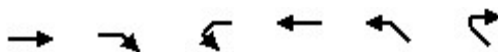


HCM Signalized Intersection Capacity Analysis

2: Eutaw PI & Druid Lake Park Dr

12/20/2021



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (vph)	895	200	67	1348	308	103
Future Volume (vph)	895	200	67	1348	308	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5		4.5	5.5	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.97	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	1817		1770	1863	1735	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	1817		1770	1863	1735	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	973	217	73	1465	335	112
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1190	0	73	1465	447	0
Confl. Peds. (#/hr)			67			
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	76.5		5.5	106.5	33.0	
Effective Green, g (s)	76.5		5.5	106.5	33.0	
Actuated g/C Ratio	0.51		0.04	0.71	0.22	
Clearance Time (s)	5.5		4.5	5.5	5.0	
Lane Grp Cap (vph)	926		64	1322	381	
v/s Ratio Prot	c0.65		0.04	c0.79	c0.26	
v/s Ratio Perm						
v/c Ratio	1.29		1.14	1.11	1.17	
Uniform Delay, d1	36.8		72.2	21.8	58.5	
Progression Factor	1.00		0.82	0.89	1.00	
Incremental Delay, d2	136.5		79.6	49.9	102.3	
Delay (s)	173.3		139.1	69.3	160.8	
Level of Service	F		F	E	F	
Approach Delay (s)	173.3			72.6	160.8	
Approach LOS	F			E	F	
Intersection Summary						
HCM 2000 Control Delay			122.7		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.27			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	20.5
Intersection Capacity Utilization			103.0%		ICU Level of Service	G
Analysis Period (min)			15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

5: N Fulton St & Druid Lake Park Dr/Auchentoroly Terr

12/20/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (veh/h)	0	254	1041	0	0	1366
Future Volume (Veh/h)	0	254	1041	0	0	1366
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	276	1132	0	0	1485
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None			None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2617	1132			1132	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2617	1132			1132	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			100	
cM capacity (veh/h)	27	247			617	
Direction, Lane #	NB 1	SE 1	NW 1			
Volume Total	276	1132	1485			
Volume Left	0	0	0			
Volume Right	276	0	0			
cSH	247	1700	1700			
Volume to Capacity	1.12	0.67	0.87			
Queue Length 95th (ft)	303	0	0			
Control Delay (s)	135.2	0.0	0.0			
Lane LOS	F					
Approach Delay (s)	135.2	0.0	0.0			
Approach LOS	F					
Intersection Summary						
Average Delay		12.9				
Intersection Capacity Utilization		77.2%		ICU Level of Service		D
Analysis Period (min)		15				

HCM Signalized Intersection Capacity Analysis

10: Reisterstown Rd & Liberty Heights Ave

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations												
Traffic Volume (vph)	0	229	362	89	367	428	329	332	47	311	338	36
Future Volume (vph)	0	229	362	89	367	428	329	332	47	311	338	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	4.0		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		0.95	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	0.85	0.85
Flt Protected		1.00	1.00		0.99	1.00		0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1863	1583		3505	1583		1770	1583	1770	1583	1583
Flt Permitted		1.00	1.00		0.72	1.00		0.66	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1863	1583		2558	1583		1238	1583	1770	1583	1583
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)	0	249	393	97	399	465	358	361	51	338	367	39
RTOR Reduction (vph)	0	0	279	0	0	180	0	0	36	0	0	23
Lane Group Flow (vph)	0	249	114	0	496	285	0	719	15	338	367	16
Turn Type		NA	Perm	Perm	NA	pm+ov	Prot	Prot	Perm	Prot	Prot	Prot
Protected Phases		4			8	1	1	6		5	2	2
Permitted Phases			4	8		8			6			
Actuated Green, G (s)		32.0	32.0		32.0	52.0		52.0	32.0	33.0	45.0	45.0
Effective Green, g (s)		32.0	32.0		32.0	52.0		52.0	32.0	33.0	45.0	45.0
Actuated g/C Ratio		0.29	0.29		0.29	0.47		0.47	0.29	0.30	0.41	0.41
Clearance Time (s)		5.0	5.0		5.0	4.0		4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		541	460		744	748		681	460	531	647	647
v/s Ratio Prot		0.13				0.07		c0.19		c0.19	0.23	0.01
v/s Ratio Perm			0.07		c0.19	0.11		c0.31	0.01			
v/c Ratio		0.46	0.25		0.67	0.38		1.06	0.03	0.64	0.57	0.02
Uniform Delay, d1		31.9	29.8		34.3	18.7		26.7	27.9	33.3	25.0	19.4
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.8	1.3		4.7	1.5		50.2	0.1	5.7	3.6	0.1
Delay (s)		34.7	31.1		39.0	20.1		76.8	28.0	39.0	28.6	19.5
Level of Service		C	C		D	C		E	C	D	C	B
Approach Delay (s)		32.5			29.9			73.6		32.9		
Approach LOS		C			C			E		C		
Intersection Summary												
HCM 2000 Control Delay			41.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			93.6%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: Reisterstown Rd & Anoka Ave

12/20/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	766	708	0
Future Volume (Veh/h)	0	0	0	766	708	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	833	770	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1603	770	770			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1603	770	770			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	116	401	844			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	0	0	833	770	0	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.00	0.49	0.45	0.00	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			43.6%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: Linden Ave & Druid Lake Park Dr

12/20/2021

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	👉			👈		
Traffic Volume (vph)	968	30	44	1438	0	0
Future Volume (vph)	968	30	44	1438	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			4.0		
Lane Util. Factor	1.00			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	1855			3534		
Flt Permitted	1.00			0.66		
Satd. Flow (perm)	1855			2337		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1052	33	48	1563	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1085	0	0	1611	0	0
Turn Type	NA		Perm	NA		
Protected Phases	6			2		
Permitted Phases			2			
Actuated Green, G (s)	100.0			101.0		
Effective Green, g (s)	100.0			101.0		
Actuated g/C Ratio	0.67			0.67		
Clearance Time (s)	5.0			4.0		
Lane Grp Cap (vph)	1236			1573		
v/s Ratio Prot	0.58					
v/s Ratio Perm				c0.69		
v/c Ratio	0.88			1.02		
Uniform Delay, d1	20.1			24.5		
Progression Factor	0.62			1.00		
Incremental Delay, d2	2.7			29.0		
Delay (s)	15.2			53.5		
Level of Service	B			D		
Approach Delay (s)	15.2			53.5	0.0	
Approach LOS	B			D	A	
Intersection Summary						
HCM 2000 Control Delay			38.1		HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.75			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	11.5
Intersection Capacity Utilization			74.9%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

2: Eutaw PI & Druid Lake Park Dr

12/20/2021



Movement	EBL	EBR	NWL	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	918	160	123	80	45	1393
Future Volume (vph)	918	160	123	80	45	1393
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.4		4.4	4.4	4.4	4.4
Lane Util. Factor	1.00		1.00	1.00	1.00	0.95
Frt	0.98		1.00	0.85	0.86	0.85
Flt Protected	0.96		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1751		1770	1583	1598	1504
Flt Permitted	0.96		0.95	1.00	0.24	1.00
Satd. Flow (perm)	1751		1770	1583	389	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	998	174	134	87	49	1514
RTOR Reduction (vph)	0	0	0	73	217	227
Lane Group Flow (vph)	1172	0	134	14	453	666
Turn Type	Prot		Prot	Perm	Perm	Prot
Protected Phases	2		8			6
Permitted Phases				8	6	
Actuated Green, G (s)	96.6		23.6	23.6	97.6	97.6
Effective Green, g (s)	96.6		23.6	23.6	97.6	97.6
Actuated g/C Ratio	0.64		0.16	0.16	0.65	0.65
Clearance Time (s)	5.4		4.4	4.4	4.4	4.4
Lane Grp Cap (vph)	1127		278	249	253	978
v/s Ratio Prot	0.67		c0.08			0.44
v/s Ratio Perm				0.01	c1.17	
v/c Ratio	1.04		0.48	0.05	1.79	0.68
Uniform Delay, d1	26.7		57.6	53.7	26.2	16.4
Progression Factor	0.36		1.00	1.00	1.00	1.30
Incremental Delay, d2	21.1		5.9	0.4	357.3	0.4
Delay (s)	30.7		63.5	54.1	383.5	21.7
Level of Service	C		E	D	F	C
Approach Delay (s)	30.7		59.8		176.8	
Approach LOS	C		E		F	
Intersection Summary						
HCM 2000 Control Delay			110.1		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.37			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	14.3
Intersection Capacity Utilization			110.4%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						

Intersection Sign configuration not allowed in HCM analysis.

HCM Signalized Intersection Capacity Analysis

4: McCulloh St/Swann Dr & Druid Lake Park Dr

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	1039	241	45	1434	37	369	5	47	16	30	15
Future Volume (vph)	15	1039	241	45	1434	37	369	5	47	16	30	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.6		5.6			5.6			5.6	
Lane Util. Factor		1.00	1.00		0.95			1.00			1.00	
Frt		1.00	0.85		1.00			0.98			0.97	
Flt Protected		1.00	1.00		1.00			0.96			0.99	
Satd. Flow (prot)		1861	1583		3521			1758			1779	
Flt Permitted		0.76	1.00		0.54			0.72			0.95	
Satd. Flow (perm)		1420	1583		1892			1313			1712	
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)	16	1129	262	49	1559	40	401	5	51	17	33	16
RTOR Reduction (vph)	0	0	0	0	1	0	0	3	0	0	8	0
Lane Group Flow (vph)	0	1145	262	0	1647	0	0	454	0	0	58	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2			4			8		
Actuated Green, G (s)		84.4	84.4		84.4			34.4			34.4	
Effective Green, g (s)		84.4	84.4		84.4			34.4			34.4	
Actuated g/C Ratio		0.56	0.56		0.56			0.23			0.23	
Clearance Time (s)		5.6	5.6		5.6			5.6			5.6	
Lane Grp Cap (vph)		798	890		1064			301			392	
v/s Ratio Prot												
v/s Ratio Perm		0.81	0.17		c0.87			c0.35			0.03	
v/c Ratio		1.43	0.29		1.55			1.51			0.15	
Uniform Delay, d1		32.8	17.2		32.8			57.8			46.1	
Progression Factor		0.37	0.17		1.14			1.00			1.00	
Incremental Delay, d2		196.3	0.1		248.8			245.2			0.8	
Delay (s)		208.3	2.9		286.3			303.0			46.9	
Level of Service		F	A		F			F			D	
Approach Delay (s)		170.1			286.3			303.0			46.9	
Approach LOS		F			F			F			D	
Intersection Summary												
HCM 2000 Control Delay			238.3				HCM 2000 Level of Service				F	
HCM 2000 Volume to Capacity ratio			1.35									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			15.2		
Intersection Capacity Utilization			113.0%				ICU Level of Service			H		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: N Fulton St & Druid Lake Park Dr/Auchentoroly Terr

12/20/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	0	254	1041	0	452	1366
Future Volume (vph)	0	254	1041	0	452	1366
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.6		4.5	5.6
Lane Util. Factor	1.00		1.00		1.00	0.95
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1863		1770	3539
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1863		1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	276	1132	0	491	1485
RTOR Reduction (vph)	230	0	0	0	0	0
Lane Group Flow (vph)	46	0	1132	0	491	1485
Turn Type	Prot		NA		Prot	NA
Protected Phases	7		2		1	6
Permitted Phases						
Actuated Green, G (s)	25.0		55.4		34.5	114.4
Effective Green, g (s)	25.0		55.4		34.5	114.4
Actuated g/C Ratio	0.17		0.37		0.23	0.76
Clearance Time (s)	5.0		5.6		4.5	5.6
Lane Grp Cap (vph)	268		688		407	2699
v/s Ratio Prot	c0.03		c0.61		c0.28	c0.42
v/s Ratio Perm						
v/c Ratio	0.17		1.65		1.21	0.55
Uniform Delay, d1	53.6		47.3		57.8	7.3
Progression Factor	1.00		1.00		0.81	0.65
Incremental Delay, d2	1.4		296.9		95.1	0.1
Delay (s)	55.0		344.2		141.9	4.8
Level of Service	E		F		F	A
Approach Delay (s)	55.0		344.2			38.9
Approach LOS	E		F			D
Intersection Summary						
HCM 2000 Control Delay			142.3		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.13			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	20.7
Intersection Capacity Utilization			108.1%		ICU Level of Service	G
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Gwynns Falls Pkwy & Auchentoroly Terr

12/20/2021

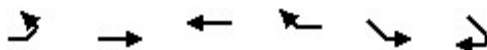


Movement	SEL	SET	SER	NWR	NWR2	NEL	NET	NER	SWT	SWR2
Lane Configurations		↰	↰	↰			↰	↰	↰	↰
Traffic Volume (vph)	15	600	596	1358	8	67	44	451	46	30
Future Volume (vph)	15	600	596	1358	8	67	44	451	46	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	5.0	6.0			6.0	5.0	6.0	6.0
Lane Util. Factor		1.00	1.00	0.88			1.00	1.00	1.00	1.00
Frt		1.00	0.85	0.85			1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00			0.97	1.00	1.00	1.00
Satd. Flow (prot)		1861	1583	2787			1808	1583	1863	1583
Flt Permitted		1.00	1.00	1.00			0.79	1.00	1.00	1.00
Satd. Flow (perm)		1861	1583	2787			1464	1583	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	652	648	1476	9	73	48	490	50	33
RTOR Reduction (vph)	0	0	0	8	0	0	0	0	0	28
Lane Group Flow (vph)	0	668	648	1477	0	0	121	490	50	5
Turn Type	Perm	NA	custom	custom		Perm	NA	custom	NA	Perm
Protected Phases		6	5	2			4	5	8	
Permitted Phases	6		6	5		4		4		8
Actuated Green, G (s)		31.0	55.0	80.0			18.0	42.0	18.0	18.0
Effective Green, g (s)		31.0	55.0	80.0			18.0	42.0	18.0	18.0
Actuated g/C Ratio		0.28	0.50	0.73			0.16	0.38	0.16	0.16
Clearance Time (s)		6.0	5.0	6.0			6.0	5.0	6.0	6.0
Lane Grp Cap (vph)		524	791	2026			239	604	304	259
v/s Ratio Prot			0.18	c0.53				c0.18	0.03	
v/s Ratio Perm		0.36	0.23				0.08	0.13		0.00
v/c Ratio		1.27	0.82	0.73			0.51	0.81	0.16	0.02
Uniform Delay, d1		39.5	23.3	8.7			41.9	30.5	39.5	38.6
Progression Factor		1.19	0.85	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2		136.7	8.5	2.3			7.5	11.3	1.2	0.1
Delay (s)		183.8	28.3	11.1			49.4	41.8	40.7	38.8
Level of Service		F	C	B			D	D	D	D
Approach Delay (s)		107.2					43.3		39.9	
Approach LOS		F					D		D	
Intersection Summary										
HCM 2000 Control Delay			53.6				HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio			1.00							
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		23.0	
Intersection Capacity Utilization			107.9%				ICU Level of Service		G	
Analysis Period (min)			15							
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis

