Congestion Equiv.									v/c	0.548
										1800

PM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	1591		0.30	477	28	1.00	28	505	*
	R	130		1.00	130				158	
WB	TR	1093		0.30	328	32	1.00	32	360	
	L	28		1.00	28				60	
NB	LT	183		1.00	183	77	1.00	77	260	
	R	12		1.00	12				89	
SB	LT	103		1.00	103				267	*
	R	100		1.00	100	164	1.00	164	264	
Note:									CLV	772
Congestion Equiv.									v/c	0.429
										1800

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

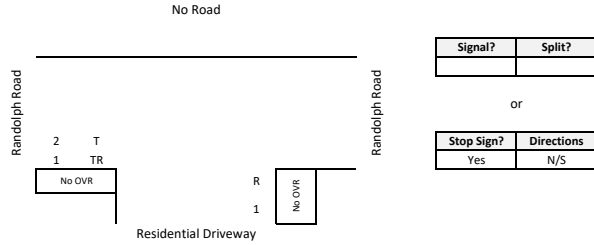
	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.00	
2	0.53	0.53	
3	0.37	0.37	
4		0.30	
5		0.25	

4
Critical Lane Volume
and
Level of Service Calculations

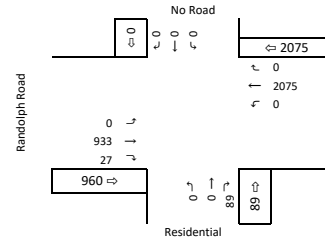
Intersection: **04. Randolph Road / Residential Driveway**
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Total Future Conditions
 Computed by: W+A



Intersection Lane Use & Traffic Control

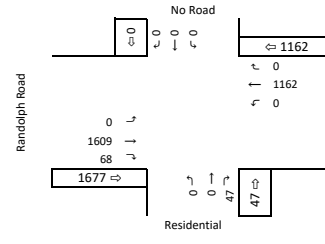


AM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	960		0.37	355	0		0	355	*
WB					0	0		0	0	
NB	R	89		1.00	89	0		0	89	*
SB					0	0		0	0	
Note:									CLV	444
									v/c	0.247
									Congestion Equiv.	1800

PM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	1677		0.37	620	0		0	620	*
WB					0	0		0	0	
NB	R	47		1.00	47	0		0	47	*
SB					0	0		0	0	
Note:									CLV	667
									v/c	0.371
									Congestion Equiv.	1800

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

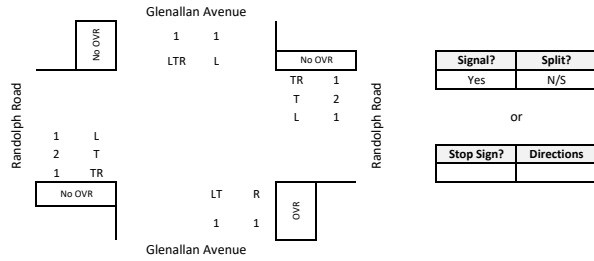
	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.00	
2	0.53	0.53	
3	0.37	0.37	
4		0.30	
5		0.25	

5
Critical Lane Volume
and
Level of Service Calculations

Intersection: **05. Randolph Road / Glenallan Avenue**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Conditions**
 Computed by: **W+A**



Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	936		0.37	346				365	
	L	33	0	1.00	33	19	1.00	19	52	
WB	TR	2180		0.37	807				840	*
	L	19	0	1.00	19	33	1.00	33	52	
NB	LT	190		1.00	190				377	*
	R	0	0	1.00	0	352	0.53	187	187	
SB	LTR	501		0.53	266				321	*
	L	352	0	1.00	352	55	1.00	55	407	*
Note:									CLV	1624
Congestion Equiv.									v/c	0.902
										1800

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	1572		0.37	582				623	*
	L	76	0	1.00	76	41	1.00	41	117	
WB	TR	1363		0.37	504				580	*
	L	41	0	1.00	41	76	1.00	76	117	
NB	LT	69		1.00	69				265	*
	R	5	5	1.00	0	370	0.53	196	196	
SB	LTR	477		0.53	253				284	*
	L	370	0	1.00	370	31	1.00	31	401	*
Note:									CLV	1289
Congestion Equiv.									v/c	0.716
										1800

Right Turn Overlap

Approach	Bici-Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Northbound	Yes	0	5	1.00	19	41	1.00	0	5
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.00	
2	0.53	0.53	
3	0.37	0.37	
4		0.30	
5		0.25	

7

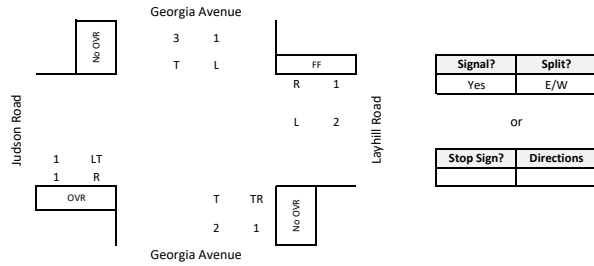
**Critical Lane Volume
and
Level of Service Calculations**

Intersection: **07. Georgia Avenue / Layhill Road**

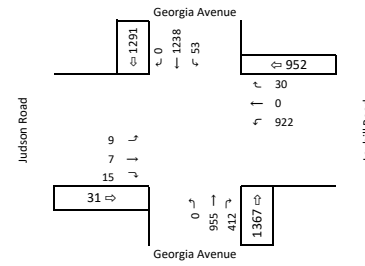
Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Conditions**
 Computed by: **W+A**