8: Auchentoroly Terr & Auchentoroly Terr Uturn

12/20/2021



Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑			↔	↔
Traffic Volume (vph)	0	630	0	0	581	0
Future Volume (vph)	0	630	0	0	581	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0	
Lane Util. Factor		1.00			0.97	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		1863			3433	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		1863			3433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	685	0	0	632	0
RTOR Reduction (vph)	0	0	0	0	335	0
Lane Group Flow (vph)	0	685	0	0	297	0
Turn Type		NA			Prot	
Protected Phases		2			3	
Permitted Phases						
Actuated Green, G (s)		83.5			14.5	
Effective Green, g (s)		83.5			14.5	
Actuated g/C Ratio		0.76			0.13	
Clearance Time (s)		6.0			6.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1414			452	
v/s Ratio Prot		c0.37			c0.09	
v/s Ratio Perm						
v/c Ratio		0.48			0.66	
Uniform Delay, d1		5.0			45.4	
Progression Factor		0.65			0.61	
Incremental Delay, d2		1.0			2.4	
Delay (s)		4.2			29.9	
Level of Service		A			C	
Approach Delay (s)		4.2	0.0		29.9	
Approach LOS		A	A		C	
Intersection Summary						
HCM 2000 Control Delay		16.6		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.51				
Actuated Cycle Length (s)		110.0		Sum of lost time (s)		12.0
Intersection Capacity Utilization		65.7%		ICU Level of Service		C
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

9: Liberty Heights Ave/Greenspring Ave & Auchentoroly Terr

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻		↻	↻			↻	↻		↻↻	
Traffic Volume (vph)	0	311	10	321	431	122	24	65	258	61	131	1
Future Volume (vph)	0	311	10	321	431	122	24	65	258	61	131	1
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		6.0	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		0.95	
Frt		1.00		1.00	0.97			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			0.99	1.00		0.98	
Satd. Flow (prot)		1855		1770	1801			1838	1583		3482	
Flt Permitted		1.00		0.95	1.00			0.86	1.00		0.83	
Satd. Flow (perm)		1855		1770	1801			1594	1583		2920	
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)	0	338	11	349	468	133	26	71	280	66	142	1
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	176	0	0	0
Lane Group Flow (vph)	0	349	0	349	592	0	0	97	104	0	209	0
Turn Type		NA		Prot	NA		Perm	NA	pm+ov	custom	NA	
Protected Phases		6		5	2			4	5			
Permitted Phases							4		4	8	8	
Actuated Green, G (s)		26.0		24.0	81.0			17.0	41.0		17.0	
Effective Green, g (s)		26.0		24.0	81.0			17.0	41.0		17.0	
Actuated g/C Ratio		0.24		0.22	0.74			0.15	0.37		0.15	
Clearance Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	
Lane Grp Cap (vph)		438		386	1326			246	676		451	
v/s Ratio Prot		c0.19		c0.20	c0.33				0.03			
v/s Ratio Perm								0.06	0.03		c0.07	
v/c Ratio		0.80		0.90	0.45			0.39	0.15		0.46	
Uniform Delay, d1		39.5		41.9	5.7			41.9	23.0		42.3	
Progression Factor		0.91		0.84	1.59			1.08	11.11		1.00	
Incremental Delay, d2		13.1		20.7	0.8			4.6	0.5		3.4	
Delay (s)		49.1		56.0	9.8			49.7	255.5		45.7	
Level of Service		D		E	A			D	F		D	
Approach Delay (s)		49.1			26.8			202.6			45.7	
Approach LOS		D			C			F			D	
Intersection Summary												
HCM 2000 Control Delay			68.2			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			24.0			
Intersection Capacity Utilization			66.4%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

10: Reisterstown Rd & Liberty Heights Ave

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations		↑↑	↑	↑	↑↑			↑	↑	↑	↑	↑
Traffic Volume (vph)	0	262	362	53	403	6	4	368	51	311	340	41
Future Volume (vph)	0	262	362	53	403	6	4	368	51	311	340	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0	5.0	5.0			4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95			1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00			1.00	0.85	1.00	0.85	0.85
Flt Protected		1.00	1.00	0.95	1.00			0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3539	1583	1770	3531			1770	1583	1770	1583	1583
Flt Permitted		1.00	1.00	0.48	1.00			1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)		3539	1583	901	3531			1858	1583	1863	1583	1583
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)	0	285	393	58	438	7	4	400	55	338	370	45
RTOR Reduction (vph)	0	0	238	0	1	0	0	0	23	0	0	12
Lane Group Flow (vph)	0	285	155	58	444	0	0	404	32	338	370	33
Turn Type		NA	pm+ov	Perm	NA		Perm	Prot	Perm	pm+pt	Prot	Perm
Protected Phases		4	1		8			6		1	2	
Permitted Phases			4	8			6		6	2		2
Actuated Green, G (s)		19.8	33.3	19.8	19.8			63.7	63.7	81.2	81.2	81.2
Effective Green, g (s)		19.8	33.3	19.8	19.8			63.7	63.7	81.2	81.2	81.2
Actuated g/C Ratio		0.18	0.30	0.18	0.18			0.58	0.58	0.74	0.74	0.74
Clearance Time (s)		5.0	4.0	5.0	5.0			4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		637	479	162	635			1075	916	1375	1168	1168
v/s Ratio Prot		0.08	0.04		c0.13					0.03	c0.23	
v/s Ratio Perm			0.06	0.06				c0.22	0.02	0.15		0.02
v/c Ratio		0.45	0.32	0.36	0.70			0.38	0.03	0.25	0.32	0.03
Uniform Delay, d1		40.2	29.6	39.5	42.3			12.5	9.9	4.7	4.9	3.9
Progression Factor		1.00	1.00	0.24	0.26			0.80	0.65	1.00	1.00	1.00
Incremental Delay, d2		0.5	0.4	0.8	2.1			1.0	0.1	0.1	0.7	0.0
Delay (s)		40.7	30.0	10.1	13.0			10.9	6.5	4.8	5.6	3.9
Level of Service		D	C	B	B			B	A	A	A	A
Approach Delay (s)		34.5			12.7			10.4		5.2		
Approach LOS		C			B			B		A		
Intersection Summary												
HCM 2000 Control Delay		16.1			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.44										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)			13.0				
Intersection Capacity Utilization		65.1%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: Reisterstown Rd & Anoka Ave

12/20/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	766	708	0
Future Volume (Veh/h)	0	0	0	766	708	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	833	770	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)				382		
pX, platoon unblocked	0.91					
vC, conflicting volume	1603	770	770			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1613	770	770			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	105	401	844			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	0	0	833	770		
Volume Left	0	0	0	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1700	1700		
Volume to Capacity	0.00	0.00	0.49	0.45		
Queue Length 95th (ft)	0	0	0	0		
Control Delay (s)	0.0	0.0	0.0	0.0		
Lane LOS						
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			43.6%		ICU Level of Service	
					A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: Linden Ave & Druid Lake Park Dr

12/20/2021

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱		
Traffic Volume (vph)	968	30	67	1415	0	0
Future Volume (vph)	968	30	67	1415	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			4.0		
Lane Util. Factor	1.00			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	1855			3531		
Flt Permitted	1.00			0.59		
Satd. Flow (perm)	1855			2088		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1052	33	73	1538	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1085	0	0	1611	0	0
Turn Type	NA		Perm	NA		
Protected Phases	6			2		
Permitted Phases			2			
Actuated Green, G (s)	100.0			101.0		
Effective Green, g (s)	100.0			101.0		
Actuated g/C Ratio	0.67			0.67		
Clearance Time (s)	5.0			4.0		
Lane Grp Cap (vph)	1236			1405		
v/s Ratio Prot	0.58					
v/s Ratio Perm				c0.77		
v/c Ratio	0.88			1.15		
Uniform Delay, d1	20.1			24.5		
Progression Factor	0.21			1.00		
Incremental Delay, d2	0.9			74.8		
Delay (s)	5.2			99.3		
Level of Service	A			F		
Approach Delay (s)	5.2			99.3	0.0	
Approach LOS	A			F	A	
Intersection Summary						
HCM 2000 Control Delay			61.4		HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			0.84			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	11.5
Intersection Capacity Utilization			91.9%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

2: Eutaw PI & Druid Lake Park Dr

12/20/2021



Movement	EBL	EBR	NWL	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	895	200	308	103	67	1348
Future Volume (vph)	895	200	308	103	67	1348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6		5.6		5.6	5.6
Lane Util. Factor	1.00		1.00		1.00	0.95
Frt	0.98		0.97		0.87	0.85
Flt Protected	0.96		0.96		0.99	1.00
Satd. Flow (prot)	1746		1735		1608	1504
Flt Permitted	0.96		0.96		0.12	1.00
Satd. Flow (perm)	1746		1735		189	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	973	217	335	112	73	1465
RTOR Reduction (vph)	0	0	8	0	173	177
Lane Group Flow (vph)	1190	0	439	0	427	761
Turn Type	Prot		Prot		Perm	Prot
Protected Phases	2		8			6
Permitted Phases					6	
Actuated Green, G (s)	93.4		25.4		93.4	93.4
Effective Green, g (s)	93.4		25.4		93.4	93.4
Actuated g/C Ratio	0.62		0.17		0.62	0.62
Clearance Time (s)	5.6		5.6		5.6	5.6
Lane Grp Cap (vph)	1087		293		117	936
v/s Ratio Prot	0.68		c0.25			0.51
v/s Ratio Perm					c2.25	
v/c Ratio	1.09		1.50		3.65	0.81
Uniform Delay, d1	28.3		62.3		28.3	21.6
Progression Factor	0.85		1.00		1.00	1.65
Incremental Delay, d2	44.3		240.9		1193.5	0.7
Delay (s)	68.3		303.2		1221.8	36.4
Level of Service	E		F		F	D
Approach Delay (s)	68.3		303.2		498.8	
Approach LOS	E		F		F	
Intersection Summary						
HCM 2000 Control Delay			309.9		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			2.79			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	15.2
Intersection Capacity Utilization			130.6%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

3: Madison Ave/Swann Dr & Druid Lake Park Dr

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	15	1056	224	226	1393	37	16	30	15	185	0	24
Future Volume (vph)	15	1056	224	226	1393	37	16	30	15	185	0	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6			5.6			5.6	
Lane Util. Factor		1.00			0.95			1.00			1.00	
Frt		0.98			1.00			0.97			0.98	
Flt Protected		1.00			0.99			0.99			0.96	
Satd. Flow (prot)		1818			3503			1779			1756	
Flt Permitted		0.95			0.54			0.95			0.70	
Satd. Flow (perm)		1736			1894			1707			1283	
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)	16	1148	243	246	1514	40	17	33	16	201	0	26
RTOR Reduction (vph)	0	0	0	0	1	0	0	8	0	0	37	0
Lane Group Flow (vph)	0	1407	0	0	1799	0	0	58	0	0	190	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)		102.4			102.4			22.4			22.4	
Effective Green, g (s)		102.4			102.4			22.4			22.4	
Actuated g/C Ratio		0.68			0.68			0.15			0.15	
Clearance Time (s)		4.6			4.6			5.6			5.6	
Lane Grp Cap (vph)		1185			1292			254			191	
v/s Ratio Prot												
v/s Ratio Perm		0.81			0.95			0.03			0.15	
v/c Ratio		1.19			1.39			0.23			0.99	
Uniform Delay, d1		23.8			23.8			56.2			63.7	
Progression Factor		1.00			1.02			1.00			1.00	
Incremental Delay, d2		93.0			177.0			2.1			63.2	
Delay (s)		116.8			201.3			58.3			126.9	
Level of Service		F			F			E			F	
Approach Delay (s)		116.8			201.3			58.3			126.9	
Approach LOS		F			F			E			F	
Intersection Summary												
HCM 2000 Control Delay		159.8			HCM 2000 Level of Service			F				
HCM 2000 Volume to Capacity ratio		1.22										
Actuated Cycle Length (s)		150.0			Sum of lost time (s)			14.7				
Intersection Capacity Utilization		147.0%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

5: N Fulton St & Druid Lake Park Dr/Auchentoroly Terr

12/20/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						 
Traffic Volume (veh/h)	0	254	1041	0	0	1592
Future Volume (Veh/h)	0	254	1041	0	0	1592
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	276	1132	0	0	1730
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						812
pX, platoon unblocked	0.67					
vC, conflicting volume	1997	1132			1132	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1497	1132			1132	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			100	
cM capacity (veh/h)	76	197			613	
Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2	
Volume Total	276	1132	0	865	865	
Volume Left	0	0	0	0	0	
Volume Right	276	0	0	0	0	
cSH	197	1700	1700	1700	1700	
Volume to Capacity	1.40	0.67	0.00	0.51	0.51	
Queue Length 95th (ft)	406	0	0	0	0	
Control Delay (s)	253.6	0.0	0.0	0.0	0.0	
Lane LOS	F					
Approach Delay (s)	253.6	0.0		0.0		
Approach LOS	F					
Intersection Summary						
Average Delay		22.3				
Intersection Capacity Utilization		77.2%		ICU Level of Service		D
Analysis Period (min)		15				

HCM Signalized Intersection Capacity Analysis

7: Gwynns Falls Pkwy & Auchentoroly Terr

12/20/2021

												
Movement	SEL	SET	SER	SER2	NWL	NWT	NWR	NEL	NET	NER	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	15	590	10	15	807	777	8	67	44	451	46	30
Future Volume (vph)	15	590	10	15	807	777	8	67	44	451	46	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			5.0	6.0			6.0	5.0	6.0	
Lane Util. Factor		0.95			1.00	0.95			1.00	1.00	1.00	
Frt		0.99			1.00	1.00			1.00	0.85	0.95	
Flt Protected		1.00			0.95	1.00			0.97	1.00	1.00	
Satd. Flow (prot)		3514			1770	3534			1808	1583	1763	
Flt Permitted		0.91			0.26	1.00			0.77	1.00	1.00	
Satd. Flow (perm)		3218			481	3534			1429	1583	1763	
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)	16	641	11	16	877	845	9	73	48	490	50	33
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	0	0	22	0
Lane Group Flow (vph)	0	684	0	0	877	853	0	0	121	490	61	0
Turn Type	Perm	NA			pm+pt	NA			Perm	NA	pm+ov	NA
Protected Phases		6			5	2			4	5	8	
Permitted Phases	6				2			4		4		
Actuated Green, G (s)		22.0			83.0	83.0			15.0	51.0	15.0	
Effective Green, g (s)		22.0			83.0	83.0			15.0	51.0	15.0	
Actuated g/C Ratio		0.20			0.75	0.75			0.14	0.46	0.14	
Clearance Time (s)		6.0			5.0	6.0			6.0	5.0	6.0	
Lane Grp Cap (vph)		643			784	2666			194	733	240	
v/s Ratio Prot					c0.37	0.24				c0.22	0.03	
v/s Ratio Perm		0.21			c0.48				0.08	0.09		
v/c Ratio		1.06			1.12	0.32			0.62	0.67	0.26	
Uniform Delay, d1		44.0			22.0	4.4			44.8	22.9	42.5	
Progression Factor		1.00			1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		53.7			69.9	0.3			14.2	4.8	2.6	
Delay (s)		97.7			91.9	4.7			59.0	27.7	45.1	
Level of Service		F			F	A			E	C	D	
Approach Delay (s)		97.7				48.9			33.9		45.1	
Approach LOS		F				D			C		D	
Intersection Summary												
HCM 2000 Control Delay		56.6			HCM 2000 Level of Service				E			
HCM 2000 Volume to Capacity ratio		1.13										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)				23.0			
Intersection Capacity Utilization		89.9%			ICU Level of Service				E			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

10: Reisterstown Rd & Liberty Heights Ave

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations		↑↑	↑	↑	↑↑			↑	↑	↑	↑	↑
Traffic Volume (vph)	0	262	362	53	403	6	4	368	51	311	340	41
Future Volume (vph)	0	262	362	53	403	6	4	368	51	311	340	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0	5.0	5.0			4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95			1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00			1.00	0.85	1.00	0.85	0.85
Flt Protected		1.00	1.00	0.95	1.00			0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3539	1583	1770	3531			1770	1583	1770	1583	1583
Flt Permitted		1.00	1.00	0.48	1.00			1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)		3539	1583	901	3531			1858	1583	1863	1583	1583
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)	0	285	393	58	438	7	4	400	55	338	370	45
RTOR Reduction (vph)	0	0	226	0	1	0	0	0	23	0	0	12
Lane Group Flow (vph)	0	285	167	58	444	0	0	404	32	338	370	33
Turn Type		NA	pm+ov	Perm	NA		Perm	Prot	Perm	pm+pt	Prot	Perm
Protected Phases		4	1		8			6		1	2	
Permitted Phases			4	8			6		6	2		2
Actuated Green, G (s)		19.8	33.3	19.8	19.8			63.7	63.7	81.2	81.2	81.2
Effective Green, g (s)		19.8	33.3	19.8	19.8			63.7	63.7	81.2	81.2	81.2
Actuated g/C Ratio		0.18	0.30	0.18	0.18			0.58	0.58	0.74	0.74	0.74
Clearance Time (s)		5.0	4.0	5.0	5.0			4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		637	479	162	635			1075	916	1375	1168	1168
v/s Ratio Prot		0.08	0.04		c0.13					0.03	c0.23	
v/s Ratio Perm			0.06	0.06				c0.22	0.02	0.15		0.02
v/c Ratio		0.45	0.35	0.36	0.70			0.38	0.03	0.25	0.32	0.03
Uniform Delay, d1		40.2	29.9	39.5	42.3			12.5	9.9	4.7	4.9	3.9
Progression Factor		1.00	1.00	1.00	1.00			0.78	0.62	1.00	1.00	1.00
Incremental Delay, d2		0.5	0.4	1.4	3.4			1.0	0.1	0.1	0.7	0.0
Delay (s)		40.7	30.3	40.9	45.7			10.7	6.2	4.8	5.6	3.9
Level of Service		D	C	D	D			B	A	A	A	A
Approach Delay (s)		34.7			45.1			10.2		5.2		
Approach LOS		C			D			B		A		
Intersection Summary												
HCM 2000 Control Delay			22.9			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			13.0			
Intersection Capacity Utilization			65.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: Reisterstown Rd & Anoka Ave

12/20/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	766	708	0
Future Volume (Veh/h)	0	0	0	766	708	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	833	770	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)				382		
pX, platoon unblocked	0.91					
vC, conflicting volume	1603	385	770			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1613	385	770			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	87	613	840			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	0	0	833	513	257	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.00	0.49	0.30	0.15	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			43.6%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: Linden Ave & Druid Lake Park Dr

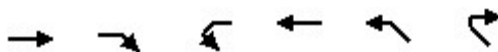
12/20/2021

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	691	15	44	910	0	0
Future Volume (vph)	691	15	44	910	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		4.5	5.0		
Lane Util. Factor	1.00		1.00	1.00		
Frt	1.00		1.00	1.00		
Flt Protected	1.00		0.95	1.00		
Satd. Flow (prot)	1857		1770	1863		
Flt Permitted	1.00		0.95	1.00		
Satd. Flow (perm)	1857		1770	1863		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	683	15	44	900	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	698	0	44	900	0	0
Turn Type	NA		Prot	NA		
Protected Phases	6		5	2		
Permitted Phases						
Actuated Green, G (s)	55.0		5.5	90.0		
Effective Green, g (s)	55.0		5.5	90.0		
Actuated g/C Ratio	0.46		0.05	0.75		
Clearance Time (s)	5.0		4.5	5.0		
Lane Grp Cap (vph)	851		81	1397		
v/s Ratio Prot	c0.38		0.02	c0.48		
v/s Ratio Perm						
v/c Ratio	0.82		0.54	0.64		
Uniform Delay, d1	28.2		56.0	7.3		
Progression Factor	0.09		1.00	1.00		
Incremental Delay, d2	3.5		23.7	2.3		
Delay (s)	6.1		79.7	9.6		
Level of Service	A		E	A		
Approach Delay (s)	6.1			12.8	0.0	
Approach LOS	A			B	A	
Intersection Summary						
HCM 2000 Control Delay			9.9		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.63			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	17.5
Intersection Capacity Utilization			47.8%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

2: Eutaw PI & Druid Lake Park Dr

12/20/2021



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↩		↩	↩	↩	↩
Traffic Volume (vph)	652	117	44	866	119	54
Future Volume (vph)	652	117	44	866	119	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5		4.5	5.5	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.96	
Flt Protected	1.00		0.95	1.00	0.97	
Satd. Flow (prot)	1824		1770	1863	1725	
Flt Permitted	1.00		0.95	1.00	0.97	
Satd. Flow (perm)	1824		1770	1863	1725	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	645	116	44	857	118	53
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	761	0	44	857	171	0
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	52.5		5.5	87.5	22.0	
Effective Green, g (s)	52.5		5.5	87.5	22.0	
Actuated g/C Ratio	0.44		0.05	0.73	0.18	
Clearance Time (s)	5.5		4.5	5.5	5.0	
Lane Grp Cap (vph)	798		81	1358	316	
v/s Ratio Prot	c0.42		0.02	c0.46	c0.10	
v/s Ratio Perm						
v/c Ratio	0.95		0.54	0.63	0.54	
Uniform Delay, d1	32.6		56.0	8.2	44.4	
Progression Factor	1.00		0.87	1.06	1.00	
Incremental Delay, d2	22.4		18.5	1.7	6.5	
Delay (s)	55.0		67.1	10.4	50.9	
Level of Service	D		E	B	D	
Approach Delay (s)	55.0			13.1	50.9	
Approach LOS	D			B	D	
Intersection Summary						
HCM 2000 Control Delay			34.0		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.81			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	20.5
Intersection Capacity Utilization			59.2%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

4: N Fulton St & Druid Lake Park Dr & Auchentoroly Terr

12/20/2021

						
Movement	WBL	WBR	NBL	NBR	SEL	SER
Lane Configurations						
Traffic Volume (veh/h)	0	755	0	170	717	0
Future Volume (Veh/h)	0	755	0	170	717	0
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	747	0	168	709	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	709		1456	709		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	709		1456	709		
tC, single (s)	4.1		6.4	6.2		
tC, 2 stage (s)						
tF (s)	2.2		3.5	3.3		
p0 queue free %	100		100	61		
cM capacity (veh/h)	890		143	434		
Direction, Lane #	WB 1	NB 1	SE 1			
Volume Total	747	168	709			
Volume Left	0	0	0			
Volume Right	0	168	0			
cSH	1700	434	1700			
Volume to Capacity	0.44	0.39	0.42			
Queue Length 95th (ft)	0	45	0			
Control Delay (s)	0.0	18.4	0.0			
Lane LOS		C				
Approach Delay (s)	0.0	18.4	0.0			
Approach LOS		C				
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			45.9%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

10: Reisterstown Rd & Liberty Heights Ave

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations		↑	↑		↑↑	↑		↓	↑	↓	↑	↑
Traffic Volume (vph)	0	186	257	52	169	320	244	189	35	118	168	7
Future Volume (vph)	0	186	257	52	169	320	244	189	35	118	168	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	4.0		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		0.95	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	0.85	0.85
Flt Protected		1.00	1.00		0.99	1.00		0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1863	1583		3498	1583		1770	1583	1770	1583	1583
Flt Permitted		1.00	1.00		0.81	1.00		0.59	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1863	1583		2867	1583		1091	1583	1770	1583	1583
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	0	184	254	51	167	317	241	187	35	117	166	7
RTOR Reduction (vph)	0	0	194	0	0	135	0	0	18	0	0	5
Lane Group Flow (vph)	0	184	60	0	218	182	0	428	17	117	166	2
Turn Type		NA	Perm	Perm	NA	pm+ov	Prot	Prot	Perm	Prot	Prot	Prot
Protected Phases		4			8	1	1	6		5	2	2
Permitted Phases			4	8		8			6			
Actuated Green, G (s)		26.0	26.0		26.0	63.0		75.0	54.0	17.0	34.0	34.0
Effective Green, g (s)		26.0	26.0		26.0	63.0		75.0	54.0	17.0	34.0	34.0
Actuated g/C Ratio		0.24	0.24		0.24	0.57		0.68	0.49	0.15	0.31	0.31
Clearance Time (s)		5.0	5.0		5.0	4.0		4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		440	374		677	906		972	777	273	489	489
v/s Ratio Prot		c0.10				0.07		c0.15		0.07	0.10	0.00
v/s Ratio Perm			0.04		0.08	0.05		c0.15	0.01			
v/c Ratio		0.42	0.16		0.32	0.20		0.44	0.02	0.43	0.34	0.00
Uniform Delay, d1		35.6	33.3		34.7	11.3		7.7	14.4	42.1	29.3	26.3
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.9	0.9		1.3	0.5		1.4	0.1	4.9	1.9	0.0
Delay (s)		38.5	34.3		36.0	11.8		9.2	14.5	47.0	31.2	26.3
Level of Service		D	C		D	B		A	B	D	C	C
Approach Delay (s)		36.0			21.7			9.6		37.4		
Approach LOS		D			C			A		D		
Intersection Summary												
HCM 2000 Control Delay		24.7			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.45										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)			13.0				
Intersection Capacity Utilization		57.3%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: Reisterstown Rd & Anoka Ave

12/20/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	488	468	0
Future Volume (Veh/h)	0	0	0	488	468	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	483	463	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	946	463	463			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	946	463	463			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	290	599	1098			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	0	0	483	463	0	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.00	0.28	0.27	0.00	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS						
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			26.7%		ICU Level of Service	
Analysis Period (min)			15			
			A			

HCM Signalized Intersection Capacity Analysis

1: Linden Ave & Druid Lake Park Dr

12/20/2021



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩			↩↩		
Traffic Volume (vph)	691	15	29	925	0	0
Future Volume (vph)	691	15	29	925	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			4.0		
Lane Util. Factor	1.00			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	1857			3534		
Flt Permitted	1.00			0.91		
Satd. Flow (perm)	1857			3228		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	683	15	29	915	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	698	0	0	944	0	0
Turn Type	NA		Perm	NA		
Protected Phases	6			2		
Permitted Phases			2			
Actuated Green, G (s)	70.0			71.0		
Effective Green, g (s)	70.0			71.0		
Actuated g/C Ratio	0.58			0.59		
Clearance Time (s)	5.0			4.0		
Lane Grp Cap (vph)	1083			1909		
v/s Ratio Prot	c0.38					
v/s Ratio Perm				0.29		
v/c Ratio	0.64			0.49		
Uniform Delay, d1	16.7			14.1		
Progression Factor	0.68			1.00		
Incremental Delay, d2	1.9			0.9		
Delay (s)	13.3			15.1		
Level of Service	B			B		
Approach Delay (s)	13.3			15.1	0.0	
Approach LOS	B			B	A	
Intersection Summary						
HCM 2000 Control Delay			14.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.42			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.5
Intersection Capacity Utilization			45.7%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

2: Eutaw PI & Druid Lake Park Dr

12/20/2021



Movement	EBL	EBR	NWL	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	666	109	47	40	29	896
Future Volume (vph)	666	109	47	40	29	896
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.4		4.4	4.4	4.4	4.4
Lane Util. Factor	1.00		1.00	1.00	1.00	0.95
Frt	0.98		1.00	0.85	0.86	0.85
Flt Protected	0.96		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1752		1770	1583	1596	1504
Flt Permitted	0.96		0.95	1.00	1.00	1.00
Satd. Flow (perm)	1752		1770	1583	1596	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	659	108	46	40	29	886
RTOR Reduction (vph)	0	0	0	32	190	197
Lane Group Flow (vph)	767	0	46	8	273	255
Turn Type	Prot		Prot	Perm	Prot	Perm
Protected Phases	2!		8		6!	
Permitted Phases				8		6
Actuated Green, G (s)	66.6		23.6	23.6	67.6	67.6
Effective Green, g (s)	66.6		23.6	23.6	67.6	67.6
Actuated g/C Ratio	0.55		0.20	0.20	0.56	0.56
Clearance Time (s)	5.4		4.4	4.4	4.4	4.4
Lane Grp Cap (vph)	972		348	311	899	847
v/s Ratio Prot	c0.44		c0.03		0.17	
v/s Ratio Perm				0.00		0.17
v/c Ratio	0.79		0.13	0.03	0.30	0.30
Uniform Delay, d1	21.1		39.8	38.9	13.8	13.8
Progression Factor	1.00		1.00	1.00	0.53	0.73
Incremental Delay, d2	6.5		0.8	0.2	0.8	0.8
Delay (s)	27.6		40.5	39.1	8.1	10.9
Level of Service	C		D	D	A	B
Approach Delay (s)	27.6		39.9		9.5	
Approach LOS	C		D		A	
Intersection Summary						
HCM 2000 Control Delay			18.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.53			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	14.3
Intersection Capacity Utilization			75.5%		ICU Level of Service	D
Analysis Period (min)			15			
! Phase conflict between lane groups.						
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: McCulloh St/Swann Dr & Druid Lake Park Dr