Intersection Lane Use & Traffic Control

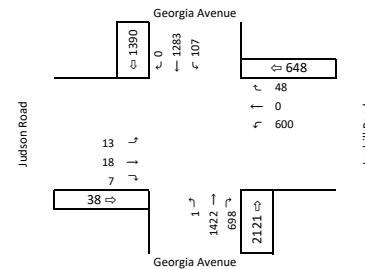


AM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	16		1.00	16				505	*
	R	15	0	1.00	15	922	0.53	489	504	*
WB	L	922		0.53	489	9	1.00	9	498	*
					0				9	
NB	TR	1367		0.37	506	53	1.00	53	559	*
			0		0				53	
SB	T	1238		0.37	458				458	
	L	53	0	1.00	53	0	1.00	0	53	
Note:									CLV	1562
Congestion Equiv.									v/c	0.868
										1800

PM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	31		1.00	31				349	*
	R	7	0	1.00	7	600	0.53	318	325	*
WB	L	600		0.53	318	13	1.00	13	331	*
	R	48	0	1.00	48				61	
NB	TR	2120		0.37	784	107	1.00	107	891	*
			0		0				107	
SB	T	1283		0.37	475				476	
	L	107	0	1.00	107	1	1.00	1	108	
Note:									CLV	1571
Congestion Equiv.									v/c	0.873
										1800

Right Turn Overlap

Approach	Excl. Right	Right Vol.				Adjacent Overlap Vol.				Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM		
Eastbound	Yes	15	7	1.00	0	1	0.00	0	0		
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0		
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0		
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0		

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

10

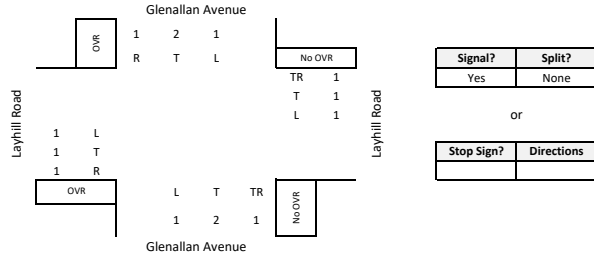
Critical Lane Volume and Level of Service Calculations

Intersection: 10. Layhill Road / Glenallan Avenue

Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Total Future Conditions
 Computed by: W+A



Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	T	385		1.00	385				496	
	R	28	19	1.00	9	111	1.00	111	120	
WB	TR	1117		0.53	592	62	1.00	62	654	*
	L	111	0	1.00	111				173	
NB	TR	444		0.37	164	134	1.00	134	298	*
	L	19	0	1.00	19				153	
SB	T	316		0.53	167				186	
	L	134	62	1.00	72	19	1.00	19	91	
Note:									CLV	952
Congestion Equiv.									v/c	0.529
1800										

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	T	703		1.00	703				799	*
	R	50	0	1.00	50	96	1.00	96	146	
WB	TR	597		0.53	316	126	1.00	126	442	
	L	96	0	1.00	96				222	
NB	TR	389		0.37	144	189	1.00	189	333	*
	L	28	0	1.00	28				217	
SB	T	337		0.53	179				207	
	L	189	0	1.00	189	28	1.00	28	217	
Note:									CLV	1132
Congestion Equiv.									v/c	0.629
1800										

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.				Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM	
Eastbound	Yes	28	50	1.00	19	28	1.00	19	28	
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Southbound	Yes	96	139	1.00	62	126	1.00	62	126	

Montgomery County LATR

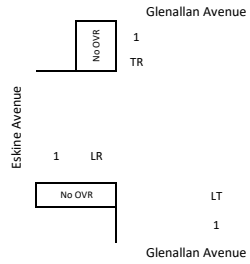
	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.00	
2	0.53	0.53	
3	0.37	0.37	
4		0.30	
5		0.25	

12
Critical Lane Volume
and
Level of Service Calculations

Intersection: **12. Glenallan Avenue / Eskine Avenue**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Conditions**
 Computed by: **W+A**



Intersection Lane Use & Traffic Control

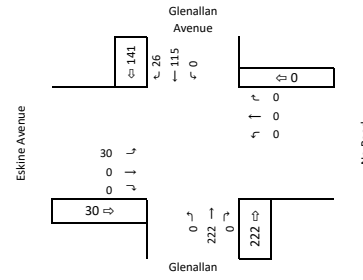


Signal?	Split?

or

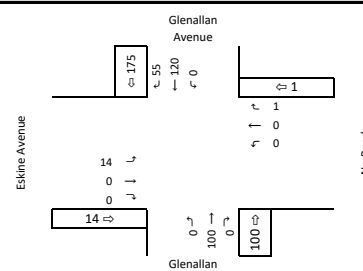
Stop Sign?	Directions
Yes	E/W

AM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LR	30		1.00	30			0	30	*
WB					0			0	0	
NB	LT	222		1.00	222			0	222	*
SB	TR	141		1.00	141	0	1.00	0	141	
Note:									CLV	252
Congestion Equiv.									v/c	0.158
1600										

PM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LR	14		1.00	14			0	14	*
WB					0			0	0	
NB	LT	100		1.00	100			0	100	
SB	TR	175		1.00	175	0	1.00	0	175	*
Note:									CLV	189
Congestion Equiv.									v/c	0.118
1600										

Right Turn Overlap

Approach	Exd. Right	Right Vol.			Adjacent Overlap Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	
Eastbound	No	n/a	n/a		n/a	n/a		n/a	0	0
Westbound	No	n/a	n/a		n/a	n/a		n/a	0	0
Northbound	No	n/a	n/a		n/a	n/a		n/a	0	0
Southbound	No	n/a	n/a		n/a	n/a		n/a	0	0

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.00	
2	0.53	0.53	
3	0.37	0.37	
4		0.30	
5		0.25	