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	754	125	30	860	53	144	5	28	6	13	5
Future Volume (vph)	8	754	125	30	860	53	144	5	28	6	13	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6			5.6			5.6			5.6	
Lane Util. Factor	1.00	1.00			0.95			1.00			1.00	
Frt	1.00	0.98			0.99			0.98			0.97	
Flt Protected	0.95	1.00			1.00			0.96			0.99	
Satd. Flow (prot)	1770	1823			3504			1751			1788	
Flt Permitted	0.23	1.00			0.69			0.75			0.93	
Satd. Flow (perm)	420	1823			2431			1367			1692	
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	8	746	124	30	851	52	142	5	28	6	13	5
RTOR Reduction (vph)	0	0	0	0	3	0	0	5	0	0	4	0
Lane Group Flow (vph)	8	870	0	0	930	0	0	170	0	0	20	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	79.4	79.4			79.4			34.4			34.4	
Effective Green, g (s)	79.4	79.4			79.4			34.4			34.4	
Actuated g/C Ratio	0.53	0.53			0.53			0.23			0.23	
Clearance Time (s)	5.6	5.6			5.6			5.6			5.6	
Lane Grp Cap (vph)	222	964			1286			313			388	
v/s Ratio Prot		c0.48										
v/s Ratio Perm	0.02				0.38			c0.12			0.01	
v/c Ratio	0.04	0.90			0.72			0.54			0.05	
Uniform Delay, d1	16.9	31.8			26.9			50.9			45.1	
Progression Factor	0.20	0.25			1.00			1.00			1.00	
Incremental Delay, d2	0.2	7.7			3.6			6.7			0.3	
Delay (s)	3.5	15.8			30.5			57.6			45.3	
Level of Service	A	B			C			E			D	
Approach Delay (s)		15.7			30.5			57.6			45.3	
Approach LOS		B			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			26.5				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			15.2		
Intersection Capacity Utilization			68.2%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: N Fulton St & Druid Lake Park Dr/Auchentoroly Terr

12/20/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	0	170	717	0	254	755
Future Volume (vph)	0	170	717	0	254	755
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.6		4.5	5.6
Lane Util. Factor	1.00		1.00		1.00	0.95
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1863		1770	3539
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1863		1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	0	168	709	0	251	747
RTOR Reduction (vph)	140	0	0	0	0	0
Lane Group Flow (vph)	28	0	709	0	251	747
Turn Type	Prot		NA		Prot	NA
Protected Phases	7		2		1	6
Permitted Phases						
Actuated Green, G (s)	25.0		58.4		31.5	114.4
Effective Green, g (s)	25.0		58.4		31.5	114.4
Actuated g/C Ratio	0.17		0.39		0.21	0.76
Clearance Time (s)	5.0		5.6		4.5	5.6
Lane Grp Cap (vph)	268		725		371	2699
v/s Ratio Prot	c0.02		c0.38		c0.14	c0.21
v/s Ratio Perm						
v/c Ratio	0.10		0.98		0.68	0.28
Uniform Delay, d1	53.0		45.2		54.6	5.4
Progression Factor	1.00		1.00		1.21	0.75
Incremental Delay, d2	0.8		28.5		6.9	0.2
Delay (s)	53.8		73.6		72.7	4.2
Level of Service	D		E		E	A
Approach Delay (s)	53.8		73.6			21.4
Approach LOS	D		E			C
Intersection Summary						
HCM 2000 Control Delay			44.1		HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	20.7
Intersection Capacity Utilization			71.4%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Gwynns Falls Pkwy & Auchentoroly Terr

12/20/2021



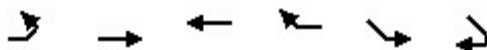
Movement	SEL	SET	SER	NWR	NWR2	NEL	NET	NER	SWT	SWR2
Lane Configurations										
Traffic Volume (vph)	13	427	294	753	2	33	41	300	11	8
Future Volume (vph)	13	427	294	753	2	33	41	300	11	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	5.0	6.0			6.0	5.0	6.0	6.0
Lane Util. Factor		1.00	1.00	0.88			1.00	1.00	1.00	1.00
Frt		1.00	0.85	0.85			1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00			0.98	1.00	1.00	1.00
Satd. Flow (prot)		1860	1583	2787			1822	1583	1863	1583
Flt Permitted		1.00	1.00	1.00			0.86	1.00	1.00	1.00
Satd. Flow (perm)		1860	1583	2787			1610	1583	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	13	422	291	745	2	33	41	297	11	8
RTOR Reduction (vph)	0	0	0	8	0	0	0	0	0	7
Lane Group Flow (vph)	0	435	291	739	0	0	74	297	11	1
Turn Type	Perm	NA	custom	custom		Perm	NA	custom	NA	Perm
Protected Phases		6	5	2			4	5	8	
Permitted Phases	6		6	5		4		4		8
Actuated Green, G (s)		33.0	55.0	80.0			18.0	40.0	18.0	18.0
Effective Green, g (s)		33.0	55.0	80.0			18.0	40.0	18.0	18.0
Actuated g/C Ratio		0.30	0.50	0.73			0.16	0.36	0.16	0.16
Clearance Time (s)		6.0	5.0	6.0			6.0	5.0	6.0	6.0
Lane Grp Cap (vph)		558	863	2026			263	575	304	259
v/s Ratio Prot			0.07	c0.27				c0.10	0.01	
v/s Ratio Perm		0.23	0.12				0.05	0.08		0.00
v/c Ratio		0.78	0.34	0.36			0.28	0.52	0.04	0.01
Uniform Delay, d1		35.2	16.5	5.6			40.3	27.4	38.7	38.5
Progression Factor		0.59	0.49	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2		10.1	1.0	0.5			2.7	3.3	0.2	0.0
Delay (s)		31.0	9.2	6.1			43.0	30.7	38.9	38.5
Level of Service		C	A	A			D	C	D	D
Approach Delay (s)		22.3					33.2		38.8	
Approach LOS		C					C		D	
Intersection Summary										
HCM 2000 Control Delay		18.1					HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio		0.60								
Actuated Cycle Length (s)		110.0					Sum of lost time (s)		23.0	
Intersection Capacity Utilization		70.4%					ICU Level of Service		C	
Analysis Period (min)		15								

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

8: Auchentoroly Terr & Auchentoroly Terr Uturn

12/20/2021



Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑			↔	↔
Traffic Volume (vph)	0	457	0	0	277	0
Future Volume (vph)	0	457	0	0	277	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0	
Lane Util. Factor		1.00			0.97	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		1863			3433	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		1863			3433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	0	452	0	0	274	0
RTOR Reduction (vph)	0	0	0	0	257	0
Lane Group Flow (vph)	0	452	0	0	17	0
Turn Type		NA			Prot	
Protected Phases		2			3	
Permitted Phases						
Actuated Green, G (s)		91.0			7.0	
Effective Green, g (s)		91.0			7.0	
Actuated g/C Ratio		0.83			0.06	
Clearance Time (s)		6.0			6.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1541			218	
v/s Ratio Prot		c0.24			c0.01	
v/s Ratio Perm						
v/c Ratio		0.29			0.08	
Uniform Delay, d1		2.2			48.5	
Progression Factor		4.22			1.00	
Incremental Delay, d2		0.5			0.1	
Delay (s)		9.6			48.6	
Level of Service		A			D	
Approach Delay (s)		9.6	0.0		48.6	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay		24.3		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		0.28				
Actuated Cycle Length (s)		110.0		Sum of lost time (s)		12.0
Intersection Capacity Utilization		43.2%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

9: Liberty Heights Ave/Greenspring Ave & Auchentoroly Terr

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	254	5	137	322	58	9	41	162	41	81	1
Future Volume (vph)	0	254	5	137	322	58	9	41	162	41	81	1
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		6.0	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		0.95	
Frt		1.00		1.00	0.98			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			0.99	1.00		0.98	
Satd. Flow (prot)		1858		1770	1820			1846	1583		3476	
Flt Permitted		1.00		0.95	1.00			0.94	1.00		0.84	
Satd. Flow (perm)		1858		1770	1820			1752	1583		2969	
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	0	251	5	136	318	57	9	41	160	41	80	1
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	102	0	1	0
Lane Group Flow (vph)	0	256	0	136	370	0	0	50	58	0	121	0
Turn Type		NA		Prot	NA		Perm	NA	pm+ov	custom	NA	
Protected Phases		6		5	2			4	5			
Permitted Phases							4		4	8	8	
Actuated Green, G (s)		27.0		21.0	79.0			19.0	40.0		19.0	
Effective Green, g (s)		27.0		21.0	79.0			19.0	40.0		19.0	
Actuated g/C Ratio		0.25		0.19	0.72			0.17	0.36		0.17	
Clearance Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	
Lane Grp Cap (vph)		456		337	1307			302	661		512	
v/s Ratio Prot		c0.14		c0.08	c0.20				0.02			
v/s Ratio Perm								0.03	0.02		c0.04	
v/c Ratio		0.56		0.40	0.28			0.17	0.09		0.24	
Uniform Delay, d1		36.3		39.0	5.5			38.7	23.0		39.2	
Progression Factor		0.94		0.92	0.95			1.84	0.56		1.00	
Incremental Delay, d2		4.9		3.4	0.5			1.2	0.3		1.1	
Delay (s)		39.0		39.1	5.7			72.6	13.2		40.3	
Level of Service		D		D	A			E	B		D	
Approach Delay (s)		39.0			14.6			27.3			40.3	
Approach LOS		D			B			C			D	
Intersection Summary												
HCM 2000 Control Delay			25.5			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			24.0			
Intersection Capacity Utilization			43.3%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

10: Reisterstown Rd & Liberty Heights Ave

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations		↑↑	↑	↑	↑↑			↑	↑	↑	↑	↑
Traffic Volume (vph)	0	175	257	37	184	2	5	204	15	118	169	12
Future Volume (vph)	0	175	257	37	184	2	5	204	15	118	169	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0	5.0	5.0			4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95			1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00			1.00	0.85	1.00	0.85	0.85
Flt Protected		1.00	1.00	0.95	1.00			0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3539	1583	1770	3533			1770	1583	1770	1583	1583
Flt Permitted		1.00	1.00	0.63	1.00			1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)		3539	1583	1168	3533			1855	1583	1863	1583	1583
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	0	173	254	37	182	2	5	202	15	117	167	12
RTOR Reduction (vph)	0	0	212	0	1	0	0	0	4	0	0	2
Lane Group Flow (vph)	0	173	42	37	183	0	0	207	11	117	167	10
Turn Type		NA	pm+ov	Perm	NA		Perm	Prot	Perm	pm+pt	Prot	Perm
Protected Phases		4	1		8			6		1	2	
Permitted Phases			4	8			6		6	2		2
Actuated Green, G (s)		11.1	18.1	11.1	11.1			78.9	78.9	89.9	89.9	89.9
Effective Green, g (s)		11.1	18.1	11.1	11.1			78.9	78.9	89.9	89.9	89.9
Actuated g/C Ratio		0.10	0.16	0.10	0.10			0.72	0.72	0.82	0.82	0.82
Clearance Time (s)		5.0	4.0	5.0	5.0			4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		357	260	117	356			1330	1135	1522	1293	1293
v/s Ratio Prot		0.05	c0.01		c0.05					0.00	0.11	
v/s Ratio Perm			0.02	0.03				c0.11	0.01	0.06		0.01
v/c Ratio		0.48	0.16	0.32	0.51			0.16	0.01	0.08	0.13	0.01
Uniform Delay, d1		46.7	39.4	45.9	46.9			4.9	4.4	2.0	2.1	1.8
Progression Factor		1.00	1.00	1.13	1.16			0.96	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.0	0.3	1.5	1.2			0.2	0.0	0.0	0.2	0.0
Delay (s)		47.8	39.7	53.6	55.8			5.0	4.4	2.1	2.3	1.9
Level of Service		D	D	D	E			A	A	A	A	A
Approach Delay (s)		43.0			55.5			4.9		2.2		
Approach LOS		D			E			A		A		
Intersection Summary												
HCM 2000 Control Delay			27.7			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.20									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			13.0			
Intersection Capacity Utilization			41.5%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: Reisterstown Rd & Anoka Ave

12/20/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	488	468	0
Future Volume (Veh/h)	0	0	0	488	468	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	483	463	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)				382		
pX, platoon unblocked	0.99					
vC, conflicting volume	946	463	463			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	942	463	463			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	290	599	1098			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	0	0	483	463		
Volume Left	0	0	0	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1700	1700		
Volume to Capacity	0.00	0.00	0.28	0.27		
Queue Length 95th (ft)	0	0	0	0		
Control Delay (s)	0.0	0.0	0.0	0.0		
Lane LOS						
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			26.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: Linden Ave & Druid Lake Park Dr

12/20/2021



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩			↩↩		
Traffic Volume (vph)	691	15	44	910	0	0
Future Volume (vph)	691	15	44	910	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			4.0		
Lane Util. Factor	1.00			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	1857			3531		
Flt Permitted	1.00			0.84		
Satd. Flow (perm)	1857			2957		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	683	15	44	900	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	698	0	0	944	0	0
Turn Type	NA		Perm	NA		
Protected Phases	6			2		
Permitted Phases			2			
Actuated Green, G (s)	70.0			71.0		
Effective Green, g (s)	70.0			71.0		
Actuated g/C Ratio	0.58			0.59		
Clearance Time (s)	5.0			4.0		
Lane Grp Cap (vph)	1083			1749		
v/s Ratio Prot	c0.38					
v/s Ratio Perm				0.32		
v/c Ratio	0.64			0.54		
Uniform Delay, d1	16.7			14.7		
Progression Factor	1.00			1.00		
Incremental Delay, d2	3.0			1.2		
Delay (s)	19.7			15.9		
Level of Service	B			B		
Approach Delay (s)	19.7			15.9	0.0	
Approach LOS	B			B	A	
Intersection Summary						
HCM 2000 Control Delay			17.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.42			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	11.5
Intersection Capacity Utilization			55.8%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Eutaw PI & Druid Lake Park Dr

12/20/2021



Movement	EBL	EBR	NWL	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	652	117	119	54	44	866
Future Volume (vph)	652	117	119	54	44	866
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6		5.6	5.6	5.6	5.6
Lane Util. Factor	1.00		1.00	1.00	1.00	0.95
Frt	0.98		1.00	0.85	0.87	0.85
Flt Protected	0.96		0.95	1.00	0.99	1.00
Satd. Flow (prot)	1750		1770	1583	1605	1504
Flt Permitted	0.96		0.95	1.00	0.68	1.00
Satd. Flow (perm)	1750		1770	1583	1091	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	645	116	118	53	44	857
RTOR Reduction (vph)	0	0	0	44	148	204
Lane Group Flow (vph)	761	0	118	9	256	293
Turn Type	Prot		Prot	Prot	Perm	Prot
Protected Phases	2		8	8		6
Permitted Phases					6	
Actuated Green, G (s)	88.4		25.4	25.4	88.4	88.4
Effective Green, g (s)	88.4		25.4	25.4	88.4	88.4
Actuated g/C Ratio	0.59		0.17	0.17	0.59	0.59
Clearance Time (s)	5.6		5.6	5.6	5.6	5.6
Lane Grp Cap (vph)	1031		299	268	642	886
v/s Ratio Prot	c0.43		c0.07	0.01		0.19
v/s Ratio Perm					0.23	
v/c Ratio	0.74		0.39	0.03	0.40	0.33
Uniform Delay, d1	22.4		55.5	52.0	16.5	15.7
Progression Factor	0.11		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6		3.9	0.2	1.8	1.0
Delay (s)	5.0		59.3	52.3	18.4	16.7
Level of Service	A		E	D	B	B
Approach Delay (s)	5.0		57.1		17.5	
Approach LOS	A		E		B	
Intersection Summary						
HCM 2000 Control Delay			16.0		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.56			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	15.2
Intersection Capacity Utilization			84.3%		ICU Level of Service	E
Analysis Period (min)			15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Madison Ave/Swann Dr & Druid Lake Park Dr

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	8	749	130	127	805	53	6	13	5	72	0	14
Future Volume (vph)	8	749	130	127	805	53	6	13	5	72	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6			5.6			5.6	
Lane Util. Factor		1.00			0.95			1.00			1.00	
Frt		0.98			0.99			0.97			0.98	
Flt Protected		1.00			0.99			0.99			0.96	
Satd. Flow (prot)		1825			3488			1788			1748	
Flt Permitted		0.99			0.62			0.94			0.74	
Satd. Flow (perm)		1807			2174			1707			1356	
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	8	741	129	126	796	52	6	13	5	71	0	14
RTOR Reduction (vph)	0	0	0	0	3	0	0	4	0	0	36	0
Lane Group Flow (vph)	0	878	0	0	971	0	0	20	0	0	49	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)		87.4			87.4			27.4			27.4	
Effective Green, g (s)		87.4			87.4			27.4			27.4	
Actuated g/C Ratio		0.58			0.58			0.18			0.18	
Clearance Time (s)		4.6			4.6			5.6			5.6	
Lane Grp Cap (vph)		1052			1266			311			247	
v/s Ratio Prot												
v/s Ratio Perm		c0.49			0.45			0.01			c0.04	
v/c Ratio		0.83			0.77			0.06			0.20	
Uniform Delay, d1		25.4			23.6			50.7			52.0	
Progression Factor		1.00			1.14			1.00			1.00	
Incremental Delay, d2		7.8			4.1			0.4			1.8	
Delay (s)		33.2			31.1			51.1			53.8	
Level of Service		C			C			D			D	
Approach Delay (s)		33.2			31.1			51.1			53.8	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay		33.3			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.58										
Actuated Cycle Length (s)		150.0			Sum of lost time (s)			14.7				
Intersection Capacity Utilization		92.0%			ICU Level of Service			F				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

5: N Fulton St & Druid Lake Park Dr/Auchentoroly Terr

12/20/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (veh/h)	0	170	717	0	0	882
Future Volume (Veh/h)	0	170	717	0	0	882
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	168	709	0	0	872
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						812
pX, platoon unblocked	0.87					
vC, conflicting volume	1145	709			709	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	862	709			709	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	55			100	
cM capacity (veh/h)	255	377			886	
Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2	
Volume Total	168	709	0	436	436	
Volume Left	0	0	0	0	0	
Volume Right	168	0	0	0	0	
cSH	377	1700	1700	1700	1700	
Volume to Capacity	0.45	0.42	0.00	0.26	0.26	
Queue Length 95th (ft)	56	0	0	0	0	
Control Delay (s)	22.0	0.0	0.0	0.0	0.0	
Lane LOS	C					
Approach Delay (s)	22.0	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			50.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

7: Gwynns Falls Pkwy & Auchentoroly Terr

12/20/2021

												
Movement	SEL	SET	SER	SER2	NWL	NWT	NWR	NEL	NET	NER	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	13	417	10	17	404	476	2	33	41	300	11	8
Future Volume (vph)	13	417	10	17	404	476	2	33	41	300	11	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			5.0	6.0			6.0	5.0	6.0	
Lane Util. Factor		0.95			1.00	0.95			1.00	1.00	1.00	
Frt		0.99			1.00	1.00			1.00	0.85	0.94	
Flt Protected		1.00			0.95	1.00			0.98	1.00	1.00	
Satd. Flow (prot)		3502			1770	3537			1822	1583	1757	
Flt Permitted		0.93			0.37	1.00			0.86	1.00	1.00	
Satd. Flow (perm)		3266			681	3537			1604	1583	1757	
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	13	412	10	17	400	471	2	33	41	297	11	8
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	452	0	0	400	473	0	0	74	297	12	0
Turn Type	Perm	NA			pm+pt	NA			Perm	NA	pm+ov	NA
Protected Phases		6			5	2			4	5	8	
Permitted Phases	6				2			4		4		
Actuated Green, G (s)		23.0			80.0	80.0			18.0	50.0	18.0	
Effective Green, g (s)		23.0			80.0	80.0			18.0	50.0	18.0	
Actuated g/C Ratio		0.21			0.73	0.73			0.16	0.45	0.16	
Clearance Time (s)		6.0			5.0	6.0			6.0	5.0	6.0	
Lane Grp Cap (vph)		682			812	2572			262	719	287	
v/s Ratio Prot					c0.14	0.13				c0.12	0.01	
v/s Ratio Perm		c0.14			c0.21				0.05	0.07		
v/c Ratio		0.66			0.49	0.18			0.28	0.41	0.04	
Uniform Delay, d1		39.9			6.5	4.7			40.3	20.1	38.7	
Progression Factor		1.00			1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		5.0			2.1	0.2			2.7	1.8	0.3	
Delay (s)		45.0			8.6	4.9			43.0	21.9	39.0	
Level of Service		D			A	A			D	C	D	
Approach Delay (s)		45.0				6.6			26.1		39.0	
Approach LOS		D				A			C		D	
Intersection Summary												
HCM 2000 Control Delay		21.3			HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio		0.54										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)				23.0			
Intersection Capacity Utilization		57.3%			ICU Level of Service				B			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

10: Reisterstown Rd & Liberty Heights Ave

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations		↑↑	↑	↑	↑↑			↑	↑	↑	↑	↑
Traffic Volume (vph)	0	175	257	37	184	2	5	204	15	118	169	12
Future Volume (vph)	0	175	257	37	184	2	5	204	15	118	169	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0	5.0	5.0			4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95			1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00			1.00	0.85	1.00	0.85	0.85
Flt Protected		1.00	1.00	0.95	1.00			0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3539	1583	1770	3533			1770	1583	1770	1583	1583
Flt Permitted		1.00	1.00	0.63	1.00			1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)		3539	1583	1168	3533			1855	1583	1863	1583	1583
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	0	173	254	37	182	2	5	202	15	117	167	12
RTOR Reduction (vph)	0	0	212	0	1	0	0	0	4	0	0	2
Lane Group Flow (vph)	0	173	42	37	183	0	0	207	11	117	167	10
Turn Type		NA	pm+ov	Perm	NA		Perm	Prot	Perm	pm+pt	Prot	Perm
Protected Phases		4	1		8			6		1	2	
Permitted Phases			4	8			6		6	2		2
Actuated Green, G (s)		11.1	18.1	11.1	11.1			78.9	78.9	89.9	89.9	89.9
Effective Green, g (s)		11.1	18.1	11.1	11.1			78.9	78.9	89.9	89.9	89.9
Actuated g/C Ratio		0.10	0.16	0.10	0.10			0.72	0.72	0.82	0.82	0.82
Clearance Time (s)		5.0	4.0	5.0	5.0			4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		357	260	117	356			1330	1135	1522	1293	1293
v/s Ratio Prot		0.05	c0.01		c0.05					0.00	0.11	
v/s Ratio Perm			0.02	0.03				c0.11	0.01	0.06		0.01
v/c Ratio		0.48	0.16	0.32	0.51			0.16	0.01	0.08	0.13	0.01
Uniform Delay, d1		46.7	39.4	45.9	46.9			4.9	4.4	2.0	2.1	1.8
Progression Factor		1.00	1.00	1.00	1.00			0.99	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.0	0.3	1.6	1.3			0.2	0.0	0.0	0.2	0.0
Delay (s)		47.8	39.7	47.5	48.2			5.2	4.4	2.1	2.3	1.9
Level of Service		D	D	D	D			A	A	A	A	A
Approach Delay (s)		43.0			48.0			5.1		2.2		
Approach LOS		D			D			A		A		
Intersection Summary												
HCM 2000 Control Delay			26.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.20									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			13.0			
Intersection Capacity Utilization			41.5%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: Reisterstown Rd & Anoka Ave

12/20/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	488	468	0
Future Volume (Veh/h)	0	0	0	488	468	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	483	463	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)				382		
pX, platoon unblocked	0.99					
vC, conflicting volume	946	232	463			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	940	232	463			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	259	771	1095			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	0	0	483	309	154	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.00	0.28	0.18	0.09	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			26.7%	ICU Level of Service		A
Analysis Period (min)			15			

DPLD Concepts with 9% Volume Reduction (PM)

HCM Signalized Intersection Capacity Analysis

1: Linden Ave & Druid Lake Park Dr

12/20/2021

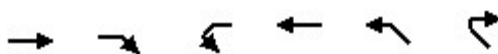
	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖	↗		
Traffic Volume (vph)	968	30	67	1415	0	0
Future Volume (vph)	968	30	67	1415	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		4.5	5.0		
Lane Util. Factor	1.00		1.00	1.00		
Frt	1.00		1.00	1.00		
Flt Protected	1.00		0.95	1.00		
Satd. Flow (prot)	1855		1770	1863		
Flt Permitted	1.00		0.95	1.00		
Satd. Flow (perm)	1855		1770	1863		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	957	30	66	1400	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	987	0	66	1400	0	0
Turn Type	NA		Prot	NA		
Protected Phases	6		5	2		
Permitted Phases						
Actuated Green, G (s)	81.0		9.5	120.0		
Effective Green, g (s)	81.0		9.5	120.0		
Actuated g/C Ratio	0.54		0.06	0.80		
Clearance Time (s)	5.0		4.5	5.0		
Lane Grp Cap (vph)	1001		112	1490		
v/s Ratio Prot	0.53		0.04	c0.75		
v/s Ratio Perm						
v/c Ratio	0.99		0.59	0.94		
Uniform Delay, d1	33.9		68.4	12.1		
Progression Factor	0.23		1.00	1.00		
Incremental Delay, d2	5.9		20.7	12.8		
Delay (s)	13.7		89.1	24.9		
Level of Service	B		F	C		
Approach Delay (s)	13.7			27.8	0.0	
Approach LOS	B			C	A	
Intersection Summary						
HCM 2000 Control Delay			22.1		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	17.5
Intersection Capacity Utilization			71.9%		ICU Level of Service	C
Analysis Period (min)			15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Eutaw PI & Druid Lake Park Dr

12/20/2021



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	EB	EB	WB	WB	NW	NW
Traffic Volume (vph)	895	200	67	1348	308	103
Future Volume (vph)	895	200	67	1348	308	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5		4.5	5.5	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.97	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	1817		1770	1863	1735	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	1817		1770	1863	1735	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	885	198	66	1333	305	102
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1083	0	66	1333	407	0
Confl. Peds. (#/hr)			67			
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	76.5		5.5	106.5	33.0	
Effective Green, g (s)	76.5		5.5	106.5	33.0	
Actuated g/C Ratio	0.51		0.04	0.71	0.22	
Clearance Time (s)	5.5		4.5	5.5	5.0	
Lane Grp Cap (vph)	926		64	1322	381	
v/s Ratio Prot	c0.60		0.04	c0.72	c0.23	
v/s Ratio Perm						
v/c Ratio	1.17		1.03	1.01	1.07	
Uniform Delay, d1	36.8		72.2	21.8	58.5	
Progression Factor	1.00		0.83	0.85	1.00	
Incremental Delay, d2	87.9		74.3	16.5	65.4	
Delay (s)	124.7		134.6	35.0	123.9	
Level of Service	F		F	D	F	
Approach Delay (s)	124.7			39.7	123.9	
Approach LOS	F			D	F	
Intersection Summary						
HCM 2000 Control Delay			83.4		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.15			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	20.5
Intersection Capacity Utilization			94.6%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis

5: N Fulton St & Druid Lake Park Dr/Auchentoroly Terr

12/20/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (veh/h)	0	254	1041	0	0	1366
Future Volume (Veh/h)	0	254	1041	0	0	1366
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	251	1030	0	0	1351
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None			None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2381	1030			1030	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2381	1030			1030	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	11			100	
cM capacity (veh/h)	38	283			674	
Direction, Lane #	NB 1	SE 1	NW 1			
Volume Total	251	1030	1351			
Volume Left	0	0	0			
Volume Right	251	0	0			
cSH	283	1700	1700			
Volume to Capacity	0.89	0.61	0.79			
Queue Length 95th (ft)	197	0	0			
Control Delay (s)	67.6	0.0	0.0			
Lane LOS	F					
Approach Delay (s)	67.6	0.0	0.0			
Approach LOS	F					
Intersection Summary						
Average Delay		6.4				
Intersection Capacity Utilization		70.8%		ICU Level of Service		C
Analysis Period (min)		15				

HCM Signalized Intersection Capacity Analysis

10: Reisterstown Rd & Liberty Heights Ave

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations												
Traffic Volume (vph)	0	229	362	89	367	428	329	332	47	311	338	36
Future Volume (vph)	0	229	362	89	367	428	329	332	47	311	338	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	4.0		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		0.95	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	0.85	0.85
Flt Protected		1.00	1.00		0.99	1.00		0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1863	1583		3505	1583		1770	1583	1770	1583	1583
Flt Permitted		1.00	1.00		0.75	1.00		0.68	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1863	1583		2655	1583		1266	1583	1770	1583	1583
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	0	227	358	88	363	423	325	328	46	308	334	36
RTOR Reduction (vph)	0	0	254	0	0	200	0	0	33	0	0	21
Lane Group Flow (vph)	0	227	104	0	451	223	0	653	13	308	334	15
Turn Type		NA	Perm	Perm	NA	pm+ov	Prot	Prot	Perm	Prot	Prot	Prot
Protected Phases		4			8	1	1	6		5	2	2
Permitted Phases			4	8		8			6			
Actuated Green, G (s)		32.0	32.0		32.0	52.0		52.0	32.0	33.0	45.0	45.0
Effective Green, g (s)		32.0	32.0		32.0	52.0		52.0	32.0	33.0	45.0	45.0
Actuated g/C Ratio		0.29	0.29		0.29	0.47		0.47	0.29	0.30	0.41	0.41
Clearance Time (s)		5.0	5.0		5.0	4.0		4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)		541	460		772	748		690	460	531	647	647
v/s Ratio Prot		0.12				0.05		c0.17		c0.17	0.21	0.01
v/s Ratio Perm			0.07		c0.17	0.09		c0.28	0.01			
v/c Ratio		0.42	0.23		0.58	0.30		0.95	0.03	0.58	0.52	0.02
Uniform Delay, d1		31.5	29.6		33.3	17.8		25.5	27.9	32.6	24.3	19.4
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.4	1.1		3.2	1.0		23.4	0.1	4.6	2.9	0.1
Delay (s)		33.9	30.7		36.5	18.8		48.9	28.0	37.2	27.3	19.4
Level of Service		C	C		D	B		D	C	D	C	B
Approach Delay (s)		32.0			28.0			47.5		31.4		
Approach LOS		C			C			D		C		
Intersection Summary												
HCM 2000 Control Delay		34.4			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.77										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)			13.0				
Intersection Capacity Utilization		86.6%			ICU Level of Service			E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: Reisterstown Rd & Anoka Ave

12/20/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	766	708	0
Future Volume (Veh/h)	0	0	0	766	708	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	758	700	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1458	700	700			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1458	700	700			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	143	439	897			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	0	0	758	700	0	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.00	0.45	0.41	0.00	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			40.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: Linden Ave & Druid Lake Park Dr

12/20/2021

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	968	30	44	1438	0	0
Future Volume (vph)	968	30	44	1438	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			4.0		
Lane Util. Factor	1.00			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	1855			3534		
Flt Permitted	1.00			0.74		
Satd. Flow (perm)	1855			2607		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	957	30	44	1422	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	987	0	0	1466	0	0
Turn Type	NA		Perm	NA		
Protected Phases	6			2		
Permitted Phases			2			
Actuated Green, G (s)	100.0			101.0		
Effective Green, g (s)	100.0			101.0		
Actuated g/C Ratio	0.67			0.67		
Clearance Time (s)	5.0			4.0		
Lane Grp Cap (vph)	1236			1755		
v/s Ratio Prot	0.53					
v/s Ratio Perm				c0.56		
v/c Ratio	0.80			0.84		
Uniform Delay, d1	17.8			18.3		
Progression Factor	0.68			1.00		
Incremental Delay, d2	2.4			4.9		
Delay (s)	14.5			23.2		
Level of Service	B			C		
Approach Delay (s)	14.5			23.2	0.0	
Approach LOS	B			C	A	
Intersection Summary						
HCM 2000 Control Delay			19.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	11.5
Intersection Capacity Utilization			68.4%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

2: Eutaw PI & Druid Lake Park Dr

12/20/2021



Movement	EBL	EBR	NWL	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	918	160	123	80	45	1393
Future Volume (vph)	918	160	123	80	45	1393
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.4		4.4	4.4	4.4	4.4
Lane Util. Factor	1.00		1.00	1.00	1.00	0.95
Frt	0.98		1.00	0.85	0.86	0.85
Flt Protected	0.96		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1751		1770	1583	1598	1504
Flt Permitted	0.96		0.95	1.00	0.45	1.00
Satd. Flow (perm)	1751		1770	1583	718	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	908	158	122	79	45	1378
RTOR Reduction (vph)	0	0	0	67	197	235
Lane Group Flow (vph)	1066	0	122	12	413	578
Turn Type	Prot		Prot	Perm	Perm	Prot
Protected Phases	2		8			6
Permitted Phases				8	6	
Actuated Green, G (s)	96.6		23.6	23.6	97.6	97.6
Effective Green, g (s)	96.6		23.6	23.6	97.6	97.6
Actuated g/C Ratio	0.64		0.16	0.16	0.65	0.65
Clearance Time (s)	5.4		4.4	4.4	4.4	4.4
Lane Grp Cap (vph)	1127		278	249	467	978
v/s Ratio Prot	c0.61		c0.07			0.38
v/s Ratio Perm				0.01	0.57	
v/c Ratio	0.95		0.44	0.05	0.88	0.59
Uniform Delay, d1	24.3		57.2	53.7	21.5	14.9
Progression Factor	0.30		1.00	1.00	10.37	0.76
Incremental Delay, d2	2.3		5.0	0.4	12.4	1.4
Delay (s)	9.5		62.2	54.1	235.6	12.7
Level of Service	A		E	D	F	B
Approach Delay (s)	9.5		59.0		108.3	
Approach LOS	A		E		F	
Intersection Summary						
HCM 2000 Control Delay			65.4		HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			0.75			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	14.3
Intersection Capacity Utilization			101.6%		ICU Level of Service	G
Analysis Period (min)			15			
c Critical Lane Group						

Intersection Sign configuration not allowed in HCM analysis.

HCM Signalized Intersection Capacity Analysis

4: McCulloh St/Swann Dr & Druid Lake Park Dr

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	1039	241	45	1434	37	369	5	47	16	30	15
Future Volume (vph)	15	1039	241	45	1434	37	369	5	47	16	30	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.6		5.6			5.6			5.6	
Lane Util. Factor		1.00	1.00		0.95			1.00			1.00	
Frt		1.00	0.85		1.00			0.99			0.97	
Flt Protected		1.00	1.00		1.00			0.96			0.99	
Satd. Flow (prot)		1861	1583		3521			1758			1778	
Flt Permitted		0.89	1.00		0.55			0.73			0.94	
Satd. Flow (perm)		1652	1583		1929			1331			1689	
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	15	1028	238	45	1418	37	365	5	46	16	30	15
RTOR Reduction (vph)	0	0	0	0	1	0	0	3	0	0	8	0
Lane Group Flow (vph)	0	1043	238	0	1499	0	0	413	0	0	53	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6		6	2			4			8		
Actuated Green, G (s)		84.4	84.4		84.4			34.4			34.4	
Effective Green, g (s)		84.4	84.4		84.4			34.4			34.4	
Actuated g/C Ratio		0.56	0.56		0.56			0.23			0.23	
Clearance Time (s)		5.6	5.6		5.6			5.6			5.6	
Lane Grp Cap (vph)		929	890		1085			305			387	
v/s Ratio Prot												
v/s Ratio Perm		0.63	0.15		c0.78			c0.31			0.03	
v/c Ratio		1.12	0.27		1.38			1.35			0.14	
Uniform Delay, d1		32.8	16.9		32.8			57.8			46.0	
Progression Factor		0.35	0.17		1.13			1.00			1.00	
Incremental Delay, d2		56.8	0.1		175.4			179.3			0.7	
Delay (s)		68.3	2.9		212.3			237.1			46.7	
Level of Service		E	A		F			F			D	
Approach Delay (s)		56.2			212.3			237.1			46.7	
Approach LOS		E			F			F			D	
Intersection Summary												
HCM 2000 Control Delay			151.0				HCM 2000 Level of Service				F	
HCM 2000 Volume to Capacity ratio			1.21									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			15.2		
Intersection Capacity Utilization			104.3%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: N Fulton St & Druid Lake Park Dr/Auchentoroly Terr

12/20/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	0	254	1041	0	452	1366
Future Volume (vph)	0	254	1041	0	452	1366
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.6		4.5	5.6
Lane Util. Factor	1.00		1.00		1.00	0.95
Frt	0.86		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1611		1863		1770	3539
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1611		1863		1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	0	251	1030	0	447	1351
RTOR Reduction (vph)	209	0	0	0	0	0
Lane Group Flow (vph)	42	0	1030	0	447	1351
Turn Type	Prot		NA		Prot	NA
Protected Phases	7		2		1	6
Permitted Phases						
Actuated Green, G (s)	25.0		55.4		34.5	114.4
Effective Green, g (s)	25.0		55.4		34.5	114.4
Actuated g/C Ratio	0.17		0.37		0.23	0.76
Clearance Time (s)	5.0		5.6		4.5	5.6
Lane Grp Cap (vph)	268		688		407	2699
v/s Ratio Prot	c0.03		c0.55		c0.25	c0.38
v/s Ratio Perm						
v/c Ratio	0.16		1.50		1.10	0.50
Uniform Delay, d1	53.5		47.3		57.8	6.8
Progression Factor	1.00		1.00		0.81	0.69
Incremental Delay, d2	1.2		231.3		48.3	0.1
Delay (s)	54.7		278.6		95.1	4.8
Level of Service	D		F		F	A
Approach Delay (s)	54.7		278.6			27.2
Approach LOS	D		F			C
Intersection Summary						
HCM 2000 Control Delay			113.6		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.03			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	20.7
Intersection Capacity Utilization			99.5%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Gwynns Falls Pkwy & Auchentoroly Terr

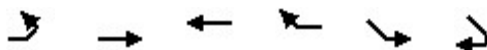
12/20/2021

										
Movement	SEL	SET	SER	NWR	NWR2	NEL	NET	NER	SWT	SWR2
Lane Configurations										
Traffic Volume (vph)	15	600	596	1358	8	67	44	451	46	30
Future Volume (vph)	15	600	596	1358	8	67	44	451	46	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	5.0	6.0			6.0	5.0	6.0	6.0
Lane Util. Factor		1.00	1.00	0.88			1.00	1.00	1.00	1.00
Frt		1.00	0.85	0.85			1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00			0.97	1.00	1.00	1.00
Satd. Flow (prot)		1860	1583	2787			1808	1583	1863	1583
Flt Permitted		1.00	1.00	1.00			0.79	1.00	1.00	1.00
Satd. Flow (perm)		1860	1583	2787			1470	1583	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	15	593	590	1343	8	66	44	446	46	30
RTOR Reduction (vph)	0	0	0	8	0	0	0	0	0	25
Lane Group Flow (vph)	0	608	590	1343	0	0	110	446	46	5
Turn Type	Perm	NA	custom	custom		Perm	NA	custom	NA	Perm
Protected Phases		6	5	2			4	5	8	
Permitted Phases	6		6	5		4		4		8
Actuated Green, G (s)		31.0	55.0	80.0			18.0	42.0	18.0	18.0
Effective Green, g (s)		31.0	55.0	80.0			18.0	42.0	18.0	18.0
Actuated g/C Ratio		0.28	0.50	0.73			0.16	0.38	0.16	0.16
Clearance Time (s)		6.0	5.0	6.0			6.0	5.0	6.0	6.0
Lane Grp Cap (vph)		524	791	2026			240	604	304	259
v/s Ratio Prot			0.16	c0.48				c0.16	0.02	
v/s Ratio Perm		0.33	0.21				0.07	0.12		0.00
v/c Ratio		1.16	0.75	0.66			0.46	0.74	0.15	0.02
Uniform Delay, d1		39.5	21.9	7.9			41.6	29.3	39.4	38.6
Progression Factor		1.19	0.83	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2		90.6	5.9	1.7			6.2	7.9	1.1	0.1
Delay (s)		137.8	24.1	9.6			47.8	37.2	40.5	38.7
Level of Service		F	C	A			D	D	D	D
Approach Delay (s)		81.8					39.3		39.8	
Approach LOS		F					D		D	
Intersection Summary										
HCM 2000 Control Delay		42.7					HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio		0.91								
Actuated Cycle Length (s)		110.0					Sum of lost time (s)		23.0	
Intersection Capacity Utilization		100.1%					ICU Level of Service		G	
Analysis Period (min)		15								
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis

8: Auchentoroly Terr & Auchentoroly Terr Uturn

12/20/2021



Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑			↔	↔
Traffic Volume (vph)	0	630	0	0	581	0
Future Volume (vph)	0	630	0	0	581	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0	
Lane Util. Factor		1.00			0.97	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		1863			3433	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		1863			3433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	0	623	0	0	575	0
RTOR Reduction (vph)	0	0	0	0	409	0
Lane Group Flow (vph)	0	623	0	0	166	0
Turn Type		NA			Prot	
Protected Phases		2			3	
Permitted Phases						
Actuated Green, G (s)		87.2			10.8	
Effective Green, g (s)		87.2			10.8	
Actuated g/C Ratio		0.79			0.10	
Clearance Time (s)		6.0			6.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1476			337	
v/s Ratio Prot		c0.33			c0.05	
v/s Ratio Perm						
v/c Ratio		0.42			0.49	
Uniform Delay, d1		3.6			47.0	
Progression Factor		0.52			0.66	
Incremental Delay, d2		0.8			0.9	
Delay (s)		2.6			31.8	
Level of Service		A			C	
Approach Delay (s)		2.6	0.0		31.8	
Approach LOS		A	A		C	
Intersection Summary						
HCM 2000 Control Delay		16.6		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.43				
Actuated Cycle Length (s)		110.0		Sum of lost time (s)		12.0
Intersection Capacity Utilization		60.5%		ICU Level of Service		B
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

9: Liberty Heights Ave/Greenspring Ave & Auchentoroly Terr

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	311	10	321	431	122	24	65	258	61	131	1
Future Volume (vph)	0	311	10	321	431	122	24	65	258	61	131	1
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		6.0	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		0.95	
Frt		1.00		1.00	0.97			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			0.99	1.00		0.98	
Satd. Flow (prot)		1855		1770	1801			1838	1583		3482	
Flt Permitted		1.00		0.95	1.00			0.86	1.00		0.83	
Satd. Flow (perm)		1855		1770	1801			1606	1583		2932	
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	0	308	10	318	426	121	24	64	255	60	130	1
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	160	0	0	0
Lane Group Flow (vph)	0	318	0	318	538	0	0	88	95	0	191	0
Turn Type		NA		Prot	NA		Perm	NA	pm+ov	custom	NA	
Protected Phases		6		5	2			4	5			
Permitted Phases							4		4	8	8	
Actuated Green, G (s)		26.0		24.0	81.0			17.0	41.0		17.0	
Effective Green, g (s)		26.0		24.0	81.0			17.0	41.0		17.0	
Actuated g/C Ratio		0.24		0.22	0.74			0.15	0.37		0.15	
Clearance Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	
Lane Grp Cap (vph)		438		386	1326			248	676		453	
v/s Ratio Prot		c0.17		c0.18	c0.30				0.03			
v/s Ratio Perm								0.05	0.03		c0.07	
v/c Ratio		0.73		0.82	0.41			0.35	0.14		0.42	
Uniform Delay, d1		38.7		41.0	5.5			41.6	22.8		42.1	
Progression Factor		0.92		0.86	1.43			1.09	10.73		1.00	
Incremental Delay, d2		9.6		14.1	0.7			3.9	0.4		2.9	
Delay (s)		45.1		49.5	8.5			49.1	245.6		44.9	
Level of Service		D		D	A			D	F		D	
Approach Delay (s)		45.1			23.6			195.2			44.9	
Approach LOS		D			C			F			D	
Intersection Summary												
HCM 2000 Control Delay			64.2			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			24.0			
Intersection Capacity Utilization			63.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

10: Reisterstown Rd & Liberty Heights Ave

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations		↑↑	↑	↑	↑↑			↑	↑	↑	↑	↑
Traffic Volume (vph)	0	262	362	53	403	6	4	368	51	311	340	41
Future Volume (vph)	0	262	362	53	403	6	4	368	51	311	340	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0	5.0	5.0			4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95			1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00			1.00	0.85	1.00	0.85	0.85
Flt Protected		1.00	1.00	0.95	1.00			0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3539	1583	1770	3531			1770	1583	1770	1583	1583
Flt Permitted		1.00	1.00	0.51	1.00			1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)		3539	1583	952	3531			1858	1583	1863	1583	1583
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	0	259	358	52	399	6	4	364	50	308	336	41
RTOR Reduction (vph)	0	0	259	0	1	0	0	0	20	0	0	10
Lane Group Flow (vph)	0	259	99	52	404	0	0	368	30	308	336	31
Turn Type		NA	pm+ov	Perm	NA		Perm	Prot	Perm	pm+pt	Prot	Perm
Protected Phases		4	1		8			6		1	2	
Permitted Phases			4	8			6		6	2		2
Actuated Green, G (s)		18.4	30.4	18.4	18.4			66.6	66.6	82.6	82.6	82.6
Effective Green, g (s)		18.4	30.4	18.4	18.4			66.6	66.6	82.6	82.6	82.6
Actuated g/C Ratio		0.17	0.28	0.17	0.17			0.61	0.61	0.75	0.75	0.75
Clearance Time (s)		5.0	4.0	5.0	5.0			4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		591	437	159	590			1124	958	1398	1188	1188
v/s Ratio Prot		0.07	0.02		c0.11					0.02	c0.21	
v/s Ratio Perm			0.04	0.05				c0.20	0.02	0.14		0.02
v/c Ratio		0.44	0.23	0.33	0.69			0.33	0.03	0.22	0.28	0.03
Uniform Delay, d1		41.2	30.7	40.3	43.1			10.7	8.7	4.2	4.3	3.5
Progression Factor		1.00	1.00	0.25	0.27			0.84	0.67	1.00	1.00	1.00
Incremental Delay, d2		0.5	0.3	0.8	2.3			0.8	0.1	0.1	0.6	0.0
Delay (s)		41.7	31.0	10.8	13.9			9.7	5.9	4.3	4.9	3.5
Level of Service		D	C	B	B			A	A	A	A	A
Approach Delay (s)		35.5			13.5			9.2		4.6		
Approach LOS		D			B			A		A		
Intersection Summary												
HCM 2000 Control Delay			16.1			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				13.0		
Intersection Capacity Utilization			61.0%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: Reisterstown Rd & Anoka Ave

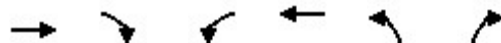
12/20/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	766	708	0
Future Volume (Veh/h)	0	0	0	766	708	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	758	700	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)				382		
pX, platoon unblocked	0.93					
vC, conflicting volume	1458	700	700			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1455	700	700			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	133	439	897			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	0	0	758	700		
Volume Left	0	0	0	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1700	1700		
Volume to Capacity	0.00	0.00	0.45	0.41		
Queue Length 95th (ft)	0	0	0	0		
Control Delay (s)	0.0	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			40.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: Linden Ave & Druid Lake Park Dr

12/20/2021



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩			↩↩		
Traffic Volume (vph)	968	30	67	1415	0	0
Future Volume (vph)	968	30	67	1415	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			4.0		
Lane Util. Factor	1.00			0.95		
Frt	1.00			1.00		
Flt Protected	1.00			1.00		
Satd. Flow (prot)	1855			3531		
Flt Permitted	1.00			0.66		
Satd. Flow (perm)	1855			2341		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	957	30	66	1400	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	987	0	0	1466	0	0
Turn Type	NA		Perm	NA		
Protected Phases	6			2		
Permitted Phases			2			
Actuated Green, G (s)	100.0			101.0		
Effective Green, g (s)	100.0			101.0		
Actuated g/C Ratio	0.67			0.67		
Clearance Time (s)	5.0			4.0		
Lane Grp Cap (vph)	1236			1576		
v/s Ratio Prot	0.53					
v/s Ratio Perm				c0.63		
v/c Ratio	0.80			0.93		
Uniform Delay, d1	17.8			21.4		
Progression Factor	0.22			1.00		
Incremental Delay, d2	0.5			11.2		
Delay (s)	4.4			32.6		
Level of Service	A			C		
Approach Delay (s)	4.4			32.6	0.0	
Approach LOS	A			C	A	
Intersection Summary						
HCM 2000 Control Delay			21.3		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.68			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	11.5
Intersection Capacity Utilization			83.9%		ICU Level of Service	E
Analysis Period (min)			15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Eutaw PI & Druid Lake Park Dr

12/20/2021



Movement	EBL	EBR	NWL	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	895	200	308	103	67	1348
Future Volume (vph)	895	200	308	103	67	1348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6		5.6		5.6	5.6
Lane Util. Factor	1.00		1.00		1.00	0.95
Frt	0.98		0.97		0.87	0.85
Flt Protected	0.96		0.96		0.99	1.00
Satd. Flow (prot)	1745		1735		1607	1504
Flt Permitted	0.96		0.96		0.24	1.00
Satd. Flow (perm)	1745		1735		393	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	885	198	305	102	66	1333
RTOR Reduction (vph)	0	0	8	0	175	182
Lane Group Flow (vph)	1083	0	399	0	371	671
Turn Type	Prot		Prot		Perm	Prot
Protected Phases	2		8			6
Permitted Phases					6	
Actuated Green, G (s)	93.4		25.4		93.4	93.4
Effective Green, g (s)	93.4		25.4		93.4	93.4
Actuated g/C Ratio	0.62		0.17		0.62	0.62
Clearance Time (s)	5.6		5.6		5.6	5.6
Lane Grp Cap (vph)	1086		293		244	936
v/s Ratio Prot	0.62		c0.23			0.45
v/s Ratio Perm					c0.95	
v/c Ratio	1.00		1.36		1.52	0.72
Uniform Delay, d1	28.2		62.3		28.3	19.3
Progression Factor	0.83		1.00		1.00	1.71
Incremental Delay, d2	7.6		182.9		242.3	1.7
Delay (s)	31.0		245.2		270.6	34.8
Level of Service	C		F		F	C
Approach Delay (s)	31.0		245.2		126.8	
Approach LOS	C		F		F	
Intersection Summary						
HCM 2000 Control Delay			107.6		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.31			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	15.2
Intersection Capacity Utilization			120.1%		ICU Level of Service	H
Analysis Period (min)			15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Madison Ave/Swann Dr & Druid Lake Park Dr

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	15	1056	224	226	1393	37	16	30	15	185	0	24
Future Volume (vph)	15	1056	224	226	1393	37	16	30	15	185	0	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.6			5.6			5.6	
Lane Util. Factor		1.00			0.95			1.00			1.00	
Frt		0.98			1.00			0.97			0.98	
Flt Protected		1.00			0.99			0.99			0.96	
Satd. Flow (prot)		1818			3503			1778			1756	
Flt Permitted		0.96			0.56			0.94			0.71	
Satd. Flow (perm)		1753			1959			1692			1310	
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	15	1045	222	224	1378	37	16	30	15	183	0	24
RTOR Reduction (vph)	0	0	0	0	1	0	0	8	0	0	37	0
Lane Group Flow (vph)	0	1282	0	0	1638	0	0	53	0	0	170	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)		102.4			102.4			22.4			22.4	
Effective Green, g (s)		102.4			102.4			22.4			22.4	
Actuated g/C Ratio		0.68			0.68			0.15			0.15	
Clearance Time (s)		4.6			4.6			5.6			5.6	
Lane Grp Cap (vph)		1196			1337			252			195	
v/s Ratio Prot												
v/s Ratio Perm		0.73			0.84			0.03			0.13	
v/c Ratio		1.07			1.23			0.21			0.87	
Uniform Delay, d1		23.8			23.8			56.0			62.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		47.6			103.0			1.9			37.5	
Delay (s)		71.4			126.9			58.0			99.9	
Level of Service		E			F			E			F	
Approach Delay (s)		71.4			126.9			58.0			99.9	
Approach LOS		E			F			E			F	
Intersection Summary												
HCM 2000 Control Delay		101.5			HCM 2000 Level of Service			F				
HCM 2000 Volume to Capacity ratio		1.07										
Actuated Cycle Length (s)		150.0			Sum of lost time (s)			14.7				
Intersection Capacity Utilization		135.5%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

5: N Fulton St & Druid Lake Park Dr/Auchentoroly Terr

12/20/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						 
Traffic Volume (veh/h)	0	254	1041	0	0	1592
Future Volume (Veh/h)	0	254	1041	0	0	1592
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	251	1030	0	0	1575
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						812
pX, platoon unblocked	0.73					
vC, conflicting volume	1818	1030			1030	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1380	1030			1030	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			100	
cM capacity (veh/h)	99	231			670	
Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2	
Volume Total	251	1030	0	788	788	
Volume Left	0	0	0	0	0	
Volume Right	251	0	0	0	0	
cSH	231	1700	1700	1700	1700	
Volume to Capacity	1.09	0.61	0.00	0.46	0.46	
Queue Length 95th (ft)	276	0	0	0	0	
Control Delay (s)	130.2	0.0	0.0	0.0	0.0	
Lane LOS	F					
Approach Delay (s)	130.2	0.0		0.0		
Approach LOS	F					
Intersection Summary						
Average Delay			11.4			
Intersection Capacity Utilization			70.8%		ICU Level of Service	C
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

7: Gwynns Falls Pkwy & Auchentoroly Terr

12/20/2021

												
Movement	SEL	SET	SER	SER2	NWL	NWT	NWR	NEL	NET	NER	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	15	590	10	15	807	777	8	67	44	451	46	30
Future Volume (vph)	15	590	10	15	807	777	8	67	44	451	46	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			5.0	6.0			6.0	5.0	6.0	
Lane Util. Factor		0.95			1.00	0.95			1.00	1.00	1.00	
Frt		0.99			1.00	1.00			1.00	0.85	0.95	
Flt Protected		1.00			0.95	1.00			0.97	1.00	1.00	
Satd. Flow (prot)		3514			1770	3534			1808	1583	1763	
Flt Permitted		0.92			0.29	1.00			0.77	1.00	1.00	
Satd. Flow (perm)		3233			549	3534			1439	1583	1763	
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	15	584	10	15	798	769	8	66	44	446	46	30
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	0	0	22	0
Lane Group Flow (vph)	0	624	0	0	798	776	0	0	110	446	54	0
Turn Type	Perm	NA			pm+pt	NA			Perm	NA	pm+ov	NA
Protected Phases		6			5	2			4	5	8	
Permitted Phases	6				2			4		4		
Actuated Green, G (s)		22.0			83.0	83.0			15.0	51.0	15.0	
Effective Green, g (s)		22.0			83.0	83.0			15.0	51.0	15.0	
Actuated g/C Ratio		0.20			0.75	0.75			0.14	0.46	0.14	
Clearance Time (s)		6.0			5.0	6.0			6.0	5.0	6.0	
Lane Grp Cap (vph)		646			813	2666			196	733	240	
v/s Ratio Prot					c0.32	0.22				c0.20	0.03	
v/s Ratio Perm		0.19			c0.42				0.08	0.08		
v/c Ratio		0.97			0.98	0.29			0.56	0.61	0.23	
Uniform Delay, d1		43.6			20.3	4.2			44.4	22.0	42.3	
Progression Factor		1.00			1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		28.0			27.4	0.3			11.1	3.7	2.2	
Delay (s)		71.6			47.7	4.5			55.5	25.8	44.5	
Level of Service		E			D	A			E	C	D	
Approach Delay (s)		71.6				26.4			31.7		44.5	
Approach LOS		E				C			C		D	
Intersection Summary												
HCM 2000 Control Delay		37.9			HCM 2000 Level of Service				D			
HCM 2000 Volume to Capacity ratio		1.00										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)				23.0			
Intersection Capacity Utilization		83.8%			ICU Level of Service				E			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

10: Reisterstown Rd & Liberty Heights Ave

12/20/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR	NWR2
Lane Configurations												
Traffic Volume (vph)	0	262	362	53	403	6	4	368	51	311	340	41
Future Volume (vph)	0	262	362	53	403	6	4	368	51	311	340	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0	5.0	5.0			4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95			1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00			1.00	0.85	1.00	0.85	0.85
Flt Protected		1.00	1.00	0.95	1.00			0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3539	1583	1770	3531			1770	1583	1770	1583	1583
Flt Permitted		1.00	1.00	0.51	1.00			1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)		3539	1583	952	3531			1858	1583	1863	1583	1583
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
Growth Factor (vph)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Adj. Flow (vph)	0	259	358	52	399	6	4	364	50	308	336	41
RTOR Reduction (vph)	0	0	259	0	1	0	0	0	20	0	0	10
Lane Group Flow (vph)	0	259	99	52	404	0	0	368	30	308	336	31
Turn Type		NA	pm+ov	Perm	NA		Perm	Prot	Perm	pm+pt	Prot	Perm
Protected Phases		4	1		8			6		1	2	
Permitted Phases			4	8			6		6	2		2
Actuated Green, G (s)		18.4	30.4	18.4	18.4			66.6	66.6	82.6	82.6	82.6
Effective Green, g (s)		18.4	30.4	18.4	18.4			66.6	66.6	82.6	82.6	82.6
Actuated g/C Ratio		0.17	0.28	0.17	0.17			0.61	0.61	0.75	0.75	0.75
Clearance Time (s)		5.0	4.0	5.0	5.0			4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		591	437	159	590			1124	958	1398	1188	1188
v/s Ratio Prot		0.07	0.02		c0.11					0.02	c0.21	
v/s Ratio Perm			0.04	0.05				c0.20	0.02	0.14		0.02
v/c Ratio		0.44	0.23	0.33	0.69			0.33	0.03	0.22	0.28	0.03
Uniform Delay, d1		41.2	30.7	40.3	43.1			10.7	8.7	4.2	4.3	3.5
Progression Factor		1.00	1.00	1.00	1.00			0.82	0.65	1.00	1.00	1.00
Incremental Delay, d2		0.5	0.3	1.2	3.3			0.8	0.1	0.1	0.6	0.0
Delay (s)		41.7	31.0	41.6	46.4			9.5	5.7	4.3	4.9	3.5
Level of Service		D	C	D	D			A	A	A	A	A
Approach Delay (s)		35.5			45.8			9.1		4.6		
Approach LOS		D			D			A		A		
Intersection Summary												
HCM 2000 Control Delay			22.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			13.0			
Intersection Capacity Utilization			61.0%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

11: Reisterstown Rd & Anoka Ave

12/20/2021

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	766	708	0
Future Volume (Veh/h)	0	0	0	766	708	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	758	700	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)				382		
pX, platoon unblocked	0.93					
vC, conflicting volume	1458	350	700			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1455	350	700			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	112	646	893			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	0	0	758	467	233	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	1700	1700	1700	
Volume to Capacity	0.00	0.00	0.45	0.27	0.14	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			40.0%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix F

Cost Estimates

					SITE NO: Option 1 - Single Lane Option			
JOB ORDER NO.:			PROJECT TITLE: Druid Park Lake Drive		PRELIMINARY DESIGN SEMI-FINAL DESIGN FINAL DESIGN OTHER: CONCEPT			
LOCATION: Druid Park Baltimore City			CLIENT: Baltimore City DOT					
ITEM NO.	COMM. CODE	DESCRIPTION		QUANTITY				UNIT
Category 1								
		50% of Category 2,4,5 and 6.					\$ 4,594,011.56	
		Category 1 Subtotal		\$ 4,594,011.56				
Category 2								
201	200000	Common Borrow		47,082	CY	\$ 21.00	\$ 988,718.89	
202	200030	Class 2 Excavation		40,941	CY	\$ 35.00	\$ 1,432,925.93	
		Category 2 Subtotal		\$ 2,421,644.81				
Category 3								
		60% of Category 2,4,5 and 6.					\$ 5,512,813.87	
		Category 3 Subtotal		\$ 5,512,813.87				
Category 4								
401	400000	Retaining Wall		2080	SF	\$ 150.00	\$ 312,000.00	
		Category 4 Subtotal		\$ 312,000.00				
Category 5								
501	500020	6 IN. Graded Aggregate Base Course		15,747	SY	\$ 12.00	\$ 188,960.00	
502	500000	Superpave Asphalt Mix 12.5mm for Surface		9,586	TONS	\$ 105.00	\$ 1,006,488.14	
503	500000	Superpave Asphalt Mix 19.0mm for Base		6,042	TONS	\$ 85.00	\$ 513,597.67	
504	500000	Superpave Asphalt Mix 9.5mm for Wedge		1,917	TONS	\$ 90.00	\$ 172,540.82	
505	500750	Grinding Asphalt Pavement 0 Inch to 2 Inch		66,197	SY	\$ 3.00	\$ 198,591.67	
		Category 5 Subtotal		\$ 2,080,178.30				
Category 6								
601	600290	Standard Type A Curb 8-In. x 16-In.		11,415	LF	\$ 34.00	\$ 388,110.00	
602	600410	Std. Mountable V Type Curb & Gutter, 12-In Gutter Pan, 8-In Depth		530	LF	\$ 40.00	\$ 21,200.00	
603	600550	Std. Type A Combination Curb & Gutter, 12-In Gutter Pan, 8-In Depth		48900	LF	\$ 31.00	\$ 1,515,900.00	
604	601330	Sidewalk Using Hot Mix Asphalt		139,615	SF	\$ 6.00	\$ 837,690.00	
605	601360	5 Inch Concrete Sidewalk		161130	SF	\$ 10.00	\$ 1,611,300.00	
		Category 6 Subtotal		\$ 4,374,200.00				
Category 7								
		9% of Category 2,4,5 and 6.					\$ 826,922.08	
		Category 7 Subtotal		\$ 826,922.08				
Category 8								
801	800000	Signal Reconstruction		6	LS	\$ 220,000.00	\$ 1,320,000.00	
802	800000	Intersection APS		1	LS	\$ 30,000.00	\$ 30,000.00	
803	800000	Signing (Cost Per Mile)		2.3	Miles	\$ 17,600.00	\$ 40,480.00	
804	800000	Pedestrian/Ornamental Lighting (Cost per Mile)		2.3	Miles	\$1,408,000.00	\$ 3,238,400.00	
		Category 8 Subtotal		\$ 4,628,880.00				
Sum of all Categories								\$ 24,750,651
Contingency 30%								\$ 7,425,195
Total Neat Construction Cost								\$ 32,175,846
Overhead Additive Rate 14.4%								\$ 4,633,322
Total								\$ 36,809,168
Utility Relocations (40% of Cat 1-8)								\$ 9,900,260
Preliminary Engineering (15% of Total Neat Construction Cost)								\$ 4,826,377

						SITE NO: Option 2 - Hybrid Option	
JOB ORDER NO.:			PROJECT TITLE: Druid Park Lake Drive		PRELIMINARY DESIGN SEMI-FINAL DESIGN FINAL DESIGN OTHER: CONCEPT		
LOCATION: Druid Park Baltimore City			CLIENT: Baltimore City DOT				
ITEM NO.	COMM. CODE	DESCRIPTION	QUANTITY	UNIT	TOTAL UNIT PRICE	TOTAL	
Category 1							
		50% of Category 2,4,5 and 6.				\$ 4,471,068.24	
						Category 1 Subtotal \$ 4,471,068.24	
Category 2							
201	200000	Common Borrow	39,756	CY	\$ 21.00	\$ 834,874.44	
202	200030	Class 2 Excavation	34,570	CY	\$ 35.00	\$ 1,209,962.96	
						Category 2 Subtotal \$ 2,044,837.41	
Category 3							
		60% of Category 2,4,5 and 6.				\$ 5,365,281.88	
						Category 3 Subtotal \$ 5,365,281.88	
Category 4							
401	400000	Retaining Wall	2080	SF	\$ 150.00	\$ 312,000.00	
						Category 4 Subtotal \$ 312,000.00	
Category 5							
501	500020	6 IN. Graded Aggregate Base Course	19,537	SY	\$ 12.00	\$ 234,440.00	
502	500000	Superpave Asphalt Mix 12.5mm for Surface	10,352	TONS	\$ 105.00	\$ 1,086,960.69	
503	500000	Superpave Asphalt Mix 19.0mm for Base	7,497	TONS	\$ 85.00	\$ 637,213.37	
504	500000	Superpave Asphalt Mix 9.5mm for Wedge	2,070	TONS	\$ 90.00	\$ 186,336.12	
505	500750	Grinding Asphalt Pavement 0 Inch to 2 Inch	70,224	SY	\$ 2.00	\$ 140,448.89	
						Category 5 Subtotal \$ 2,285,399.06	
Category 6							
601	600290	Standard Type A Curb 8-In. x 16-In.	15375	LF	\$ 34.00	\$ 522,750.00	
602	600410	Std. Mountable V Type Curb & Gutter, 12-In Gutter Pan, 8-In Depth	0	LF	\$ 40.00	\$ -	
603	600550	Std. Type A Combination Curb & Gutter, 12-In Gutter Pan, 8-In Depth	51290	LF	\$ 31.00	\$ 1,589,990.00	
604	601330	Sidewalk Using Hot Mix Asphalt	121740	SF	\$ 6.00	\$ 730,440.00	
605	601360	5 Inch Concrete Sidewalk	145672	SF	\$ 10.00	\$ 1,456,720.00	
						Category 6 Subtotal \$ 4,299,900.00	
Category 7							
		9% of Category 2,4,5 and 6.				\$ 804,792.28	
						Category 7 Subtotal \$ 804,792.28	
Category 8							
801	800000	Signal Reconstruction	7	LS	\$ 220,000.00	\$ 1,540,000.00	
802	800000	Intersection APS	4	LS	\$ 30,000.00	\$ 120,000.00	
803	800000	Signing (Cost Per Mile)	2.2	Miles	\$ 17,600.00	\$ 38,720.00	
804	800000	Pedestrian/Ornamental Lighting (Cost per Mile)	2.2	Miles	\$ 1,408,000.00	\$ 3,097,600.00	
						Category 8 Subtotal \$ 4,796,320.00	
Sum of all Categories						\$ 24,379,599	
Contingency 30%						\$ 7,313,880	
Total Neat Construction Cost						\$ 31,693,479	
Overhead Additive Rate 14.4%						\$ 4,563,861	
Total						\$ 36,257,339	
Utility Relocations (40% of Cat 1-8)						\$ 9,751,840	
Preliminary Engineering (15% of Total Neat Construction Cost)						\$ 4,754,022	

					SITE NO: Option 3 - Two Lane Option			
JOB ORDER NO.:		PROJECT TITLE: Druid Park Lake Drive		PRELIMINARY DESIGN SEMI-FINAL DESIGN FINAL DESIGN OTHER: CONCEPT				
LOCATION: Druid Park Baltimore City		CLIENT: Baltimore City DOT						
ITEM NO.	COMM. CODE	DESCRIPTION	QUANTITY	UNIT	TOTAL UNIT PRICE	TOTAL		
Category 1								
		50% of Category 2,4,5 and 6.				\$	4,006,221.73	
		Category 1 Subtotal					\$	4,006,221.73
Category 2								
201	200000	Common Borrow	29,454	CY	\$ 21.00	\$	618,544.11	
202	200030	Class 2 Excavation	25,613	CY	\$ 35.00	\$	896,440.74	
		Category 2 Subtotal					\$	1,514,984.85
Category 3								
		60% of Category 2,4,5 and 6.				\$	4,807,466.07	
		Category 3 Subtotal					\$	4,807,466.07
Category 4								
401	400000	Retaining Wall	2080	SF	\$ 150.00	\$	312,000.00	
		Category 4 Subtotal					\$	312,000.00
Category 5								
501	500020	6 IN. Graded Aggregate Base Course	18,889	SY	\$ 12.00	\$	226,666.67	
502	500000	Superpave Asphalt Mix 12.5mm for Surface	9,827	TONS	\$ 105.00	\$	1,031,800.00	
503	500000	Superpave Asphalt Mix 19.0mm for Base	7,248	TONS	\$ 85.00	\$	616,085.27	
504	500000	Superpave Asphalt Mix 9.5mm for Wedge	1,965	TONS	\$ 90.00	\$	176,880.00	
505	500750	Grinding Asphalt Pavement 0 Inch to 2 Inch	66,489	SY	\$ 3.00	\$	199,466.67	
		Category 5 Subtotal					\$	2,250,898.60
Category 6								
601	600290	Standard Type A Curb 8-In. x 16-In.	16680	LF	\$ 34.00	\$	567,120.00	
602	600410	Std. Mountable V Type Curb & Gutter, 12-In Gutter Pan, 8-In Depth	300	LF	\$ 40.00	\$	12,000.00	
603	600550	Std. Type A Combination Curb & Gutter, 12-In Gutter Pan, 8-In Depth	46900	LF	\$ 31.00	\$	1,453,900.00	
604	601330	Sidewalk Using Hot Mix Asphalt	138690	SF	\$ 6.00	\$	832,140.00	
605	601360	5 Inch Concrete Sidewalk	106940	SF	\$ 10.00	\$	1,069,400.00	
		Category 6 Subtotal					\$	3,934,560.00
Category 7								
		9% of Category 2,4,5 and 6.				\$	721,119.91	
		Category 7 Subtotal					\$	721,119.91
Category 8								
801	800000	Signal Reconstruction	6	LS	\$ 220,000.00	\$	1,320,000.00	
802	800000	Intersection APS	2	LS	\$ 30,000.00	\$	60,000.00	
803	800000	Signing (Cost Per Mile)	2.2	Miles	\$ 17,600.00	\$	38,720.00	
804	800000	Pedestrian/Ornamental Lighting (Cost per Mile)	2.2	Miles	\$1,408,000.00	\$	3,097,600.00	
		Category 8 Subtotal					\$	4,516,320.00
Sum of all Categories							\$	22,063,571
Contingency 30%							\$	6,619,071
Total Neat Construction Cost							\$	28,682,643
Overhead Additive Rate 14.4%							\$	4,130,301
Total							\$	32,812,943
Utility Relocations (40% of Cat 1-8)							\$	8,825,428
Preliminary Engineering (15% of Total Neat Construction Cost)							\$	4,302,396